

## **Mental Health Problems, Dark Triad Personality and School Environment Performance in Substance User and Non-User of High School Students**

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### **ABSTRACT**

This study attempted to examine whether there were differences between substance nonuser and user adolescents on mental health problems, personality, and school environment performance. The data on mental health problems (depression, anxiety, and stress), dark triad personality traits, and substance use were collected through self-report questionnaires from a sample of 680 high school students and accessing their average scores in all subjects from the Registrars' Offices of the respective High Schools. For this study, 680 (i.e., 340 substance users and 340 non-substance users) participants were selected using repeated survey sampling from eight government and private high schools in Bahirdar City, Ethiopia. Results indicated higher mental health problems (anxiety, depression, and stress) in substance users than non-users. It was also found that substance users score lower on school environment performance than non-users. Analysis of the data showed that female students don't have significant substance use, whereas male students do have significantly higher substance use. A statistically significant difference was also found between the substance nonuser and user female and male students. The results of the general MANOVA tests revealed that the mean differences for those with substance non-users and users were significant for narcissism ( $F= 4.796, p < 0.01$ ) and psychopathy ( $F= 7.143, P < 0.01$ ) personality. Parents, teachers, and counselors could benefit from this study by being informed about the mental health problems and substance use of students.

**Keywords:** Mental Health, Personality, School Environment Performance, and Substance Use.

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### **INTRODUCTION**

This study focused on adolescents, for whom it is illegal or legal to consume substances (alcohol, khat, hookah, tobacco, and cigarettes) that are not unlawful for adults. Substances in this study include several substances (i.e.,

alcohol, cigarettes, khat, and tobacco).

According to Kring, Davison, Neale, and Johnson (2007), a substance is a chemical used in the treatment, cure, prevention, or diagnosis of disease or to enhance physical and mental health. Furthermore, substances, which are smoking cigarettes, tobacco, alcohol, khat, heroin, and cocaine, are used for perceived beneficial

effects on behavior, mental health, personality, and school success. In this study, substances refer to illegal and legal substances used by adolescent students, which are not used for therapeutic purposes and which have a harmful effect on their mental development, thinking, attitudes, and their behavior, for example, cocaine, heroin, alcohol, khat, hookah, and cigarettes.

Kring et al. (2007) stated that substance use refers to continual or habitual use of any substance to change states of body or mind, other than medically warranted purposes leading to effects that are detrimental to the individual's physical or mental health or the welfare of others. In this study, substance use refers to the misuse of illegal and legal products such as khat, alcohol, smoking cigarettes, and hookah, which are harmful to adolescents' mental health as well as the well-being of society.

Substance use in adolescence is associated with several mental health problems, such as conduct problems, hyperactivity/attention problems, depression, anxiety, and suicidal behavior (Tarter, Kirisci, Feske, & Vanyukov, 2007).

Alcohol use and nicotine have influenced the occurrence of familiar young persons' mental health problems (Ribeiro et al., 2008). Verdurmen, et al. (2001) concluded that prevalence rates indicate early onset (age 18–24 years) of substance misuse and alcohol with the association between mental health and alcohol use among the youngest adolescents.

Asgari (2008) stated that there was no significant relationship between mental health and education performance both among male students and among female ones. However, Sha'iri (2004) found that there was a significant association between academic environment performance and mental health.

Psychopathy personality trait positively predicts mental health problems such as anxiety, depression, reduced perception of general health (Beaver et al., 2014), and higher self-reported reactivity to stress (Noser, Zeigler-Hill, & Besser, 2014). Psychopathy persons have been found to be at risk for many compromising health behaviors that associate with shorter life expectancy such as impulsive behavior (Jones & Paulhus, 2011), and substance use (Jonason, Li, & Teicher, 2010).

In Dark Triad traits, studies that examined the links of Machiavellianism with mental health issues indices have found positive correlations with depression (Bakir, Yilmaz, & Yavas, 1996), paranoia, and anxiety (Christoffersen & Stamp, 1995), and low self-esteem (Valentine & Fleischman, 2003).

