

Which features of impulsivity influence alcohol consumption.

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Glossary of terms:

UPPS-P:

- Negative urgency refers to the tendency to act rashly when experiencing intense negative emotions,
- Positive urgency is similar but relates to feeling extreme positive emotions (Lynam, Smith, Cyders, Fischer & Whiteside, 2007).
- Lack of Premeditation is the inability to think and reflect on the consequences of an act before engaging in such act (Lynam, Smith, Cyders, Fischer & Whiteside, 2007).
- Lack of Perseverance is the inability to remain focused on a task that may be long or uninteresting (Lynam, Smith, Cyders, Fischer & Whiteside, 2007).
- Sensation Seeking refers to the tendency to enjoy and pursue activities that are exciting, while having a tendency to welcome new experiences (Lynam, Smith, Cyders, Fischer & Whiteside, 2007).

WHO:

- World Health Organisation

AUDIT:

- Alcohol use identification test
- Three sub dimensions: alcohol problem, alcohol dependency and alcohol related problems.

NIAAA:

- National Institute on Alcohol Abuse and Alcoholism

Abstract:

Background: Impulsive behaviour and excessive alcohol consumption is a double edged sword. Impulsivity has been implicated in the literature regarding alcohol use. It is regularly disentangled for further analyses. Furthermore, previous literature has acknowledged such relationship yet there has been problematic findings and patterns related to this rapport. Impulsivity is a heterogeneous construct in scientific literature and is assessed by many different measures.

Methods: 138 participants completed assessment of alcohol consumption, dependence and alcohol related problems using the AUDIT. Impulsivity was assessed using the UPPS-P behavioural scale (i.e. negative urgency, lack of premeditation, lack of perseverance, sensation seeking and positive urgency). Therefore, multiple regression analyses were performed to assess the predictive act of the sub-dimensions of impulsivity on alcohol consumption, dependence and alcohol related problems.

Results: Sensation seeking was predictive of alcohol dependency. Where the remaining sub-dimensions were not predictive of any other alcohol related score in this model. Further, alcohol and age were correlated, finding older cohorts (31-71 years) engaging in alcohol consumption as well as being more dependent and having more alcohol related problems than the lower age group (18-30 years).

Conclusion: Sensation Seeking was the only sub-dimension of impulsivity predictive of alcohol dependency. This finding is closely linked to previous research on the overall impact and importance of assessing sensation seeking and its relationship to alcohol. This study calls for further assessment, as well as the implementation of intervention programs.

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Chapter 1 Literature Review

Introduction:

Reckless alcohol consumption is continually perceived as an ‘Irish problem’ (Muli & Lagan, 2017). Studies suggest that alcohol-related behaviour may be bi-directionally linked to the personality trait of ‘impulsivity’ (Kaiser, Bonsu, Charnigo, Milich & Lynam, 2016). This research study aims to determine whether specific impulsivity facets predict alcohol consumption in the adult Irish population. Results will have relevance for the fields of health psychology, counseling psychology, forensic psychology, social policy, police organizations, and substance misuse workers, all of which endeavour to address alcohol-related problems in society and individuals. The present review will critically evaluate the recent pertinent literature on this topic to identify assessment tools and findings from recent primary human and animal studies, as well as developments in this field, to identify a gap in our knowledge that this study will address. The review will examine evidence for relationships between impulsivity and alcohol consumption, highlight contextual examinations of impulsivity, and understanding of the overall theoretical problems linked with measuring impulsivity as a psychological construct. Moreover, it will explore how the relationship of impulsivity with alcohol consumption evolved. From a biological standpoint, “impulsivity is characterized by a failure in inhibiting a potentially risky impulse for the individual or the others around” (Chamberlain & Sahakian, 2007, p. 255). Experts have various definitions regarding alcohol consumption, intoxication and alcohol use disorders. The WHO have implemented the concept of harmful use of alcohol as being “broad and encompasses the drinking that causes detrimental health and social consequences for the drinker, the people around the drinker and society at large, as well as the patterns of drinking that are associated with increased risk of adverse health outcomes” (WHO, 2014, p. 5).

Personality Psychometric Assessments of Impulsivity:

Commonly, impulsivity is psychometrically assessed using the UPPS-P which measures five conceptualized facets of impulsivity: negative urgency, lack of premeditation, lack of perseverance, sensation-seeking, and positive urgency (Lynam & Whiteside, 2001). The UPPS-P was developed by Whiteside and Lynam (2001), using factor analysis of existing self-report measures of impulsivity. Initially, the scale was founded as the UPPS without the distinguished urgency sub-dimensions. Cyders et al. 2007, highlighted the possibility of positive urgency as well as the established negative urgency. Therefore, the scale was renamed to the UPPS-P.

