Relationship Between Classically Conditioned Cues And Harmful Alcohol Use Among Kenyatta University Students In Nairobi City County, Kenya

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Abstract:
Background *Globally, harmful and excessive alcohol consumption has been evident in university student populations for many years. These observed alcohol levels have been linked to multiple adverse health and behavioral outcomes among students including poor mental health and wellbeing, increased injury, being victims of crime and poor academic performance. To establish the relationship between subjective emotional mood classical conditioning cues and harmful alcohol use among Kenyatta University students in Nairobi, Kenya.*
Materials and Methods*: Correlational research design employed and Krejcie and Morgan's (1970) table used for determining sample size and come up with a sample size of 381 respondents. The study screened the general population of students using World Health Organization Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) Volume 3.0. Those who met the criteria of moderate high or high risk the candidate was included in the study. Simple random sampling method was then utilized to select the participants. Data was collected using a researcher generated questionnaire.*
Results*: There is significant impact of situational classical conditioning cues on student's harmful use of alcohol and therefore an indicator of strong relationship between situational classical conditioning cues on harmful use of alcohol among students (P<0.05).*
Conclusion: *The study established that there is a significant association between subjective mood classical condition cues and harmful alcohol use among students.*
***Key Word****: Classically Conditioned cues; harmful use of alcohol; University Students.*

I.   Introduction

According to the World Health Organization (WHO, 2016, 2018) harmful use of alcohol is a major problem globally. This observation is supported by Obiechina and Isiguzo (2016) who observed that harmful use of alcohol is one of the most persistent global problems that almost all countries have and continue to grapple with. WHO (2018) observed that 2.4 billion people globally are current drinkers of alcohol; 47.1% of whom are young people aged 18-35 years. According to WHO (2018) the numbers of people consuming alcohol worldwide continue to increase despite peoples' awareness of its associated negative outcomes which include morbidity, mortality, disability, economic burden and broken relationships among others. These observations by the World Health Organization on harmful alcohol use are supported by studies worldwide. In a 10-year survey done from 1996 to 2005 for example, Hingson et al. (2016) established that there were more than 32,696 Australians aged 15 years and over who had died from injuries and diseases attributable to risky drinking. A further 813,072 Australians aged 15 years and over were hospitalized between 1996-2005 because of alcohol-caused injuries and diseases. A report released by the United Nations Drug Control Programme (UNDCP) in 2017 reported that the harmful alcohol use among children aged 15 - 20 years in Pakistan had doubled to almost 24 percent. According to a report by WHO (2016) in China, alcohol use was going up while the age of new users was going down. In Czech Republic, the same report showed that 37% of new alcohol users were teenagers between 15 and 19 years old.

Studies conducted in universities worldwide also report a high prevalence of harmful alcohol use among university students. A study conducted by Dantzer et al. (2016), for example found out that approximately 60% of university students in USA and 48.9% of those in Asia abused alcohol. Varius research studies have been conducted in universities in Nigeria, Uganda, South Africa and Ethiopia and the findings have shown that consumption of alcohol ranged from 27.5% to 62% (Nwanna et al. 2018). In Nigeria, one of the universities recorded prevalence of 27.5% among undergraduate students. In Kenya a high prevalence of alcohol use ranging
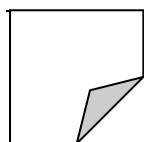
from 20% to 68% has been established in different universities including Kenyatta University and University of Eldoret (Ndegwa et al., 2017; Tumuti et al. 2014). These statistics justify the choice University students as a target population for this study. Among the many factors that have been associated with this high consumption of alcohol globally, classical conditioning is one of them.

Subjective emotional mood refers to the internal, subjective experience of a person's emotional state or affective state, including feelings such as happiness, sadness, anger, and anxiety (Davidson et al., 2019). It is a complex construct that involves both affective and cognitive components and can vary in intensity, duration, and valence. According to Kuppens et al., 2021, recent research has focused on the role of subjective mood in various aspects of human behavior and well-being, including social relationships, decision making, and mental health outcomes. Subjective mood may make youths have unfavorable self-evaluation, not to love and accept their talents, to involve in antisocial activities and rely current on their feelings (Alavi, 2011). Some studies with young people have reported negative associations with higher levels of drinking associated with subjective moods while some authors have reported a lack of association between harmful alcohol use and subjective mood. One study that has reported a lack of association between harmful alcohol use and subjective moods among university students is the research conducted by Jones et al. (2017). Contrary to the hypothesis that higher levels of alcohol use would be associated with more negative subjective moods, the findings of the study did not support this relationship. The researchers found no significant association between harmful alcohol use and negative affect. Basing on these differences in terms of the influence of subjective mood on harmful alcohol use, the researcher hypothesizes that alcohol use among university students is not related to a single pattern hence it would be interesting to find out the direction of the relationship, if any, through this study.