According to Jonason, Baughman, Carter, and Parker (2015), Machiavellianism is sometimes focused on long-term benefits and a repetitive delay of gratifications. Jonason et al. (2015) also stated that a delay in gratification may be stressful and that stressful experiences may mediate the relationship between Machiavellianism and negative mental health outcomes. Narcissism might predict negative health outcomes through its associations with

impulsivity (Jones & Paulhus, 2011), sensation seeking (Crysel, Crosier, & Webster, 2013), risk-taking, and substance use (Buelow & Brunell, 2014). Rutledge (2006) one of the main characteristics of Narcissism, the use of defensive mechanisms for coping with ego threats, could also be related to deleterious physiological consequences. Jonason et al. (2015) conducted research investigating the relationships between the three Dark Triad personality traits and various measures of mental, social, and physical health. Their results are mainly in accord with previous studies. Specifically, psychopathy was related to a variety of mental health outcomes such as more risk-taking, increased depression, a faster life history strategy, and lower life expectancy.

McKay, Sumnall, Cole, and Percy (2012) stated that adolescent illegal drug use is affecting adolescents' academic progress, and preventative measures need to be applied to decrease substance abuse. McKay et al. (2012) also stated that Northern Ireland adolescents who engaged in socially unacceptable alcohol drinking also had lower academic environment performance, which contributed to substance abuse. Chakravarthy, Shah, and Lotipour (2013) stated that drug use prevention programs should focus on building self-efficacy approaches to decrease alcohol consumption and influences. Specific influences that contribute to adolescent drug misuse need to be identified so prevention methods can be implemented effectively. The early enhancement of awareness and skills for family members, school staff, and health

care workers about drug prevention needs to be implemented as well so they can be aware of updates. Negative outcomes such as low academic environment achievement, promiscuous sexual acts, mental health problems, deviant behavior, and loss of life result from adolescent illicit drug abuse.

Additionally, Henry (2010) stated that students' academic environment achievement can begin to decline in junior high school due to an increase in drug use. Students more often have very little attachment to school and little or no activities to build their interests and these students have a strong attachment to peers with persistent misbehavior. Low school attachment contributed to the development of substance abuse and student academic failure (Henry, 2010).

The purpose of the present study was to explore whether there were differences between substance users and non-users in terms of the underlying factors identified in the factor structure (e.g., mental health problems, psychopathy, Machiavellianism, Narcissism, gender, and school environment performance). To undertake the study, the following leading hypotheses were formulated.

H1: There would be a statistically significant difference in anxiety, depression, and stress between substance user and non-user students.

H2: There would be a significant difference in psychopathy, Machiavellianism, and narcissism between substance user and non-user students.

H3: There would be mean variations between substance user and non-user adolescent students in scores on school environment performance.

H4: There would be a significant gender difference between substance user and non-user students.

## METHOD

### Sample and Setting

The first step in sampling was to decide on an appropriate sample size. The researcher, based on the objectives of the research, decided to utilize a 5% confidence interval. The next step was to define which sampling technique would be used to select the samples from the target population. Three hundred and forty substance user and 340 non-user students, 85 each from eight government and private high schools of Bahirdar (Ethiopia) were selected for this study. These male and female students were selected using repeated survey sampling. A repeated survey is a survey carried out more than once, mostly with regular frequency. The mean age of government and private secondary and preparatory schools' substance user and non-user students was 17.6 years (age range 16-20 years). The researcher used selection criteria in terms of their frequency of substance use: the substance had to be used a minimum of 4 times a week and a minimum duration of 6 months, to be eligible to participate in the study.

