THE RELATIONSHIP BETWEEN ALCOHOL CONSUMPTION AND DEPRESSIVE SYMPTOMOLOGY IN THIRD LEVEL STUDENTS

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Abstract

Depression is a pervasive problem in society, affecting up to 4.4% of the world's population. In Ireland, mental health problems cost over €8.2 billion annually, with rates of depression being above the European average for both men and women. Rates of depression continue to rise in the student population, with research suggesting that depressive symptoms may be brought on by excessive alcohol use. Students are suggested to be at risk for alcohol related issues, due to the frequent and excessive nature of their alcohol behaviours. This study aimed to examine the relationship between alcohol use and depressive symptoms in students. As hypothesized, those with higher alcohol consumption had higher levels of depression. Age and gender did not significantly influence either variable. Future research may utilize a more longitudinal approach, and infer causality. Third level institutes of education may better support students by providing awareness of alcohol related disorders, and the relationship between alcohol and depression. Healthier alcohol environments in these institutes may serve to improve student's mental health, as well as academic performance.

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Introduction

1.1 Depression:

Depression is a pervasive problem in society, affecting up to 4.4% of the world's population (World Health Organisation, 2017). Diagnosis of depression have been consistently increasing over the years (Klerman & Weissman, 1989; World Health Organisation, 2017), with one study estimating that the total number of people suffering from depression increased by 18.4% between 2005 and 2015 (Vos et al., 2016). In Ireland, mental health problems cost over €8.2 billion annually, with rates of depression being above the European average for both men and women (OECD/EU 2018).

Depression can be chronic, with major depressive disorder having been named as one of the most prevalent lifetime disorders (Kessler et al., 2005). Self-reported symptoms of depression include a lack of energy, a lack of ability to enjoy positive experiences, fear of the future, regret of past actions and a lack of ability to appreciate beauty in the world (Richards, 2011). It may result in cognitive difficulties, and deficits in attention and concentration (Waraich, Goldner, Somers & Hu, 2004), and as such impacts on the individual's functionality.

Given the pervasive nature of depression, research has often focused on the causes and risk factors associated with it. Biological theories such as that of Penner et al., (2016), suggest that depressive disorders may be linked to reduced connectivity between the medial prefrontal cortex, and ventral prefrontal emotional encoding regions. This theory portrays depression as a functional disorder that affects the brain regions associated with the interpretation of emotional stimuli. The hippocampus has been associated with emotional processing and memory (Phelps, 2004; Phelps & LeDoux, 2005), and also has been implicated in theories of depression (Heikkinen et al., 2017; Uhlmann et al., 2018).

Studies using neuroradiology have shown that there is reduced frontal lobe volume, and reduced grey matter density of the hippocampus, anterior cingulum, and left amygdala in patients with a depressive disorder (Tham, San Woon, Sum, Lee, & Sim, 2011; Wise et al., 2017). Moreover, other research has suggested that the changes in grey matter volume are dependent on illness duration (Cheng et al., 2010). Although these studies would suggest that the frontal cortex plays a role in the development of depressive disorders, it is not certain to what extent these findings are unique to depression, as they may present in other functional psychiatric disorders (Goodwin, 2016).

Other studies have suggested more personality-based causes, such as the likelihood of the individual to ruminate in response to stressful life events, with individuals diagnosed with major depressive disorder reporting more event-related rumination than healthy controls, even after adjusting for the stressfulness of the event (Ruscio et al., 2015). It may be suggested that this increased rumination may be a symptom of depression, rather than a cause. Regardless of the causes, depression is an important area of research, particularly in a student population, given it is the most prevalent mental health issue for students in third level education (Arslan, Ayranci, Unsal & Arslantas, 2009).

1.2 Gender differences in depression:

The relationship between gender and depression is complex, with discrepancies between diagnoses of depression and self-reported depression. Sundbom Thunander, Bingefors and Isacson (2015), conducted a study using The Hospital Anxiety and Depression Scale to assess depression, and found that 11.4% of participants were depressed, with men reporting higher levels of depression but less antidepressant use, while woman reported lower levels of depression but higher antidepressant use. Other research has suggested that women

are twice as likely to be depressed, and this gender difference emerges around the age of 12-13 (Nolen-Hoeksema & Hilt, 2013), with the suggestion being that differences peak during adolescence, but stabilise in adulthood (Salk, Hyde & Abramson, 2017; Cyranowski, Frank, Young, & Shear, 2000). Hormone related changes in woman's adulthood do not appear to significantly influence major depression. Perhaps the differences in prevalence among the genders is a result of a higher risk of early onset among woman, rather than the illness persisting, or reoccurring (Kessler, 2003).

A systematic review of the epidemiological literature relating to instances and prevalence of major depressive disorder at a global level found differences between the genders, with estimates being 5.8% for women and 3.5% for men (Ferrari et al., 2013). A study which performed two meta-analyses, including data of over 1.7 million people, found that there was a 1.95 Odds Ratio for gender differences in major depression. This would mean if 10% of woman were depressed, 5.4% of men would be (Salk, Hyde & Abramson, 2017).