Subjective emotional moods refer to an individual's self-reported experience of affective states, such as happiness, sadness, anger, fear, and other emotions (Forgas, 2018). These subjective experiences are influenced by both internal and external factors, such as personal beliefs, values, physiological states, social situations, and environmental cues. A significant proportion of individuals consume alcohol to cope with negative emotions, such as stress, anxiety, and depression, which can lead to harmful alcohol use. Several studies have shown that emotional mood states classical conditioning cues can significantly influence alcohol use among university students. Leyvers et al. (2019) conducted a research study on personality and alcohol-related risks which included neuroticism, extraversion and alexithymia and targeted 285 male and female students who consumes alcohol in two universities in southeast Queensland, Australia and the general public through Facebook. It made observations that when neuroticism scores were entered at step 2, they explained a significant 7% of additional variance in AUDIT, $\Delta F_{(1, 280)} = 20.83$, $p < .0001$, which resulted into significant model, $F_{(4, 280)} = 6.97$, $p < .0001$. Consequently, the study concluded that neuroticism is associated with being prone to negative moods; a reliance on consumption to cope with such states may account for the links of both traits to risky or problematic drinking in line with Cloninger's Type I alcoholism. Another study conducted by Lammers et al. (2020) aimed to do a meta-analysis that compiled findings from various experimental studies conducted in different countries. The authors examined the link between negative affect and alcohol use in 75 countries worldwide. As this study is a meta-analysis of experimental studies, it included a synthesis of multiple individual studies rather than a single sample size.

Notably, methodological variations, particularly in the definition or measurement, may be the cause of these inconsistent findings in the literature of subjective emotional mood classical cues, but may also indicate that university students display many psychological tendencies. Therefore, the current study's primary objective was to separate the association between subjective emotional mood classical conditioning cues and university students' harmful alcohol use. To this end, the researcher hypothesized that harmful alcohol use among university students can be connected to multiple patterns but is not limited to just one subjective emotional mood.

In Africa, a study by Makanjuola et al. (2018) examined the role of classical conditioning cues in the development and maintenance of AUDs among university students in Nigeria. A total of 1329 youths were selected and invited to participate in this study. Out of these, 1213 completed the questionnaires. The authors found that individuals with a history of AUDs were more likely to experience cravings when exposed to cues that had previously been paired with alcohol use, highlighting the importance of classical conditioning cues in the development and maintenance of AUDs in these populations. In Kenya, a study by Mbwayo et al. (2013) on factors associated with alcohol use among university students in Kenya. The study's sample consisted of 816 participants. It was found that emotional mood states such as stress and depression were significant predictors of harmful alcohol use. The study also found that students who reported high levels of stress and depression were more likely to engage in harmful alcohol use. Another study by Oteyo & Karuiki (2009) did a study on the extent to which selected factors contribute to alcohol use using an ex post facto research design where the independent variables were studied retrospectively. Multistage cluster, Probability Proportionate to Size and purposive sampling methods were used to select the participating schools and respondents. A sample size of 327 students was selected from total population of 2279 from nine sampled schools and a self- administered questionnaire used. This may mean that the most important issues experienced by emerging adults are expectations from the
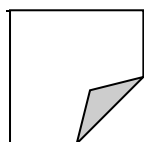
society, parents, peers and others causing stress and anxiety about aspects of life thus may have an impact on alcohol use among university students.

Notably, these discrepant results in the literature may stem from methodological differences, especially in the definition or measurement of subjective emotional mood classical cues, but may also indicate that university students exhibit different psychological patterns. Therefore, the main goal of the current study was to disentangle the relationship between subjective emotional mood classical conditioning cues and university students' harmful alcohol use. To this end, the researcher hypothesized that harmful alcohol use among university students is not related to a single pattern but can be associated with subjective emotional moods. Below is the conceptual framework that guided the study.