### Data Collection and Procedures

First, permission was taken from the principals of different high schools for

conducting the study. They were made clear about the objectives of the study. Before administering the questionnaires, a good rapport was established with the participants and they were assured of the confidentiality of their responses. Before administering the test, required instructions were given in responding to the statements of questionnaires. For secondary and preparatory school students in Ethiopia, English is a foreign language and as a result, students may have considerable difficulty in English. Therefore, the questionnaire was translated into Amharic, the national language of the country, by two translators who are lecturers in the Department of English. The questionnaire was first translated into the Amharic language by a bilingual language expert who was not told about the objectives of the study. Then another bilingual language expert back-translated the questionnaire into English without having access to the original instruments. If minor differences occur, the forward and backward translations were corrected by the researcher based on rigorous discussions with the translators. Permission to conduct the study and approach the students was obtained from the participating high schools by briefing them about the purpose and importance of the study. In addition, the participants' parents were informed that their children could assent or consent freely and voluntarily. The self-report questionnaire was administered by the researchers with the help of two senior teachers, who facilitated questionnaire administration. After the completion of the questionnaire, the participants were

thanked by the researcher for their cooperation. Students' school environment performance was obtained from the official records of the Registrar's Offices of the respective secondary.

### Materials

**Depression Anxiety Stress Scales (DASS-21) (Lovibond & Lovibond (1995)).** This is a 21-item self-report instrument consisting of three 7-item subscales assessing symptoms of depression, anxiety, and stress. Individual items are scored on a 4-point scale (0–3), allowing for subscale scores ranging from 0 to 21 (Lovibond & Lovibond, 1995). Past studies have shown adequate construct validity and high internal consistency reliability (Clara et al., 2001; Crawford & Henry, 2003; Henry & Crawford, 2005).

**Dark Triad Traits Scale (Jones & Paulhus, 2014).** The Short Dark Triad (S3) is a scale that measures three personalities, namely Machiavellianism, narcissism, and psychopathy consisting of 27 items with 9 items for each subscale. It is a Likert-type scale from 1 (strongly disagree) to 5 (strongly agree). The SD3 has acceptable reliability; using Cronbach's Alpha, the reliability rates of the SD3 subscales were  $\alpha = .79$  for Machiavellianism,  $\alpha = .75$  for narcissism, and  $\alpha = .73$  for psychopathy, which represents an appropriate indication of internal consistency (Hair, Joseph, Ringle, Christian, & Sarstedt, 2013). The present study's reliability for the scales was narcissism (Cronbach's  $\alpha = .86$ ), Machiavellianism ( $\alpha = .78$ ), psychopathy

( $\alpha = .83$ ), and a single Dark Triad index of all three ( $\alpha = .89$ ).

**Drug Abuse Screening Test (DAST-20) (Skinner, 1982).** This 20-item instrument may be given in either a self-report or in a structured interview format; a "yes" or "no" response is requested from each of the 20 questions. The purpose of the DAST is to: provide a brief, simple, practical, but valid method for identifying individuals who are abusing psychoactive drugs; and to yield a quantitative index score of the degree of problems related to drug use and misuse. DAST scores are highly diagnostic with respect to a DSM diagnosis of psychoactive drug dependence. A form of the DAST has been adapted for use by adolescents (the word "work" has been replaced by "school"). Only two items are keyed for a "No" response: "Can you get through the week without using drugs?" and "Are you always able to stop using drugs when you want to?" A DAST score of six or above is suggested for case-finding purposes, since most of the clients in the normative sample score six or greater. It is also suggested that a score of 16 or greater be considered to indicate a very severe abuse or dependency condition. An internal consistency coefficient of .92 was obtained for a sample of 256 drug/alcohol abuse clients.

**School Environment Performance.** In the present study, school environment performance was defined as the secondary and preparatory school students' average scores in all subjects in the school environment. The average scores from grade 9 first semester to the

present semester (in all subject areas) for each student were collected from record offices of the secondary and preparatory schools involved in the study to measure school environment performance. Then each of the average scores was transformed into z scores

and the average of the z scores for each student was used for the analyses. The scores were transformed into z scores to allow for maintaining the normalization among scores of students from different schools environment and grade levels.

