Impulsivity and Sensation-Seeking Personality Traits as Predictors of Substance Use Among University Students

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ABSTRACT
The purpose of the current study was to investigate the relationship between substance use and impulsivity and sensation-seeking personality traits among 655 university students using a cross-sectional, descriptive, correlational design. A significant correlation was found between students' impulsivity level scores and frequency of substance use ($r = 0.11$, $p < 0.05$). A positive correlation was found between frequency of substance use and sensation-seeking levels ($r = 0.2$, $p < 0.05$), as well as impulsivity levels ($r = 0.31$, $p < 0.01$). Multiple linear regression analysis showed that the two predictors model was able to account for 12.4% of variation in substance use. Impulsivity and sensation-seeking personality traits are significant predictors of substance use among university students. [Journal of Psychosocial Nursing and Mental Health Services, 56(1), 57-63.]

Substance use has been recognized as a major health and social problem throughout the world (Centers for Disease Control and Prevention, 2014). The economic and social consequences of substance use in the United States, for example, are devastating, causing losses of billions of dollars and destroying society cohesion and development (Bouchery, Harwood, Sacks, Simon, & Brewer, 2013). Young adults are considered among the most vulnerable population for substance use and misuse (Hamdan-Mansour, 2010). University students are exposed to various psychological and social difficulties that increase their vulnerability to risk behaviors such as substance use (Hamdan-Mansour, Halabi, & Dawani, 2009). The transition to university is overwhelming for many students as they experience changes in their social and psychological demands and duties (Hamdan-Mansour et al., 2009). University students are also at risk for mental and psychosocial problems, such as stress, depression, substance use, hostility, and anger, that have a direct impact on their academic performance and social functioning (Hamdan-Mansour, Dardas, Nawafleh, & Abu-Asba, 2012; Hamdan-Mansour & Dawani, 2008). In an attempt to adapt to these changes, coupled with increased freedom and distance from family, university students may resort to substance use (Kong et al., 2013).
The evolving political and economic changes in the region globally support the notion that university students are becoming the most vulnerable population for various psychological and mental disturbances...
ality of the study. The cover letter also included contact information for the principal investigator (PI) and instructions on where to return the questionnaires; 1,200 packets were distributed and 655 were returned, with a 54% response rate. Participants’ information was kept confidential. All electronic versions were kept on the PI’s computer.

**Instruments**

Data were collected using an Arabic version of self-reporting questionnaires. The World Health Organization (WHO; 2010) guideline for translation and tool adaptation was used to translate the tools. Initially, the tool was translated by a mental health consultant who has knowledge and proficiency in English-speaking culture and whose first language is Arabic. A bilingual (English- and Arabic-speaking) expert identified and resolved inadequate expressions/concepts in the translation, as well as any discrepancies between the forward translation and existing or comparable previous versions of the questions. The instrument was then translated back to English by an independent translator, whose first language was English. Emphasis in the back-translation was placed on conceptual and cultural equivalence rather than linguistic equivalence. Discrepancies were discussed and no further work was needed. Tools included the Persian Substance Use Questionnaire (PSUQ; Fadardi, 2005), Barratt Impulsiveness Scale-11 (BIS-11; Patton, Stanford, & Barratt, 1995), and Arnett Inventory of Sensation Seeking (Arnett, 1994).

Persian Substance Use Questionnaire. The PSUQ (Fadardi, 2005) was used to measure frequency of substance use. This questionnaire measures the frequency of using nonprescribed substances, including sedatives, antidepres- sants, anti-anxiety drugs, analgesic agents, psychedelic herbal medicines, tea and coffee, nicotine (i.e., smoking tobacco), and energizing and hallucinating drugs, among the Iranian population. University students were asked to rate their frequency of using substances on a Likert scale from 0 = not at all to 6 = quite often during the past 3 months (Fadardi, Ziaee, & Shamloo, 2009). For the purposes of the current study, individual and total frequency of substance use was used. Reliability of the tool was 0.78.

Barratt Impulsiveness Scale-11. The BIS-11 (Patton et al., 1995) was used to measure impulsivity levels. The BIS-11 is a self-report questionnaire comprising 30 items that assess six first-order factors (i.e., attention, motor, self-control, cognitive complexity, perseverance, and cognitive instability) and three second-order factors (i.e., attention impulsiveness, motor impulsiveness, and non-planning impulsiveness). Items are scored on a 4-point scale where 1 = rarely/never, 2 = occasionally, 3 = often, and 4 = almost always/always. To calculate scores, scores for items 1, 7, 8, 9, 10, 12, 13, 15, 20, 29, and 30 were reversed (Patton et al., 1995). For the purposes of the current study, the total score was obtained; higher scores indicate higher levels of impulsivity. Reliability of the tool was 0.75.