The independent variable is classically conditioned cues operationalized as situational, subjective emotional mood, presence of drinking peers and temporal classical conditioning cues. The dependent variable is harmful alcohol use. Classical conditioning cues are divided into four namely situational cues, subjective emotional mood cues, present of drinking peer cues, and temporal condition cues. Situational cues include sight and smell of beer, availability of bars or alcohol and advertisement. Subjective emotional mood cues include anxiety, sadness, produce while presence of drinking peer cues include the need to belong, need to be loved by peers and need to gain experience. Temporal conditioning cues include social events, weekends, public holidays and games. The presence of these classical conditioning cues leads to tolerable use of alcohol. However, continued presence of these cues gradually changes the use from tolerable to abuse then dependence and finally to the level of addiction.

II. Material And Methods

This study employed a correlational research design. Without modifying any of the variables, a correlational study design looks into correlations between them. A connection may have a positive or negative direction. For this study, the correlational design worked well since it allowed the researcher to determine the relationship between alcohol consumption and classical conditioning stimuli.

Study Design: Correlational research design

Study Location: The study was conducted in Nairobi County, Kenya, at the Main Campus of Kenyatta University. Situated roughly 17.5 kilometers by road northeast of Nairobi's central business area, the main campus of Kenyatta University is situated on over 1,000 acres in Kahawa, Nairobi County, Roysambu Constituency. The school is accessible via the Nairobi-Thika Road. The study was conducted at Kenyatta University because, according to NACADA (2014), studies there have shown that students there engage in risky alcohol use as a result of life transition issues.

Study Duration: November 2014 to November 2015.

Sample size: 381 students.

Sample size calculation: Out of the target population, the researcher used Krejcie and Morgan's (1970) table for determining sample size as presented in figure 3.1, hence coming up with a sample size of 382 respondents.

In the calculation of the required sample size, Krejcie and Morgan (1970) use the formula
S = X2NP (1-P)/ d2 (N-1) + X2P(1-P)
Where;
S = required sample size
X2 = the chi-square table value at the specified confidence level for one degree of freedom
N = the population size
P = the population proportion
d = the degree of accuracy which is (.05)
Therefore, basing on the formula, a sample of 381 university students will be utilized.

Subjects & selection method: The researcher screened the general population of students using World Health Organization Alcohol, Smoking and Substance Involvement Screening Test (ASSIST) Volume 3.0. Those who met the criteria of moderate high or high risk the candidate was included in the study. Simple random sampling method was utilized to select the participants. After identifying the target population, the researcher chose the sample and listed the population. The units were then assigned specific numbers and thereafter random numbers was used to select a sample size of 381 university students.
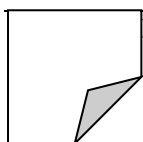
Procedure Methodology

The researcher self-administered the questionnaires with the help of duly trained 3 research assistants drawn from psychology students from Kenyatta University who understand the school environment. The researcher then took them through an induction on the nature of the research, interpretation of the research tools and data collection procedures. The researcher and the research assistants then visited the respondents within the university from where questionnaires were issued to them. The participants filled the questionnaires after which they were retrieved by the researcher and her assistants.

Statistical analysis

Data was analyzed with the aid of the statistical package for social sciences (SPSS) version 26 guided by study objectives. For objective one, data was analyzed using descriptive statistics specifically frequencies, percentages and mean scores. For objectives two to five, frequencies, percentages and mean scores were used together with Pearson correlation coefficient test to test the null hypotheses to establish if there are significant relationships between independent and dependent variables. A value greater than 0.05 indicated a positive association; that is, as the value of one variable increases, so does the value of the other variable. A value less than 0.05 indicated a negative association; that is, as the value of one variable increases, the value of the other variable decreases.

III. Result

Data was gathered on a number of demographic variables which included the gender of the students, year of study, place of residence and the courses they are undertaking. Presented below is the analysis of the demographic characteristics of the respondents.

Table 2: Demographic Characteristics of the Respondents

Variable	Frequency	Percentage
Gender		
Male	181	60.1
Female	120	39.9
Total	**301**	**100**
Year of Study	**Frequency**	**Percentage**
First	30	10.0
Second	72	23.9
Third	108	35.9
Fourth	70	23.3
Fifth	21	7.0
Total	**301**	**100**
Type of Residence	**Frequency**	**Percentage**
University Hostel	158	52.5
Rental House	124	41.2
Home	12	4.0
With relatives	7	2.3
Total	**301**	**100**
Course	**Frequency**	**Percentage**
Engineering	11	3.7
Humanities	13	4.3
Others	33	11.0
Arts	65	21.6
Medicine	10	3.3
Education	100	33.2
Computer science	4	0.01
Social sciences	50	16.6
Sciences	15	5.0
Total	**301**	**100**