Consistent with the aforementioned literature, the study suggested that differences peak in adolescence, but stable out during adulthood. A study analysing the gender differences across 23 European countries found that Ireland has some of the smallest variation between the genders (Van de Velde, Bracke & Levecque, 2010). Marriage, cohabiting with a partner, and having a good socioeconomic position were associated with lower rates of depression.

1.3 Depression in a student population:

Rates of depression continue to rise in the student population (Sarokhani et al., 2013), with Cairns, Massfeller and Deeth (2010), finding that the greatest number of students present for counselling seek help for issues such as anxiety, relationship issues, academic concerns and depression. This supports other research which found that the most common concerns for students were academic performance, pressure to succeed, and post-graduation plans (Beiter et al., 2015). Other research has linked cyberbullying and victimisation to both higher levels of alcohol consumption and depression (Selkie, Kota, Chan, & Moreno, 2015), with there being no significant gender related differences in a college student's likelihood to be cyber victimised indicated (Tennant, Demaray, Coyle & Malecki, 2015). These factors may contribute to the prevalence of depression in students.

Some members of the student population are more vulnerable than others, and may be particularly at risk, such as students with learning difficulties, who score higher on scales of depression than those without (Maag & Reid, 2006). Students with financial difficulties are also at higher risk for mental health problems (Eisenberg, Gollust, Golberstein & Hefner, 2007). Students suffering from depression are thought to present with less adaptive emotional regulation, higher rates of thought suppression and less clarity about their feelings (Rude & McCarthy, 2003). It is important to note that depression does not have to be at the level of a psychiatric disorder in order to interfere with a student's educational achievement (Žikić & Nikolić, 2014).

Depression negatively affects a student's academic performance (Khurshid, Parveen, Yousuf, & Chaudhry, 2015), altering the individual's behaviour and sometimes resulting in feelings of worthlessness. High levels of depression and suicidality scores have been

associated with low levels of happiness, high hopelessness and a negative attitude towards oneself (Pompili et al., 2016), with both depression and low academic performance being risk factors for suicide in male and female students (Dearden, De La Cruz, Crookston, Novilla & Clark, 2005). University students with lower academic achievement levels display higher levels of depressive symptoms than those students with higher academic achievement levels (Ceyhan, Ceyhan, & Kurtyılmaz, 2009).

1.4 Depression and Alcohol:

Co-morbidity of mental illness is high in cases of alcohol misuse related conditions, with estimates of the prevalence ranging from 10-60% (Riper et al., 2014), depression being the most common co-occurring illness (Lai, Cleary, Sitharthan & Hunt, 2015). Pettinati and Dundon (2011), have suggested that depressive symptoms may be linked to excessive alcohol use, as a diagnosis of one increases the risk of developing the other. Feelings of isolation have been positively associated with both depression and severity of addiction (Jabłoński & Chodkiewicz, 2017) indicating that risk factors may be shared among the illnesses.

Some studies suggest a causal relationship, in that alcohol use disorders increase the risk of depression (Boden & Fergusson, 2011), with a meta-analysis of alcohol research suggesting that those who abuse alcohol may be 2.4 times as likely as the general population to suffer from depression (Lai, Cleary, Sitharthan & Hunt, 2015). Substance abuse has also been linked to depression, with depressive symptoms in students being associated with the use of cannabis, tobacco, amphetamines, cocaine, sedatives, and hallucinogens (Walters, Bulmer, Troiano, Obiaka & Bonhomme, 2018). No relationship was found between substance abuse and anxiety, which may suggest that the association is with depression alone.

Those with a dual diagnosis of alcohol misuse and depression experience increased symptom severity, and poorer mental and social functioning than those with just one condition (Burns, Teesson & O'Neill, 2005). Trajectory based studies have shown that early onset alcohol consumption, and drinking to intoxication are associated with higher levels of depressive symptoms (Skogen, Knudsen, Hysing, Wold & Sivertsen, 2016). Longitudinal studies have shown that higher levels of alcohol consumption are associated with higher levels of depression, but not generalised anxiety disorder (Bellos et al., 2016), perhaps suggesting the relationship between alcohol and mood disorders is predominately relevant to depression. Irish men are said to more likely consume alcohol than woman, which is interesting to note given it is suggested that moderate alcohol consumption is associated with better mental health (Harrington et al., 2009).

As previously mentioned, depression is associated with grey matter deficits in a number of brain areas such as the hippocampus, anterior cingulum, and left amygdala (Tham, San Woon, Sum, Lee, & Sim, 2011; Wise et al., 2017), while heavy-drinking has been associated with reduced grey matter the bilateral anterior cingulate cortex, right orbitofrontal and frontopolar cortex, right superior temporal gyrus, right insular cortex and hippocampus (Heikkinen et al., 2017; Uhlmann et al., 2018). A longitudinal cohort study has found that higher alcohol consumption is associated with increased risk of hippocampal atrophy, in a dose dependent manner (Topiwala et al., 2017). The overlap of areas affected by depression and alcohol use may provide support for the strong association between the two.

