Personality, Social Stress, and Drug Use Among College Students

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ABSTRACT. The present study identified significant predictors of substance use behavior among university students and investigated differences among types of drug users. We examined personality factors and stress in 202 college students (110 women and 92 men, ages 18 to 24) by use of the College Life Stress Inventory, the NEO Five-Factor Inventory, and the Drug Use Screening Inventory. Regression analyses showed that stress and neuroticism, $F(3, 190) = 54.53$, $p < .001$, $R^2 = .46$, were significant predictors of drug use. Participants were also grouped into major and minor drug user categories. Analyses of variance showed that the group of major drug users scored significantly higher on neuroticism, $F(1, 197) = 54.33$, $p < .001$, $\eta^2 = .21$, and stress level than the group of minor drug users. Although several genetic, environmental, psychological, and social factors play a role in the development of substance abuse, it is critical to identify predictors to create more effective interventions and treatment methods.

Substance abuse among college students is a widespread concern for colleges and universities across the United States (Palmer, McMahon, Moreggi, Rounsaville, & Ball, 2012). Drug use on campuses can pose significant health, emotional, and behavioral risks (Johnston, O'Malley, Bachman, & Schulenberg, 2011). Students attending college undergo a crucial developmental time period characterized by significant interpersonal and professional transitions that influence their adult development. With college student drinking on the rise, it is imperative to be aware of the significant risk factors and predictors associated with substance use. Furthering the current understanding of the risk factors related to college student substance use will assist in establishing effective on-campus prevention and treatment programs (Brook, Morojele, Pahl, & Brook, 2006).

According to the five-factor model of personality (Digman, 1990), the full range of personality traits can be well-defined in terms of five basic dimensions. These dimensions are extraversion, agreeableness, conscientiousness, neuroticism, and openness (Goldberg, 1993; Luo, Kranzler, Zuo, Wang, & Gelernter, 2007). Personality traits are one of the many factors that have been implicated in contributing to the development of drug use and abuse. Premorbid personality traits such as impulsivity, thrill-seeking, rebelliousness, irresponsibility, and nonconformity appear to play a central role in the development of substance dependence (Sher, Walitzer, Wood, & Brent, 1991). In contrast, other personality traits, especially negative emotionality (anxiety, inhibition, moodiness, and unhappiness), may be a consequence rather than a cause of substance dependence (Schuckit, Irwin, & Brown, 1990).

Beginning in early childhood, personality trait differences can be seen in those children who abuse substances versus those who do not (Anderson, Tapert, Moadab, Crowley, & Brown, 2007). Those children who abused drugs at a young age had significantly higher scores on neuroticism, and lower scores of agreeableness and conscientiousness. These traits appear to be consistent across the lifespan. Personality traits related to neuroticism and disinhibition have been consistently associated with substance use disorders (Grekin, Sher, & Wood, 2006). Because of its wide applicability and consistency across the lifespan, knowledge of the personality traits that render a person susceptible to

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substance abuse can prove beneficial in the prevention and early intervention of drug using behavior.

Personality dimensions may be related to both a propensity to engage in substance abuse and to use different kinds of substances (Hopwood, Baker, & Morey, 2008). As such, personality differences among subtypes of drug abusers are a significant and important issue to explore. Although limited, previous research has illustrated that key personality differences may exist between those individuals who abuse alcohol and those who abuse narcotics (McGue, Slutske, & Iacono, 1999). Specifically, Butler (2004) reported that participants who identified alcohol as their primary drug of choice scored significantly higher on neuroticism, agreeableness, and conscientiousness than participants who identified cocaine as their drug of choice. Studying the individual differences among substance abusers may serve as a tool to enhance clinical assessment in substance abusing populations.

In addition to personality traits, stress serves as a risk factor for substance use (Gurley & Satcher, 2003). There is increasing evidence that environmental and economic stressors can have adverse effects on families and children, indicating that stress is an important risk factor in substance use (Brook et al., 2006). Moreover, the literature has consistently found stress to be a significant risk factor for the development of addiction to drugs and/or alcohol and relapse vulnerability (Bamberger & Bacharach, 2006; Sinha, 2008). Furthermore, stressful life events have been found to be associated positively with depression, poor physical health, and substance use, suggesting that stress may be a precipitant of drug use behavior (Unger, Kipke, & Simon, 1998). Lloyd and Turner (2008) investigated the relationship between stress and alcoholism, and lent support to this hypothesis. The researchers found that lifetime stress exposure exhibits a pattern of association with alcohol dependence.