Of the 381 study participants, 39.9% were female while male students accounted for 60.1%. first year students accounted for 10.0%, second year 23.9% while third year students accounted for 35.9%. Additionally, 23.3% of the students were in their fourth year while 7.0% were in their fifth year. Out of the 381 students, 52.5% lived in university hostels, 41.2% lived in rental houses outside the university, 4.0% lived at home while 2.3% lived with relatives. In terms of courses taken, 3.7% of the students were studying engineering, 4.3% other courses, 11.0% did other courses, 21.6% did arts, 3.3% did medicine while 33.2% did education. An additional 0.01% did computer science, 16.6% did social sciences while another 5.0% did science.

Relationship between Subjective Emotional Mood Classical Conditioning Cues and Harmful use of Alcohol Use among Kenyatta University Students

The above objective intended to establish the relationship between subjective emotional mood classical conditioning cues and harmful use of alcohol among Kenyatta University Students. The respondents were presented with a questionnaire containing 5-point Likert scale with rating from strongly disagree, disagree, uncertain, agree and strongly agree. The results of this descriptive analysis are presented on table 3.

Table 3 Findings on Subjective Emotional Mood Classical Conditioning Cues and Harmful Alcohol Use
N = 301

Subjective Mood Cues (n=7)	Strongly Disagree		Disagree		Uncertain		Agree		Strongly Agree		
	F	%	F	%	F	%	F	%	F	%	Mean
I use alcohol to cope with negative emotions.	38	12.6	15	5.0	15	5.0	102	33.9	131	43.5	3.9
Alcohol helps me to feel relaxed.	34	11.3	38	12.6	29	9.6	88	29.2	112	37.2	3.7
With alcohol use, I feel less stressed than usual.	27	9.0	45	15.0	33	11.0	91	30.2	105	34.9	3.7
There is a pattern between my mood state and alcohol consumption.	42	14.0	56	18.6	21	7.0	78	25.9	104	34.6	3.5
When I take alcohol, I feel more confident	20	6.6	65	21.6	22	7.3	90	29.9	104	34.6	3.6
My current mood state influences my desire to consume alcohol.	39	13.0	51	16.9	54	17.9	69	22.9	88	29.1	4.3
I feel more sad than usual if I don't take alcohol	82	27.2	98	32.6	20	6.6	57	18.9	44	14.6	2.6
Average subjective emotional mood classical conditioning cues rating											**3.6**

From the study, 43.5% of the respondents strongly agreed that they use alcohol to cope with negative emotions, 102 (33.9%) of them agreed while 15 (5.0%) were undecided. Another 15 (5.0%) of the respondents disagreed that they use alcohol to cope with negative emotions while 38 (12.6%) of them strongly disagreed. From the study, 112 respondents (37.2%) of the respondents strongly agreed that alcohol helps them feel relaxed while 88 (29.2%) of them agreed. The study also established that 29 respondents (9.6%) were undecided, 38 (12.6%) of them disagreed that alcohol helps them feel relaxed while the remaining 34 (11.3%) strongly disagreed. The study further noted that 105 (34.9%) of the respondents strongly agreed that with alcohol use, they feel less stressed than usual, 91 (30.2%) of them agreed while 33 (11.0%) of them were undecided. The findings further showed that 45 (15.0%) disagreed that with alcohol use, they feel less stressed than usual while 27 (9.0%) of them strongly disagreed. The study also established that 104 respondents (34.6%) strongly agreed that there is a pattern between their mood state and alcohol consumption, 78 of them (25.9%) of them agreed while 21 respondents (7.0%) were undecided. The study further showed that 56 respondents (18.6%) of the respondents disagreed that there is a pattern between their mood state and alcohol consumption while 42 (14.0%) of them strongly disagreed. The study also noted that 104 respondents (34.6%) strongly agreed that when they take alcohol, they feel more confident, 90 (29.9%) of them agreed while 22(7.3%) of them were undecided. sixty-five respondents (21.6%) disagreed that when they take alcohol, they feel confident while the other 20 (6.6%) strongly disagreed. In the study, 88 (29.1%) strongly agreed that their current mood state influences their desire to consume alcohol, 69 of them (22.9%) of them disagreed while 54 (17.9%) of them were undecided.