1.5 Students and Alcohol:

Students are suggested to be vulnerable for alcohol related risks, due to the frequent and excessive nature of their alcohol behaviours (Wechsler, Lee, Kuo & Lee, 2000). Research focusing on European students experience of college found that French students associate alcohol with the college lifestyle; "alcohol is a part of student life" (Van Hal et al., 2018). The problems associated with student's alcohol misuse affect both the individual student, and their student peers. High levels of alcohol consumption and episodes of heavy drinking have been previously linked with drinking to cope (Perkins, 2002), and social influence factors such as alcohol offers and perceived peer drinking environments have also associated with student's alcohol use (Read, Wood, Kahler, Maddock & Palfai, 2003).

Moreover, research has suggested that inaccurate and exaggerated perceptions of peers drinking norms contributes to alcohol misuse amongst students, and that a more accurate representation may reduce alcohol intake (Perkins, 2002). A study analysing the drinking norms among seven European countries found that the perceived norm of alcohol behaviours was predictive of student's own behaviour and attitudes, and that American and European students had similar perception patterns (McAlaney et al., 2015).

Irish students are reported to have high levels of hazardous alcohol consumption in comparison to the general public (Davoren, Shiely, Byrne, & Perry, 2015) with similar adverse consequences for both genders. Ireland and the United Kingdom are reported as having the highest levels of binge drinking and drunkenness (Davoren, Demant, Shiely, & Perry, 2016), with the levels of consumption being elevated among university students. One study found that the most negative effects of heavy episodic drinking was on student–faculty interaction (Porter & Pryor, 2007) which is associated with positive outcomes for student

such as satisfaction with college and developing student's motivation (Komarraju, Musulkin & Bhattacharya, 2010).

Risk factors for binge drinking in students include living in rented accommodation, and the use of tobacco and cannabis (Tavolacci et al, 2016), perhaps due to the lack of familial supervision. A qualitative study analysing European student's college experiences (Van Hal et al., 2018) found that Hungarian students associated living on campus with higher levels of alcohol use; "most students living on student residence drink everyday". Full time college students are more likely to binge drink than their peers who are not in college, with Reckdenwald, Ford and Murray (2016) suggesting that it is due to lack of maturity, and the freedom of the college lifestyle, which lacks adult roles.

Although college students and their non-student peers differ in their alcohol related behaviours, peer behaviour has been shown to be a strong predictor of drinking behaviours in both groups (Byrd, 2016). Given that binge drinking has been associated with poor executive functioning in the dorsolateral prefrontal cortex (Parada et al., 2012), which is suggested to be an integral part of working memory (Petrides, 2000), it may be suggested that high rates of binge drinking may have negative impacts on students' academic achievement. High amounts of alcohol consumed has been shown to negatively affect a student's GPA (Singleton, 2007).

Research which has focused on the motives behind drinking in college students has found that students who fit the criteria for extreme drinkers reported greater social, enhancement, and coping motives (White, Anderson, Ray, & Mun, 2016). Social motivates are suggested to have the most significant influence on students drinking behaviours, with students who are motivated by factors such enhancement, and coping being more at risk for problematic drinking (Van Damme et al., 2013). A greater understanding of the risk factors

that motivate dangerous drinking behaviours may serve to aid in affective implementation of interventions.

1.6 Aims and Hypothesis:

The research question of this project is therefore:

"Is there an association between student's alcohol consumption and levels of depression?"

The first aim of the current study is to investigate the association between student's alcohol consumption and levels of depression. It is hypothesized that those with high alcohol consumption scores will also have high depression scores. The second aim is to investigate if the association differs for males and females. It is hypothesized that females will present with higher depression scores than males.

The objective is to explore the association between alcohol consumption using the Alcohol Use Disorders Identification Test (AUDIT) scale (Babor, Higgins-Biddle, Saunders, Monteiro, & World Health Organization, 2001), and depressive symptoms measured using the Becks Depression Inventory II (Beck, Ward, Mendelson, Mock & Erbaugh, 1961), in a population of 166 college students between November 2018 and January 2019.

Method

2.1 Participants:

The current study comprised of 166 participants (N=166). Men made up 37.3% of all participants, while woman made up 61.4%. 108 participants engaged with the qualitative aspect of the survey. The mean age was 20.74, with the youngest participant being aged 18, and the oldest aged 36.

Participants were selected through primarily convenience sampling, via an open invitation to take part shared via social media, participants were given the opportunity to share the survey with others who they feel would like to participate. Exclusion criteria included anyone under the age of 18, or anyone who was not a student in third level education at the time, as well as those with diminished autonomy, due to ethical consideration. Those invited to complete the survey include anyone over the age of 18, who was in third level education at the time of completion, and who consented to be involved.

2.2 Design:

The current study aimed to investigate the association between student alcohol consumption, and if the association differs for male and females using a cross sectional design. To assess this association, a mixed methods approach was used, with a mostly quantitative outlook. Participants were gathered via convenience and snowball sampling.

2.3 Materials:

The first section of the survey asked participants for demographics such as age and gender. Two scales were then used, The Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock & Erbaugh, 1961) to measure depressive symptoms, and Alcohol Use Disorders Identification Test (AUDIT) (Babor, Higgins-Biddle, Saunders, Monteiro, & World Health Organization, 2001) to measure alcohol consumption.