Personality traits and stressful life events serve as potential risk factors for substance use and abuse in college students. The Big Five neuroticism factor has been studied by stress researchers and has been found to be related to many poor health outcomes (Williams & Wiebe, 2000). Neurotic individuals perceive stressors as more stressful, which may underlie some of the health risks (Guenole, Chernyshenko, Stark, McGregor, & Ganesh, 2008). Substance abuse is a form of destructive behavior that people may engage in when experiencing high levels of stress. Identifying personal traits along with improved treatment methods may enable people to more constructively manage their stress.

The present study aimed to construct a profile predictive of drug use among college students. First, we hypothesized that significant personality differences would exist between users of alcohol and marijuana (minor drug use) and users of narcotics (major drug use). Specifically, we hypothesized that major drug users would score higher on neuroticism and lower on conscientiousness. Second, we hypothesized that increased levels of stress would be positively associated with total drug use. Last, we hypothesized that the interaction between stress, high levels of neuroticism, and low levels of conscientiousness would be the greatest predictor of major drug use. Multiple regression analyses and Multivariate Analyses of Variance (MANOVA) were used to investigate these relationships.

Method

Participants

The participants were 202 undergraduate and graduate university students between the ages of 18 and 24. The sample consisted of 110 (54%) women and 92 (46%) men. Most of the sample was European American, (n = 148), with other ethnicities represented as follows: African American (14%; n = 29), Latino (10%; n = 21), and other (2%; n = 4). Participants reported a mean income of approximately $45,000 (range $9,000–$150,000). Being college students, most of the population were single (94%) or cohabitating but not married. Most participants had some college education (85%), with the rest either high school grads or some graduate school. Participants were not paid or compensated for their time or participation. However, dependent upon the professor, some students might have received extra credit in class for their participation in research. There were no exclusion criteria for participating in the study. The study was approved by the university's institutional review board.

Design and Procedure

The experimenter visited classrooms and residence halls, and asked students to complete packets of self-report measures. Most participants were recruited from the residence halls on campus. Participation was voluntary, and participants were able to withdraw at any time for any reason without penalty. Participants were given two to three days to complete the packets and return the forms to the

researcher. The confidentiality of participant data was emphasized, with signed informed consents being obtained prior to the participants' completion of the packet.

Materials

Demographics. Background data such as age, sex, marital status, household income, ethnicity, and education level were collected using a self-report demographic questionnaire.

Personality. Personality dimensions were assessed in all participants using the 60-question, self-report NEO Five-Factor Inventory (NEO-FFI; Costa & McCrae, 1992; McCrae & Costa, 1997). The NEO-FFI measures the five major domains of personality: openness, conscientiousness, extraversion, agreeableness, and neuroticism. The items are scored on a five-point Likert-type scale, ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). Through comparative intercultural structures, evidence so far has suggested that the five-factor structure is very similar across cultures (McCrae & Costa, 1997; McCrae, Costa, Del Pilar, Rolland, & Parker, 1998). The replicability and ubiquity of the Big Five have led many personality psychologists to advocate this structure as a basic framework for personality description and assessment across cultures (Zukauskiene & Barkauskene, 2006). The scale demonstrated good internal consistency and validity across various diverse samples (Bjornsdottir et al., 2014).

Stress. The College Life Stress Inventory (Renner & Mackin, 1998) was used as the measure to investigate stress. The scale is a 50-question self-report form that asks about stressors and daily hassles that are most relevant to college students. The participants checked off each of stressors that they experienced within the past year. The items are scored on an ordinal scale with each stressor assigned to a number value between 20 and 100, with 100 being the most severe stressor. The total number values are added together, and a higher score on the scale indicates a higher level of stress.

Drug Use. The Drug Use Screening Inventory (Tarter, 1990) was used as a quantitative self-report instrument to measure frequency and type of substances used. Questions were asked regarding the type of drugs used and the frequency of use of the drugs in the last year. Used most commonly as a qualitative measure, the Drug Use Screening Inventory was converted into a quantitative measure for statistical purposes. Each of the 11 drug categories (e.g., alcohol, cocaine, ecstasy) were number coded. The five categories for frequency of the drug use were assigned a number to reflect the amount of drug usage. To quantitatively report the total amount of drug use, the frequency of the use of each drug used was added together, with a higher score indicating a greater amount of drug use. Participants who reported use of alcohol and/or marijuana were coded as "minor" drug users, and participants who reported use of other illicit drugs and narcotics were coded as "major" drug users.