Arnett Inventory of Sensation Seeking. The Arnett Inventory of Sensation Seeking (Arnett, 1994) was used to measure sensation-seeking levels. The questionnaire comprises 20 self-report items and assesses novelty and intensity subscales. Items are scored on a 4-point scale where 1 = does not describe me at all, 2 = does not describe me very well, 3 = describes me somewhat, and 4 = describes me very well. To calculate the scores, scores for items 2, 3, 6, 10, 13, and 17 were reversed. For the purposes of the current study, the total score was obtained; higher scores indicate higher levels of sensation seeking. Reliability of the tool was 0.81.

**Data Analysis**

SPSS version 22 was used for statistical analysis. University students’ demographic characteristics were described using central tendency and dispersion measures (i.e., standard deviation and range). University students’ frequency of substance use was also described. Pearson coefficients were used to examine the relationship between variables, and independent t-tests were used to examine differences in substance use, impulsivity, and sensation seeking in relation to gender. Multiple regression analysis was used to examine the predictive power of impulsivity and sensation seeking on substance use.

**RESULTS**

**Descriptive Characteristics**

A total of 655 university students completed and returned the questionnaire. Students’ ages ranged from 18 to 25 years (mean age = 20.1 years, SD = 1.6 years). Of 655 students, 371 were female (56.6%) and 284 were male (43.4%) (Table 1). Approximately 45.6% (n = 299) studying at public universities, whereas 54.4% (n = 356) were studying at private universities. More than one half of students were science majors (55.1%, n = 361), followed by humanities majors (32.8%, n = 215) and health majors (12.1%, n = 79). Most participants had an average medium (i.e., $1,000 to $1,400 per month) family income (83.4%, n = 546), and only 4.4% (n = 29) reported a family history of mental illness; 1.4% (n = 9) and 0.5% (n = 3) reported a history of father and mother substance use, respectively.

**Frequency of Substance Use**

Students were asked to report their frequency of use of 12 non-prescribed substances (two substances [unusual drinks/drugs] are not reported herein). The highest frequencies were reported for tea and coffee (82.9%, n = 543), followed by analgesic agents (54.1%, n = 354), tobacco products (39.7%, n = 260), and other types of non-prescribed drugs (31.1%, n = 204). The lowest frequencies were reported for antidepressant, anti-anxiety, and energizing and hallucinogen drugs (2.5%, n = 17) (Table 2).
**Personality Traits**

**Impulsivity.** The analysis showed that students’ mean impulsivity score was 63.1 (SD = 9.4, range = 40 to 95). One half of students had a score ≥62 and the other half had a score between 56 and 69, indicating students had mild to moderate levels of impulsivity (total possible score range = 30 to 120).

**Sensation Seeking.** The analysis showed that students’ mean sensation-seeking score was 54 (SD = 7.2, range = 29 to 75). Approximately 50% of students had a score of ≥54 and 50% had a score between 49 and 59. The results indicate students had moderate to high levels of sensation seeking (total possible score range = 20 to 80).

**Bivariate Analysis**

Using Pearson coefficient (r), the analysis showed that there was a positive and significant correlation between sensation seeking and frequency of substance use (r = 0.11, p < 0.05), and between impulsivity and frequency of substance use (r = 0.20, p < 0.05). Moreover, there was significant and positive correlation between students’ impulsivity and sensation-seeking scores (r = 0.31, p < 0.05).

Although there was a correlation among sensation seeking, impulsivity, and substance use, the magnitudes of correlation were weak. Thus, the results must be considered with caution (Table 3).

Multiple linear regression analysis was used to develop a model for testing prediction power of sensation seeking and impulsivity to predict university students’ frequency of substance use. Regression coefficients are shown in Table 4. Impulsivity and sensation-seeking predictors had significant effects in the model (p < 0.05). The model including both variables was significant (F = 46.23, p < 0.05) and explained 12.4% of variance in the mean frequency of students’ substance use (R² = 0.124).

Independent t tests were calculated to examine differences in university students’ frequency of substance use and impulsivity and sensation-seeking.
levels regarding demographic characteristics (Table 5). Mean score of frequency of substance use for male students (mean = 11.5, SD = 8.4) was higher than that for female students (mean = 9.7, SD = 6.4), and this difference was significant ($t = 3.23, p < 0.05$). Similarly, the mean sensation-seeking score was higher for male students (mean = 54.2, SD = 6.6) than female students (mean = 51.8, SD = 7.1), and this difference was significant ($t = 4.43, p < 0.05$). Although female students reported a higher mean impulsivity score than male students (64.1 versus 63, respectively), the difference was not statistically significant ($t = –1.31, p = 0.19$).