The BDI-II was chosen due to its ability to differentiate between anxiety and depression, and its appropriateness for both clinical and non-clinical populations (Beck, Steer & Carbin, 1998). It is suitable for individuals 13 years and over, so was suitable for the current population of students aged 18 and over. Advantages of the BD-II include its high internal consistency, its validity in differentiating between depressed and non-depressed participants, high content validity, and international propagation (Richter, Werner, Heerlein, Kraus, & Sauer, 1998). Disadvantages include its high item difficulty, and instability of scores over short time periods. It has been repeatedly supported as a valid and reliable measurement for use with college students, and its validity is supported by positive correlations with self-reported measurements of both anxiety and depression (Storch, Roberti, & Roth, 2004).

AUDIT (Babor, Higgins-Biddle, Saunders, Monteiro, & World Health Organization, 2001) is a screening tool which assess an individual's alcohol usage, and rates the individual, from low risk, to almost certainly dependent. It has been developed by the World Health Organisation, and has the capacity to discriminate between substance use, abuse and dependence (Newcombe, Humeniuk, & Ali, 2005). Positive attributes of the AUDIT include psychometric properties such as test re-test reliability and internal consistency. This is only

evident in the English version, which is being used in the current study (Reinert & Allen, 2007). It is suggested to have reasonable psychometric properties in sample of college aged students, and its use is supported in this population (Kokotailo et al., 2004).

Although the current scoring of AUDIT recommends that any score over 7 is considered at the level of risky or hazardous drinking, some research has suggested that the scoring should differ for males and female college students. DeMartini and Carey (2012) suggested that a total score of 7 should be used for males, and a score of 5 should be used for females. The current study however, will utilise the scoring provided with current AUDIT guidelines. Research suggests that self-report scales are a reliable way of sourcing alcohol related data (Simons, Wills, Emery & Marks, 2015). A reliability test of the current sample produced a Cronbach's alpha score of .902.

2.4 Procedure:

Prior to creation of the survey used for this research ethical considerations, based on those provided by the Psychology Society of Ireland, and a research proposal was submitted to the National College of Ireland for viewing and acceptance. Once permission was granted for the current research, a survey was created using google forms.

The data was collected via an online survey, using a cross sectional design. The survey took roughly five minutes to complete, and was completed by the participant on an individual level, with no input from the researcher. The Beck Depression Inventory (BDI) (Beck, Ward, Mendelson, Mock & Erbaugh, 1961) was used to measure depressive symptoms, and AUDIT (Babor, Higgins-Biddle, Saunders, Monteiro, & World Health Organization, 2001) to measure alcohol consumption. All scales, including scoring, may be found in appendices 1 through 3 No reward was offered for participation.

Participants were provided with a detailed consent form, which contained all information regarding inclusion and exclusion criteria, how their data would be used, and their right to withdraw. The consent and debriefing form that participants were provided with may be found in appendices 6.4 and 6.5.

The survey was circulated via social media, such as Facebook, Instagram, Twitter, and LinkedIn, and participants were invited to share the survey with other students who might be interested. Participants were asked one qualitative question, upon completion of the two scales, which wasn't required for completion of the study. 108 participants answered the question "Do you find that your own alcohol usage impacts negatively on your mood? If so, please explain how." It aimed to analyse the participant's anecdotal experience of alcohols effect on their mood.

Upon completion of the entire survey the participant's data was saved to the google drive, and once 166 participants had submitted data the survey was closed and the data downloaded onto an excel document by the researcher. It was closed after this number of participants in accordance with recommendations by GPower (Erdfelder, Faul & Buchner, 1996). Data was converted from Excel into SPSS, where descriptive statistics and assessments of normality were run. Non parametric inferential statistical tests such as Spearman's Rho, and Mann Whitney U were used to test the hypotheses previously presented.

Results

3.1 Descriptive Statistics

Table 1 displays the relevant categorical variable information investigated in the current study. Table 2 displays relevant information surrounding the continuous variables examined. All tables may also be found in appendices 1. A Kolmogorov-Smirnov normality test resulted in a statistically significant p value for each variable (Gender, Age, Depression total, Alcohol total), meaning the data violated the assumption of normal distribution and as such non-parametric statistics were used.

Table 1: categorical variables

Frequencies for the current sample of students on each demographic variable (N = 166)

Variable	Frequency	Valid Percentage
Gender		
Male	62	37.3
Female	102	61.4

Table 2 (continuous variables)

Descriptive statistics for continuous variables associated with the current sample of students.

	Mean	Std. Error Mean	Median	SD	Range
Age	20.74	.16	21	2.12	18-36
Depression	13.55	.86	11	11.05	0-55
Alcohol	10.07	.48	9	26.15	0-27

3.2 Inferential Statistics

A Spearman's correlation was run to assess the relationship between the scores for depression total and alcohol total in a student population (N=166). There was a weak (Cohen, 1988) positive correlation between depression level and alcohol consumption, which was statistically significant, (r_s =.204, p = .009). Age was not significantly correlated to either depression (r_s=0.14, p=.859) or alcohol consumption (r_s=-.044, p=.569).

A Mann-Whitney test indicated that there were no significant differences between men and woman in their depression (U=-1.841, p=.066) or alcohol total score (U=-1.854, p=.064). The relationship between alcohol and depression was then investigated for each gender. This found that females scores were more highly correlated, (r_s =.312, p = .001) than those of males (r_s =.117, p = .365), which were not significantly correlated.