Results

Group Personality Differences

We hypothesized that there would be significant differences in neuroticism and conscientiousness between major and minor drug users. Looking at all five of the personality dimensions, a one way MANOVA was conducted, Wilks' Lambda = .68, $F(5, 193) = 17.83$, $p < .001$. There were significant personality differences among the two groups of drug users. Major drug users scored significantly higher on neuroticism, $F(1, 197) = 54.33$, $p < .001$, $\eta^2 = .21$, and lower on conscientiousness, $F(1, 197) = 35.15$, $p < .001$, $\eta^2 = .15$, than minor drug users.

Predictors of Drug Use

Standard multiple regressions were conducted to determine the accuracy of the independent variable social stress in predicting total drug use. Regression results indicated that the overall model significantly predicted total drug use, $R^2 = .29$, adjusted $R^2 = .29$, $F(1, 195) = 80.59$, $p < .001$. This model accounted for 29.2% of the variance in total drug use. Regression analyses also revealed that the interaction of stress and neuroticism significantly predicted total drug use, $R^2 = .46$, adjusted $R^2 = .45$, $F(3, 190) = 54.53$, $p < .001$. This model accounted for 46.3% of the variance in total drug use. We examined the model of stress, neuroticism, and extraversion predicting total drug use, and found that it was also significant, $R^2 = .46$, $F(3, 190) = 53.21$, $p < .001$.

Discussion

The study's findings strengthened previous research supporting the importance of personality and stress as crucial factors in drug use and abuse. As hypothesized, we did observe differences between types of drug users. Users of illicit street drugs and narcotics (major drug users) displayed higher levels of neuroticism and lower levels of conscientiousness. Consistent with previous literature, stress served as a risk factor for general substance

use, regardless of drug use of choice (Sinha, 2008).

Results of the present study supported the growing research examining the typology variance among different drug users (Ersche, Turton, Pradhan, Bullmore, & Robbins, 2010). The findings indicated that those individuals who experience large amounts of stress and possess neurotic personality traits may be more susceptible to abusing substances. Additionally, findings suggested significant differences in personality traits between major and minor drug users, which may have broad implications for future research and treatment methods.

Limitations of the study suggested that the findings be analyzed with caution. The correlational design of the study limited the ability to draw causal relationships. In addition, we examined only two important risk factors for substance use. Although research has shown their potential significance, several other factors can play a role in the development of substance use. Reviews of research on the development of drug use have reported that drug use of peers and friends is a major risk factor for drug use (Belcher & Shinitzky, 1998; Copans & Kinney, 1996; Hawkins, Catalano, & Miller, 1992). Other risk factors for substance use that were unaccounted for included trauma history, psychopathology, social support, and biological factors (Stone, Becker, Huber, & Catalano, 2012; Swendsen et al., 2010).

The findings for the group differences should be carefully examined. The Drug Use Screening Inventory has traditionally been used as a qualitative measure of the frequency and type of drug use. For statistical purposes, there needed to be a measure of total drug use. The qualitative data was formatted quantitatively for the purposes of the present study. The issue lies in the reliability of the measure in a quantitative form. Further, the grouping of participants into major and minor drug use categories may create an artificial distinction, because research has illustrated high rates of polysubstance use in this population (Connor, Gullo, White, & Kelly, 2014). Also, although we used fairly standard measures, we were unable to perform reliability statistics for the study sample. Although we have no reason to believe that the measures used were not reliable in the sample studied, we cannot verify this as being the case.

The nonrandom sampling of participants posed a generalizability issue for the study. Although we had a fairly large sample of participants, the nonrandomization recruitment of participants weakened the significance of the results. The homogeneity of the sample also lessened the generalizability of the findings. With most of the sample ethnically European American and attending the same college, perhaps the results would prove different with a more heterogeneous sample. In addition, in an effort to maintain privacy and confidentiality, our survey methodology limited our ability to be certain that the participants who received the packets were the same as the person who completed the forms.

The vast majority of etiology research has concentrated on testing main effects of models of drug use. A far smaller number of studies have examined interactions between predictors of substance use (Brook, Whiteman, Balka, Win, & Gursen, 1997; Brook, Whiteman, Gordon, & Cohen, 1986, 1989; Cooper, Peirce, & Tidwell, 1995; Curran, White, & Hansell, 1997). Universities across the United States strive to provide their students with tools to make healthy and constructive decisions. Many colleges also provide educational programs, counseling, and substance abuse services to their students. To better assist their students, it is important for colleges and universities to be aware of the risk factors and precipitants of substance use. Knowledge of these concepts will hopefully better inform prevention programs and treatment methods. Future research is needed to determine the precise nature of these relationships as well as to improve treatment approaches.

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