## RESULTS

### Difference between Substance Non-Users and Users on Mental Health Problems

Table 1: The difference in substance nonusers and users for anxiety, depression, and stress

Variables	Nonuser M(SD)	User M(SD)	Standard error	df	t
Anxiety	19.23 (4.93)	30.07 (6.14)	.31	678	23.47**
Depression	13.74 (2.19)	18.94(1.96)	.23	678	16.93**
Stress	17.41(3.94)	28.01(4.16)	.28	678	19.97**

\*\*  $p < .01$  and \* $p < .05$

As can be seen in Table 1, there was a significant difference in anxiety between substance user and non-user students  $t(678) = 23.47, p < .01$ . The mean score of substance users ( $M = 30.07$ ) was significantly higher than the non-users ( $M = 19.23$ ), indicating that substance users are higher on anxiety as they were more nervousness, worried, restless and tense than their non-user counterparts. Furthermore, there was a significant difference in terms of depression between substance user and non-user students  $t(678) = 16.93, p < .01$ . The higher mean score of substance users ( $M = 18.94$ ) than the non-users ( $M = 13.74$ ) on depression indicated that substance users were high on depression, showing higher levels of despair, sadness, and hopelessness compared to non-users. Additionally, Table 1 also shows that there was a significant difference in

stress between substance user and non-user students  $t(678) = 19.97, p < .01$ . The higher mean score of substance users ( $M = 28.01$ ) compared to non-users ( $M = 17.41$ ) indicates that substance users are higher on stress as they were exhibited more trauma, disturbance, and shock than their non-user counterparts. The first hypothesis which stated that substance-user students would differ significantly from non-user students in their mental health problems (anxiety, depression, and stress) was supported.

### Differences between Substance Non-Users and Users on the Dark Triad of Personality

The variable was analyzed using the Multivariate Analysis of Variance (MANOVA) statistic. The MANOVA results yielded two statistically significant

differences out of three Dark Triad traits. That is, the mean differences for those with substance users and non-user were statistically significant for narcissism ( $F = 4.796, p < 0.05$ ), and psychopathy ( $F = 7.143, p < 0.05$ ) personality traits. In each case, the substance-user group scored significantly higher on narcissism and psychopathy personality traits than their non-user counterparts.

**Differences between Substance Non-Users and Users on School Environment Performance**

The school performance variable was tested using an independent samples  $t$ -test. The analysis yielded a statistically significant difference between the non-user and user students on school environment performance  $t(478) = 19.13, p < .01$ . The higher mean score of non-users ( $M = 23.07$ ) compared to substance users ( $M = 13.49$ ) showed that nonusers scored higher in school environment performance than substance users. This suggests that nonusers possess a greater ability to

study and thus perform better in their schooling environment intellectually. This result supports the third hypothesis which predicted that there would be significant mean variations between the substance user and non-user adolescent students in scores on school environment performance.

**Gender Differences in Substance User and Nonuser Students**

A test of gender differences in substance user and nonuser students yielded a statistically significant result  $t(678) = 18.07, p < .01$ . Male students ( $M = 47.13$ ) were significantly more likely to be substance users than females ( $M = 31.14$ ). Thus, the fourth hypothesis that predicted a significant gender difference between substance users and non-users was supported.

Finally, the path diagrams for the hypothesized integrated mental health problems and personality for the samples of the substance user and nonuser students are depicted in Figures 1 & 2 below.

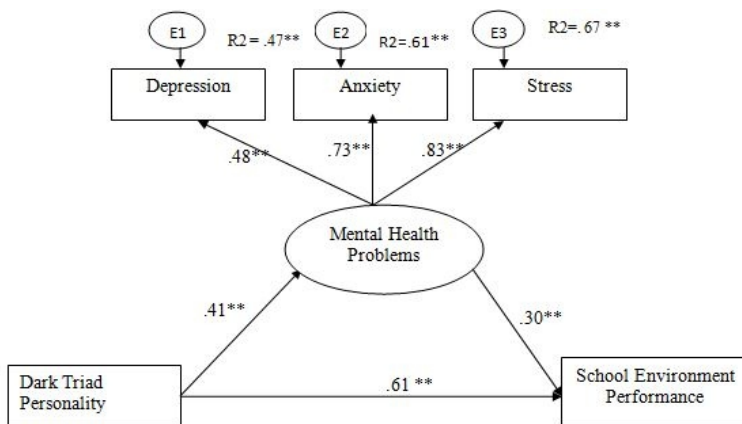


Figure 1: The Path Model of the Hypothesized Integrated Mental Health and Personality Model of School Environment Performance for Substance Users.