3.3 Thematic Analysis

Participants response to the question “Do you find that your own alcohol usage impacts negatively on your mood? If so, please explain how.” were analysed through thematic analysis. 108 participants chose to engage with this part of the study. The three main themes identified were; Feeling low post consumption, Guilt or shame, and Intensified emotions.

1. Feeling Low Post Consumption:

   Participants described feeling tired and lacking motivation the day after drinking alcohol “when I’m hungover it makes me feel down”. Some described this feeling as lasting longer than the traditional hungover period “sometimes after drinking a lot on a night out I feel anxious and low for days after”. Participants described themselves as feeling more negative emotions than they would have had they not consumed alcohol “I next day I feel more low than normal” “I feel down the day after I drink”.

2. Guilt or Shame

   A common response was feeling embarrassed or fearful of what they had done while they were under the influence of alcohol. “the fear of my actions the previous night remains in my mind constantly for a few weeks after”. Some participants expressed that this guilt occurs commonly after a period of alcohol consumption “I nearly always feel guilty or embarrassed for maybe a week after”. Participants attributed these feelings of guilt to their actions while drunk “I feel ashamed of how I behaved when I was drunk the next morning”. “Think a lot and regret my actions when I drink”.

3. Intensified Emotions

   Participants reported feeling their emotions more intensely while they were drinking alcohol “it intensifies my emotions that I am feeling during that day whether they are good or bad emotions”. Others expressed that alcohol caused them to recognise negative feelings that they didn’t sober “feel bad because I realize things I didn’t want to realize”. “I get really sad but it’s usually about things that I’m sad about anyway but hide when I’m sober”. One participant mentioned that it intensifies their mood swings “I already experience mood swings and alcohol amplifies that”.

Discussion

4.1 Interpretation of results

The current study aimed to investigate the relationship between alcohol consumption and depressive symptoms. The research question was “is there an association between student’s alcohol consumption and levels of depression?” As hypothesised, student’s alcohol scores and depression scores were found to be positively correlated. As scores on one variable increased, so too did the scores for the other.

One aim was to assess if females and males significantly differed in this relationship. Females scores were slightly more correlated for alcohol and depression than that of males, meaning that they were more susceptible to having high scores on both. It was hypothesised that females would score higher on average than males on the depression scale, however the scores for males and females did not significantly differ. Females scores for alcohol consumption did not significantly differ when compared to the males scores. The age of the participant did not influence their scores for either variable.

The mean score for depression was 13.55, which according to the becks inventory scale is classed as “mild mood disturbances”. A score of 10 or under is considered normal ups and downs. (Beck, Ward, Mendelson, Mock & Erbaugh, 1961). On the AUDIT scale (Babor, Higgins-Biddle, Saunders, Monteiro, & World Health Organization, 2001) a score of 8 or more is considered to indicates hazardous or harmful use of alcohol. The mean score in the current study was 10.07. These results indicate that on average, the participants in this study had both harmful alcohol behaviours and depression scores which are considered above normal ups and downs.

The relationship between high alcohol scores and high depression scores was reflected in participants own anecdotal experience of the effect of alcohol on their mood, with

the majority of responses to the qualitative questions presenting negative feelings for varying periods of time after consuming alcohol.

4.2 Contribution to existing literature

Alcohol and depression have been associated in many studies, with this result being consistent across several measures of drinking behaviour such as the amount of alcohol consumed, consumption intensity, alcohol dependence and risk of dependence (Churchill, & Farrell, 2017). Treatment for co-occurring alcohol misuse and depression internationally utilises dual-focused treatment guidelines. However, a systematic review highlighted that many of these studies have methodological limitations (Hobden et al., 2018). The evidence supporting the superiority of these treatments is limited, and as such more high-quality research is needed to provide recommendations for clinical practice.

Previous studies have analysed if mood influences a young adult's likelihood to seek out alcohol and found that negative mood greatly influences alcohol seeking behaviour, with alcohol choice which is mood induced being associated with depressive symptoms (Hogarth, Hardy, Mathew & Hitsman, 2018). The current study may support this finding, given higher depression scores resulted in higher alcohol consumption scores.

Although the literature suggests that there is a strong association, it is important to note that there is evidence to suggest this relationship may be dependent on how the variables are measured (Graham, Massak, Demers & Rehm, 2007). It was found that the relationship was not influenced by gender, or the type of depression an individual was experiencing, but rather by how alcohol usage was measured. The strongest relationship found was that between depression and heavy episodic drinking or high quantity per occasion.

An American study looking at coping mechanisms among students who had been diagnosed with depression found that non-medical methods were qualitatively rated as more

effective than medication (Aselton, 2012). These coping mechanisms included exercise, talking to friends, self-talk, deep breathing, journaling, marijuana use, and listening to music. Other research has suggested that students with depression present with more problem focused thoughts, which is associated with drinking to cope, and alcohol related issues (Bravo, Pearson & Henson 2017). Perhaps colleges should provide students with information surrounding coping mechanisms, in order to lessen the likelihood of students drinking to cope, given that alcohol misuse in conjunction with depression is suggested to increase symptom severity (Burns, Teesson & O'Neill, 2005).