**DISCUSSION**

Substance use has been recognized worldwide as a major health, social, and economic problem (WHO, 2010), and Jordan is no exception. The current study aimed to explore frequency of substance use and its relationship to problematic personality traits among Jordanian university students. The study revealed that students reported moderate to high frequency of use of caffeine, analgesic agents, tobacco products, and non-prescribed drugs. However, students reported less frequent consumption of alcohol, antidepressant drugs, anti-anxiety drugs, and hallucinogen drugs. The current results correspond with those from a previous study (Hamdan-Mansour et al., 2009) that found university students had high consumptions of painkillers and caffeine, and used stimulants, tranquilizers, inhalants, alcohol, and opioid drugs in less amounts. However, inconsistent with the current study’s findings, Hamaideh et al. (2010) found that alcohol was the most consumed substance (excluding tobacco products) by university students in Jordan. It is important to consider that in the current study and the study by Hamdan-Mansour et al. (2009), samples were drawn from several universities in Jordan, whereas Hamadieh et al.’s (2010) sample came from one university in the southern region of Jordan.

A high frequency of non-prescription drug use among university students was highlighted in the current study. This finding can be attributed to culture; Jordanian individuals tend to initially consult pharmacists rather than physicians for their health problems. Therefore, over-the-counter medications and non-prescribed medications are consumed in larger amounts than prescribed medications or illicit substances. The current results do not correspond with international studies reporting alcohol as the most used substance among university students (Verdejo-García, Lawrence, & Clark, 2008). One possible explanation for this discrepancy is related to the religious affiliation of students, as >92% of students in the current study were Muslims. Islam prohibits alcohol and illicit drug use, and the Arabic and Islamic cultures stigmatize substance use—particularly those mentioned in the Qura’an or Sunnah. Individuals who consume alcohol and illicit drugs may face social and cultural punishment that includes social isolation and neglect. Therefore, despite keeping participants’ information anonymous, it is possible that students underreported their substance use. However, regarding substances that are less offensive to Islamic and Arabic cultures,
such as tobacco and caffeine, students reported high frequency consumption rates, with almost equal prevalence to those in national and international reports (Hamdan-Mansour et al., 2009; Hamdan-Mansour & Marmash, 2007).

The current study highlighted the role of impulsivity and sensation seeking in predicting frequency of substance use among university students. The results revealed that impulsivity and sensation seeking were significant predictors of substance use among university students. Male students also reported higher sensation-seeking levels than female students. The literature is inconsistent in reports on the differences between males and females regarding sensation-seeking levels. Contrary to the current study, Chambers, Taylor, and Potenza (2003) reported that female students had higher sensation-seeking levels than male students. However, de Wit (2009) also found that male students had higher sensation-seeking levels than female students. In addition, a significant correlation was found between sensation seeking and substance use, which corresponds with findings from other studies that found that individuals with higher sensation-seeking levels exhibited higher frequencies of substance use (de Wit, 2009). However, no difference was found between male and female students’ impulsivity levels, but previous studies found that male students reported higher impulsivity levels than female students (Blanchard et al., 2009; Shin, Hong, & Jeon, 2012).

LIMITATIONS

One limitation of the current study is self-reporting was used to collect information about substance use. Culture may have also contributed to low self-reported substance use among the sample. Therefore, results and prevalence must be interpreted with caution.

CONCLUSION

Impulsivity and sensation seeking were significant predictors of substance use among university students, indicating the role of problematic personality traits in substance use. Attention must be given to assessment and management of personality problems, as well as development of intervention programs for substance use among young individuals. There is a need to emphasize the role of personality traits while developing substance prevention programs. University students are at a period in life that makes them vulnerable to substance and psychosocial disturbances, which requires adopting an integrative model of intervention.

### Table 4

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Beta</th>
<th>t Test</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Impulsivity</td>
<td>0.217</td>
<td>7.96</td>
<td>[0.098, 0.251]</td>
</tr>
<tr>
<td>Sensation seeking</td>
<td>0.175</td>
<td>4.47</td>
<td>[0.163, 0.270]</td>
</tr>
</tbody>
</table>

Note. CI = confidence interval.
*p < 0.05

### Table 5

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>t Test</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substance use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>11.5 (8.4)</td>
<td>3.23*</td>
<td>[0.599, 0.690]</td>
</tr>
<tr>
<td>Female</td>
<td>9.7 (6.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impulsivity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>63 (10.9)</td>
<td>–1.31</td>
<td>[–2.584, 0.514]</td>
</tr>
<tr>
<td>Female</td>
<td>64.1 (9.3)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensation seeking</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>54.2 (6.6)</td>
<td>4.43*</td>
<td>[1.342, 3.449]</td>
</tr>
<tr>
<td>Female</td>
<td>51.8 (7.1)</td>
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</tbody>
</table>

Note. CI = confidence interval.
*D Difference is significant at 0.05 (two-tailed).
including curriculum- and services-based approaches to target this population.

REFERENCES

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