It was further noted that 51 respondents (16.9%) disagreed that their current mood state influences their desire to consume alcohol while 39 (13.0%) of them strongly disagreed. From the study, 44 (14.6%) of the respondents strongly agreed that they feel more sad than usual if they don't take alcohol, 57 (18.9%) of them agreed while 20 (6.6%) of them were undecided. The study also noted that 98 (32.6%) of the respondents disagreed that they feel more sad than usual if they don't take alcohol while 82 (27.2%) of them strongly disagreed. The findings of the study means that subjective mood state of the students influences their desire to engage in harmful consumption of alcohol. The students would consume alcohol to develop or gain certain feelings such as being confident or getting relaxed. This means that they would continue taking alcohol until they achieve the desired feeling which leads to harmful alcohol consumption. It therefore implies that subjective emotional moods significantly influence harmful alcohol use among university students and therefore any intervention measures should aim at addressing how the students can manage their emotions without necessarily using alcohol. These findings are consistent with the findings of a research conducted by Lammers et al. (2020) which linked negative effects and alcohol use in 75 countries worldwide. It established that majority of youth turns to alcohol as a way of dealing with negative emotions. The study also established that personal mood swings among youths have significant influence on alcohol consumption. A study by Forgas (2018) also found that

negative emotions such as anxiety, depression, stress greatly influences alcohol consumption among youths. This descriptive data was further subjected to hypothesis testing using the following hypothesis that guided the study.

Pearson Correlation Coefficient (r) test was conducted to establish if any significant relationship existed between subjective emotional mood classical conditioning and harmful alcohol use among university students. Significant P-value was set at 0.05 in which a P-value of less than 0.05 would show that significant relationship between the variables does not exist and therefore leads to a null hypothesis of subjective emotional mood classical conditioning and harmful alcohol use. Results of inferential statistical analysis are presented on table 4.7.

Table 4 Results of Pearson Correlation Coefficient (r) Test

		Harmful use of alcohol
Subjective mood classical conditioning cues	Pearson Correlation (r)	.437
	Sig. (2-tailed)	**.000**
	N	301

Correlation is significant at the 0.05 level (2-tailed).

The result in table 4.7 show that there is a significant relationship between subjective mood classical conditioning cues and harmful use of alcohol (r=0.437, P<0.05). This means that subjective mood classical conditioning cues significantly contributes to harmful alcohol use among university students. Consequently, the hypothesis that there is no significant relationship between subjective emotional mood classical conditioning cues and harmful alcohol use among Kenyatta University students in Nairobi, Kenya was rejected. This means that the desire to engage in harmful use of alcohol among university students is influenced by the desire to change or maintain a certain mood pattern. Similar outcomes were recorded by other researchers across the world that found that some university students engage in harmful alcohol consumption due to negative feelings, stress and the need to feel relaxed. For example, a study conducted by Leyvers et al. (2019) on personality and alcohol-related risk: Neuroticism, extraversion, and alexithymia in Australia. The outcome of the study showed that neuroticism is associated with proneness to negative moods; a reliance on drinking to cope with such states may account for the links of both traits to risky or problematic drinking in line with Cloninger's Type I alcoholism. The findings also resonated with the outcome of a study conducted by Grant et al. (2017) on prevalence of 12-month alcohol use, high-risk drinking, and DSM-IV alcohol use disorder in the United States. The study found that individuals with a history of major depression were more likely to develop an AUD than those without such a history. A study by Boitt (2016) also revealed that there was a significant relationship between the mood of the students and alcohol consumption. These similar findings by different researchers imply that there could be many students involved in harmful use of alcohol because they have emotional sicknesses that they may or may not be aware of.

IV.   Discussion

Subjective emotional mood classical conditioning cues was found to have a significant influence on harmful use of alcohol among Kenyatta University Students. The most prevalent subjective emotional mood classical conditioning cue was use of alcohol to cope with negative emotion followed by use of alcohol by students to make them feel relaxed. There is a relationship between mood states and alcohol consumption among university students and a small number feel reported that they feel sad if they don't take alcohol. Inferential statistics shows that r = 0.437 and P-value < 0.05. This tests results confirms that subjective mood classical conditioning cues significantly contributes to harmful alcohol use among university students.

V.   Conclusion

The study established that there is a significant association between subjective mood classical conditioning cues and harmful alcohol use among students. The P-value in inferential statistics = 0.437and therefore an indication of significant relationship between the two variables. The study revealed that a substantial percentage of students reported their current mood state influencing their desire to consume alcohol, indicating a link between mood and alcohol consumption. Additionally, students perceived a pattern between their mood state and alcohol use.

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