The results of the current study also support previous, longitudinal studies which suggested that higher levels of alcohol consumption are associated with higher levels of depression (Bellos et al., 2016). Longitudinal studies may infer causality, that one variable may predict the other. Boden and Fergusson (2011), suggested the relationships is dependent on alcohol, suggesting that alcohol use disorders increase the risk of depression, while Lai, Cleary, Sitharthan and Hunt (2015), found that individuals who abuse alcohol are 2.4 times more likely to suffer from depression than those who don't.

Given that college students are said to experience greater rates of depression than that of the general population (Ibrahim, Kelly, Adams & Glazebrook, 2013), it seems unsurprising that the current study averaged a depression score which would suggest mild mood disturbances, not just normal ups and downs. On a much larger scale than the current study, de Sá Junior, de Andrade, Andrade, Gorenstein and Wang, (2018) found that in a population of 12,711 college students, the BDI-II has shown good reliability in predicting depression, finding that four out of five students reported depressive symptoms. These studies highlight the prevalence of depressive symptoms in college populations.

These results also support previous studies which analysed the relationship between heavy episodic drinking and depressive symptoms. Pedrelli, Borsari, Lipson, Heinze and

Eisenberg (2016), found that students with major depressive disorder are more likely to report heavy episodic drinking, with this relationship being especially prominent for females. The association between alcohol and depression was found to be more significant for females than males in the present study.

Research investigating university student's depression in a population of 440 university students attending Anadolu University, Turkey found that students who were dissatisfied with their body image, or had low academic achievement were more likely to be depressed than students who were satisfied with their body image and had high academic achievement (Ceyhan, Ceyhan, & Kurtyılmaz, 2009). Similar to the current study, they found no significant differences in males and females' levels of depression. Given that depression negatively affects a student's academic performance (Khurshid, Parveen, Yousuf, & Chaudhry, 2015), and that the amount of alcohol consumed by a student is negatively correlated with their GPA (Singleton, 2007), it may be suggested that low academic achievement might be a marker for students who are struggling, and that colleges may use this information to offer extra supports to these students.

It seems counter intuitive that students are aware of the negative impacts that alcohol is having on their mood, yet still continue to engage in hazardous alcohol behaviours. Perhaps future research may take a more qualitative approach in order to analyse student's alcohol use motivation in light of this awareness. It is suggested that student's alcohol consumption is influenced by the behaviours of their peers (Read, Wood, Kahler, Maddock & Palfai, 2003).

A focus group in Denmark found that students who start university and are concerned with making friends would usually socialise in situations that involve alcohol (Larsen, Smorawski, Kragbak & Stock, 2016). Students described alcohol as an important part of this social integration as it provided a feeling of togetherness. In a qualitative study investigating European student's college experiences, Danish students described alcohol as a "social

lubricant" (Van Hal et al., 2018). Perhaps students continued alcohol use, regardless of the impact it has on their mental health, is due to being socially conscious, and wanting to be accepted by their peers.

A study which analysed college drinking beliefs from the perspective of regretted sexual encounters found that from a public health perspective, college student's alcohol beliefs are dangerous (Osberg & Boyer, 2016). They suggested that approaches to college students drinking and its consequences is a matter that warrants serious consideration. Given that participants in the current study expressed feelings of guilt or shame after a period of alcohol consumption, fearing their actions while under the influence, it seems that regrettable actions, sexual or otherwise, may be a persistent problem in college student's alcohol experiences. One study found that 66.1% of participants reported displaying regrettable social behaviours after drinking alcohol (Dunne & Katz, 2015). This suggests they occur at a much higher rate than more severe drinking-related consequences, such as drinking and driving or violence.

The intentions a student has while drinking seems to influence their regret related outcomes. Students who consumed alcohol, with the intention of getting drunk, were more likely to experience situations which compromised their health and safety (Pedersen & Feroni, 2018). The networks they had formed within the university they attended were also more likely to be jeopardised when they drank to get drunk. The possible breakdown of a student's network may seem like a deterrent to negative drinking behaviours, given that student's have reported that they often drink in order to strengthen their social network (Larsen, Smorawski, Kragbak & Stock, 2016).

A theme identified in the current study was low mood post consumption with students expressing feeling low during the traditional hangover period the day after drinking alcohol. A qualitative study in the south west of England aimed to analyse students' feelings

surrounding hangovers, and found that hangovers were a relatively frequent occurrence for most of their 23 participants (Griffin, Freeman, Adams & Smith, 2018). They associated them with periods of heavy drinking, and reported that they had unpleasant physical and psychological effects. Despite the negative associations, students felt positively towards hangovers where there was a collective period of shared suffering. It formed a valuable aspect of the hangover experience, with students suggesting it strengthened group identity. Given that the research has repeatedly suggested students are influenced by their peers, and by social integration, it may be suggested that interventions must take into account the social aspect of alcohol culture on college campuses.