As shown in Figure 1, the direct effect of dark triad personality on school environment performance was .61, whereas; the indirect effect of dark triad personality on school environment performance via mental health problems (.41 X .30) was .12. Therefore, all the direct effects of dark triad personality on school environment performance were significant, indicating that the relations of dark triad personality on school environment performance were partially mediated by mental health problems.

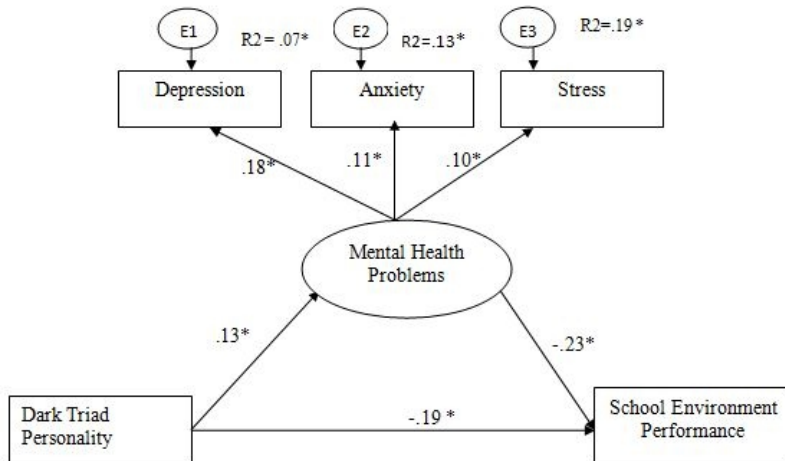


Figure 2: The Path Model of the Hypothesized Integrated Mental Health and Personality Model of School Environment Performance for Substance Nonusers.

Notes: Standardized estimates(β), correlations (r) of the observed variables of mental health problem, and multiple squared correlation ( $R^2$ ), the proportion of variance of the criterion variable explained by the model, for Maximum Likelihood Method (MLE) and the corresponding parameter estimates for Bootstrap Method. \*\*, and \* denote the effect is significant at  $p < .01$ , &  $p < .05$ , respectively

As shown in Figure 2, the direct effect of dark triad personality on school environment performance was -.19, whereas the indirect effect of dark triad personality on school environment performance via mental health problems (.13 X -.23) was .03. Therefore, all the direct effects of dark triad personality on school environment performance were not significant, indicating the relations of

dark triad personality on school environment performance were not partially mediated by mental health problem in sport.

## DISCUSSION

The purpose of the present study was to explore whether there were differences between substance users and non-users



in terms of the underlying factors identified in the factor structure (e.g., mental health problems, psychopathy, Machiavellianism, narcissism, gender, and school environment performance). The hypotheses were tested statistically using the *t*-test, MANOVA, and path analysis. The results showed that substance use is related to mental health problems. This is consistent with problematic substance use relating to mental health problems (Swendsen et al., 2010). Regarding the effect of substance abuse on particular mental health problems, this study confirmed that stress, anxiety, and depression were related to mental health problems. This finding is comparable with the study conducted by Compton and his associates which found that problematic substance use is also common among individuals with other affective disorders e.g., depression and mania, and among individuals with anxiety disorders including phobia and panic disorder (Compton et al., 2007) as well as their problematic substance use and mental health problems (Proctor & Hoffman, 2012).