4.3 Critical Appraisal

Implications of this study may be viewed in the context of how third level institutes of education may better support their students. The literature would suggest that many students are engaging in alcohol related behaviours that put their mental and psychical health at risk. The results of the current study highlight this, by the mean score of alcohol consumption, which at 10.07 is at a point of harmful alcohol consumption. Interventions which aim to change student's perceptions on surrounding harmful alcohol behaviours be beneficial in lessening the number of students with dangerous alcohol behaviours.

Given that much of the research shows that students are aware of the negative effects of alcohol, future research may focus on the motivations behind students drinking. Many results have highlighted that students drink more than the general population, and that this is harmful, however little research has focused on the reasons why, with most focusing on the outcomes of the behaviour. Perhaps a mixed methods study may better analyse student motivations than either a quantitative or qualitative study alone.

Strengths of the current study include its mixed method approach, given that participants own opinions served to support the results of the correlational analysis. The high reliability and validity of the scales used for a student population also may be considered a strength. Weaknesses include the sampling method, as random sampling may be considered a stronger methodological tool than that of convenience or snowball sampling. The study provided a reliable test of the hypothesis, as a correlational analysis resulted in a significant association between alcohol and consumption. Future studies may take a more longitudinal approach, and perhaps use multiple regression to examine to what extent alcohol usage and depression predict the other.

The previous research suggests that alcohol consumption and depression are associated, with the current study supporting the assertion that there is a relationship between the two. There is however a lack of longitudinal studies providing evidence on a causal relationship. This relationship may be dependent on the way alcohol use is measured, which may be taken into account in future research. This relationship is relevant as students are particularly are risk for both depression and alcohol related disorders.

Institutes of education should focus interventions on providing information surrounding the dangers of hazardous alcohol use, both long and short term. The implications of student's hazardous alcohol use may be discussed in colleges and universities in relation to how it impacts on a student's academic achievement. The motivation behind student's alcohol use appears to be social in nature, particularly for students just starting their time in college or university. Student Unions may better serve their student's by providing more alcohol-free events.

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Appendices

Appendix 6.1 Tables

Table 1: categorical variables

Frequencies for the current sample of students on each demographic variable (N = 166)

Variable	Frequency	Valid Percentage
Gender		
Male	62	37.3
Female	102	61.4

Table 2 (continuous variables)

Descriptive statistics for continuous variables associated with the current sample of students.

	Mean	Std. Error Mean	Median	SD	Range
Age	20.74	.16	21	2.12	18-36
Depression	13.55	.86	11	11.05	0-55
Alcohol	10.07	.48	9	26.15	0-27

Appendix 6.2 Becks Depression Inventory (BDI-II)

The score given for each answer is provided in brackets accompanying.

Question One:

I do not feel sad (0)

I feel sad (1)

I am sad all the time and I can't snap out of it (2)

I am so sad and unhappy that I can't stand it (3)

Question Two:

I am not particularly discouraged about the future (0)

I feel discouraged about the future (1)

I feel I have nothing to look forward to (2)

I feel the future is hopeless and that things cannot improve (3)

Question Three:

I do not feel like a failure (0)

I feel I have failed more than the average person (1)

As I look back on my life, all I can see is a lot of failures (2)

I am a complete failure as a person (3)

Question Four:

I get as much satisfaction out of things as I used to (0)

I don't enjoy things the way I used to (1)

I don't get real satisfaction out of anything anymore (2)

I am dissatisfied or bored with everything (3)

Question Five:

I don't feel particularly guilty (0)

I feel guilty a good part of the time (1)

I feel guilty most of the time (2)

I feel guilty all the time (3)

Question Six:

I don't feel I am being punished (0)

I feel I may be punished (1)

I expect to be punished (2)

I feel I am being punished (3)

Question Seven:

I don't feel disappointed in myself (0)

I am disappointed in myself (1)

I am disgusted with myself (2)

I hate myself (3)

Question Eight:

I don't feel I am any worse than anybody else (0)

I am critical of myself for my weaknesses or mistakes (1)

I blame myself all the time for my faults (2)

I blame myself for everything bad that happens (3)

Question Nine:

I don't have thoughts of killing myself (0)

I have thoughts of killing myself, but I would not carry them out (1)

I would like to kill myself (2)

I would kill myself if I had the chance (3)

Question Ten:

I don't cry any more than usual (0)

I cry more now than I used to (1)

I cry all the time now (2)

I used to be able to cry, but now I can't cry even though I want to (3)

Question Eleven:

I am no more irritated by things than I ever was (0)

I am slightly more irritated now than usual (1)

I am quite annoyed or irritated a good deal of the time (2)

I feel irritated all the time (3)

Question Twelve:

I have not lost interest in other people (0)

I am less interested in other people than I used to be (1)

I have lost most of my interest in other people (2)

I have lost all of my interest in other people (3)

Question Thirteen:

I make decisions about as well as I ever could (0)

I put off making decisions more than I used to (1)

I have greater difficulty in making decisions more than I used to (2)

I can't make decisions at all anymore (3)

Question Fourteen:

I don't feel that I look any worse than I used to (0)

I am worried that I am looking old or unattractive (1)

I feel that there are permanent changes in my appearance that make me look unattractive (2)

I believe that I look ugly (3)

Question Fifteen:

I can work about as well as before (0)

It takes an extra effort to get started at doing something (1)

I have to push myself very hard to do anything (2)

I can't do any work at all (3)

Question Sixteen:

I can sleep as well as usual (0)

I don't sleep as well as I used to (1)

I wake up 1-2 hours earlier than usual and find it hard to get back to sleep (2)

I wake up several hours than I used to and cannot get back to sleep (3)

Question Seventeen:

I don't get more tired than usual (0)

I get tired more easily than I used to (1)

I get tired from doing almost anything (2)

I am too tired to do anything (3)

Question eighteen:

My appetite is no worse than usual (0)

My appetite is not as good as it used to be (1)

My appetite is much worse now (2)

I have no appetite at all anymore (3)

Question Nineteen:

I haven't lost much weight, if any, lately (0)

I have lost more than five pounds (1)

I have lost more than ten pounds (2)

I have lost more than fifteen pounds (3)

Question Twenty:

I am no more worried about my health than usual (0)

I am worried about physical problems like aches, pains, upset stomach, or constipation (1)

I am very worried about physical problems and its hard to think of much else (2)

I am so worried about my physical problems that I cannot think of anything else (3)

Question Twenty-one:

I have not noticed any recent change in my interest in sex (0)

I am less interested in sex than I used to be (1)

I have almost no interest in sex (2)

I have lost interest in sex completely (3)

Appendix 6.3: Alcohol Use Disorders Identification Test

The score given for each answer is provided in brackets accompanying.

Q1- How often do you have a drink containing alcohol

Never (0)

Monthly or less (1)

2-4 times a month (2)

2-3 times a week (3)

4 or more times a week (4)

Q2- How many standard drinks do you have on a typical day when you are drinking?

1 or 2 (0)

3 or 4 (1)

5 or 6 (2)

7 to 9 (3)

10 or more (4)

Q3- How often do you have six or more standard drinks on one occasion?

Never (0)

Less than monthly (1)

Monthly (2)

Weekly (3)

Daily or almost daily (4)

Q4- How often during the last year have you found that you were not able to stop drinking once you had started?

Never (0)

Less than monthly (1)

Monthly (2)

Weekly (3)

Daily or almost daily (4)

Q5- How often during the last year have you failed to do what was normally expected of you because of drinking?

Never (0)

Less than monthly (1)

Monthly (2)

Weekly (3)

Daily or almost daily (4)

Q6- How often during the last year have you needed a first drink in the morning to get yourself going after a heavy drinking session?

Never (0)

Less than monthly (1)

Monthly (2)

Weekly (3)

Daily or almost daily (4)

Q7- How often during the last year have you had a feeling of remorse or guilt after drinking?

Never (0)

Less than monthly (1)

Monthly (2)

Weekly (3)

Daily or almost daily (4)

Q8- How often during the last year have you been able to remember what happened the night before because you had been drinking?

Never (0)

Less than monthly (1)

Monthly (2)

Weekly (3)

Daily or almost daily (4)

Q9- Have you or someone you else been injured because of your drinking?

No (0)

Yes, but not in the last year (2)

Yes, during the last year (4)

Q10- Has a relative, friend, doctor or other health care worker been concerned about your drinking or suggest you cut down?

No (0)

Yes, but not in the last year (2)

Yes, during the last year (4)

Appendix 6.4 Consent Form

The aim of this research is to investigate the relationship between alcohol usage and depressive symptoms in third level students. Due to this, there will be questions relating to alcohol usage and depression. The answers you give to these questions will not be under your name, and so cannot be traced to you. Information like your age and gender are required in order to complete the survey. The two surveys which aim to measure depressive symptoms and alcohol usage require each question to be answered before moving on. If at any point before completion of the survey you wish you discontinue you may do so, and your data will not be recorded or used. However, once you have submitted your survey your data will not be able to be removed. All data collected will be viewed and stored only by Abbie Feeney and her thesis supervisor, Matthew Hudson, however the results may be presented by the researcher named above at academic functions throughout the academic year. All data is de-identified and as such you personally will not be named, nor will information beyond demographics such as age, and gender be included in the results. Any further questions may be directed towards my email; x16320156@student.ncirl.ie.

Continuing on with this survey at this point will be taken as your consenting to your data being used. A reminder that as the participants name will not be attached to their data it will not be possible for their data to be removed once submitted, as it will not be identifiable.

6.5 Information that was provided to participants upon completion of the survey

If any of the questions asked in this survey have caused you concern the following numbers and web addresses may provide support:

Alcohol Action Ireland:

Number: (01) 878 0610

Website: http://alcoholireland.ie/

HSE Drugs & Alcohol Helpline

Number: 1800 459 459

Email service: helpline@hse.ie

Mental Health Ireland:

Number: (01) 284 1166

Email service: info@mentalhealthireland.ie

Website: www.mentalhealthireland.ie/

Samaritans:

Number: (01) 671 0071

Email: jo@samaritans.ie

Website: https://www.samaritans.org/

If you feel that you may be at risk of experiencing any alcohol related disorders, please avail of the following online assesssment, and seek the appropriate help from the above list of services.

This quick and simple test below helps you to understand more about the impact of your drinking. Find out whether your relationship with alcohol is about right or whether you're over doing it and need to act:

https://www.drinkaware.co.uk/selfassesssment