The findings of this study supported the hypothesis that stated there would be significant differences in psychopathy, Machiavellianism, and narcissism between the substance user and non-user students. Substance user students had developed dark personality traits than non-user students in schools. The finding is consistent with a number of previous studies. For instance, narcissism might predict negative health outcomes through its associations to impulsivity

(Jones & Paulhus, 2011), sensation seeking (Crysel, Crosier, & Webster, 2013), risk-taking and substance use (Buelow & Brunell, 2014). Furthermore, one of the main characteristics of Narcissism, the use of defensive mechanisms for coping with ego threats, could also be related to deleterious physiological consequences (Rutledge, 2006). Machiavellianism is sometimes focused on long-term benefits and a repetitive delay of gratifications (Jonason, Baughman, Carter, & Parker, 2015). A delay of gratification may be stressful and that stressful experience may mediate the relationship between Machiavellianism and negative mental health outcomes (Jonason et al., 2015). Jonason et al. (2015) conducted the only research dealing with the relationships between all three Dark Triad personality traits and various measures of mental health problems. Namely, psychopathy was related to a range of mental health outcomes such as increased depression, more risk-taking, lower life expectancy, and a faster life history strategy. Machiavellianism was linked to poorer mental health and well-being as well as to a slower life-history strategy, while narcissism was linked to a few negative as well as some positive health outcomes such as longer life expectancy and a slow life-history strategy.

Results of the present study also showed that there were statistically significant variations between substance the user and non-user adolescent students in scores on school environment performance. Substance-user students had not performed well in the school environment academic performance

than non-user students. This finding is consistent with the results of the former scholars. For example, McKay, Sumnall, Cole, and Percy (2012) stated that adolescent substance use is affecting adolescents' academic progress. They also reported that adolescents who engaged in socially unacceptable alcohol drinking also had lower academic environment performance, which contributed to substance abuse. In addition to this, Henry (2010) stated that students' academic environment achievement can begin to decline in junior high school due to an increase in substance use. Students more often have very little attachment with school and little or no activities to build their interests and these students have a strong attachment to peers with persistent misbehavior. Low school attachment contributed to the development of substance abuse and student academic failure (Henry, 2010). According to Emagnaw, and Hong (2018) students' school environment performance is related to prosocial behavior. Studies also have shown that heavy adolescent substance use can lead to problems working with memory and attention due to brain activities (Kelvin, Meehan, et al., 2006) and poor academic environment performance, students missing classes, difficulty in keeping up with academic responsibility, failing tests, dropping out of school environment due to poor grades resulting from alcohol (Monti, Miranda, Nixon, et al., 2005).

Hypothesis 4 stated that there would be a significant gender difference

between the substance user and non-user students, and the results confirmed this hypothesis. This is also consistent with Johnston et al. (2007) have found gender differences in the use of substances during adolescence. In general, females report lower rates of illicit drug use and report using fewer types of drugs than males. Males also have higher rates of heavy drinking, whereas differences in the use of cigarettes are less apparent (Johnston et al., 2007). Wallace et al. (2003) found similar gender differences. The rate of substance use between males and females was comparable, however, gender differences were noticeable among the twelfth-grade participants. During twelfth grade, marijuana and alcohol use were more prevalent among males than females. Wagner and Anthony (2007) found that males were more likely to develop a dependence on marijuana and alcohol than females.

## CONCLUSIONS

Based on the results obtained in the research, it can be concluded that substance use certainly relates to mental health problems, personality, and school environment performance. Substance users exhibited mental health problems (anxiety, depression, and stress) more than non-users. The personality of a person influences them to become more depressed, anxious, and stress-vulnerable. Narcissism and psychopathy were strong personality traits that can induce mental health problems and could induce the person to use

substances and develop mental health problems. The results indicated that there were gender differences among substance users and nonusers. Male students were much more likely to be substance users than female students. In the case of school environment performance, the group which reported nonusers had significantly better school environment performance than those who reported substance users. The nonuser group significantly differed from the substance users group in the mean of school environment performance. Based on these findings, we conclude that substance use is a very destructive habit that needs corrective measures. In order to control the substance use behavior of adolescents, all stakeholders should strive to take their parts across all levels of intervention. Hence, both government and private high schools should make accessible different recreational activities so that it is possible to draw students to positive health behavior and should establish clubs or strengthen extra curricula activities so that students can share knowledge and experience with each other. The city administration should set a means to control different areas where students use substances. The Ministry of Education should set a strategy to commence about substance and its adverse effect on the curriculum.

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