The examination of impulsivity as a psychological construct has grown dramatically in the literature due to its relationship with many behavioural problems and disorders (Dick et al., 2010). Historically, the most common psychometric assessment of impulsivity was the Barratt Impulsiveness Scale (BIS) developed by Dr. Ernest Barratt (Barratt, 1959). Currently, the BIS-11 is a 30-item scale measuring three sub-dimensions of impulsivity: attentional impulsiveness, motor impulsiveness, and non-planning impulsiveness. Second, Hans Eysenck (1959) created the 54-item Eysenck Personality Questionnaire (EPQ) which uses a yes/no questionnaire format, that is a widely used and approved measure of impulsivity (Eysenck, Pearson, Easting & Allsopp, 1985). Both Barratt and Eysenck scales are inter-correlated and measure impulsivity as a personality trait, yet neither assesses impulsivity from a clinical perspective (Fields et al., 2015; van Kampen, 2010). The literature has advised of limited psychometric properties linked to the BIS which refer to low to zero correlations between items on the scale, as well as the theory that the BIS assesses three underlying impulsivity facets; motor, attentional and non-planning variables, is often not supported in the literature (Reise, Moore, Sabb, Brown & London, 2013). Therefore, researchers have advised that such scale not

be used as a valid measure of impulsivity. Additionally, the EPQ is problematic, researchers have validated this scale using factor analyses and advise extreme caution when interpreting scores attained on this scale (Goh, King & King, 1982).

Behavioural Paradigms of Impulsivity:

Furthermore, impulsivity has been assessed in laboratory settings. One of the most widely recognised tasks for assessing impulsivity is the delay reward ‘marshmallow’ task (Mischel, Ebbesen & Raskoff Zeiss, 1972). This task was developed in the 1960s to assess levels of discipline in children at various ages (Mischel, Ebbesen & Raskoff Zeiss, 1972). The task requires children to sit in a room unaccompanied with a single marshmallow in their presence. The children are rewarded with an extra marshmallow if they wait until the researcher has come back into the room, allowing them to eat two marshmallows. Longitudinal research found the marshmallow task predicts better academic performance as well as greater social and emotional coping in young people attending full time education. (Ayduk et al., 2000; Mischel, Ebbesen & Raskoff Zeiss, 1972; Shoda, Mischel & Peake, 1990)

Delay discounting tasks are similar to the marshmallow task as they measure delay of gratification. Delay discounting tasks are commonly utilized in research into substance abuse such as opioids, cocaine and methamphetamines. The Balloon Analogue Risk Task (BART) is a computerised measure of impulsive behaviour (Lejuez et al., 2002). Research has indicated that the BART task has a strong reliability (>0.7) (Lejuez et al., 2002). However, due to the laboratory nature of the BART task it cannot replicate real life risk taking or impulsive behaviours. Yet, it uses contingencies that activate impulsive or risky behaviours in the environment (Lejuez et al., 2002). To conclude, the measures highlighted give insight into the various methods of assessing impulsivity. In relation to understanding the relationship between

alcohol and impulsivity much of the research utilizes personality assessments of impulsivity. In comparison, researchers who are examining general substance usually assess such construct using behavioural paradigms. Therefore, as discussed, this study aims to review literature regarding alcohol and impulsivity as well as investigating the impact of age as the sole demographic in this literature.

Impulsivity and Alcohol:

Impulsivity is a multi-dimensional construct, defined as a tendency of individuals to act prematurely or without fully weighing the consequences of their behaviour (Caswell, Celio, Morgan & Duka, 2015). According to the literature, impulsivity is an umbrella construct which has been disentangled into sub-dimensions or facets (Bø, Billieux & Landrø, 2016). In the history of impulsivity there has been a lack of concrete evidence regarding the understanding of this construct in the literature; Depue & Collins (1999) put forward that impulsivity is a heterogeneous term comprising and relating to terms such as sensation seeking, risk taking, novelty seeking, unreliability and boredom susceptibility. A growing body of literature has noted that there may not be a single personality characteristic which can ultimately underlie the action to act rashly or impulsively. Rather, models of impulsivity have proposed five prominent dispositions to act impulsively based on a behaviour scale: UPPS-P. The identification of these sub-dimensions has had advantages for the understanding and examination of impulsivity concerning alcohol consumption (Bø, Billieux & Landrø, 2016). Distinctions among emotion-based, conscientiousness-based and sensation seeking-based dispositions make further important contributions for measuring personality risk for impulsive behaviour (Dick et al., 2010).

Alcohol Consumption:

For many countries and cultures, drinking alcoholic beverages is prominent in social situations (Mandelbaum, 1965). Excessive/reckless consumption of alcohol is linked to risk of health adversities and social consequences, dependence and alcohol related disorders (WHO, 2014). Physical and psychological harm due to increased alcohol consumption has been established in three manners: “toxic effects on organs and tissues, intoxication which leads to impairment of physical co-ordination, consciousness, cognition, perception, affect or behaviour, as well as dependence, whereby the individual’s self-control over his/her drinking behaviour is impaired” (WHO, 2014, p. 5). The general criteria for assessing excessive alcohol consumption is approximately four alcoholic drinks for women and five alcoholic drinks for men consumed in approximately 2 hours (National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2018). This equates to a blood alcohol level of approximately, 0.8 (National Institute on Alcohol Abuse and Alcoholism (NIAAA), 2018).

Valentine, Holloway & Jane (2010) investigated possible generational attitudes towards alcohol consumption across many generations. Generational groups are individuals similar in age who have experienced the same historical events within the same time period (Ryder, 1965). Historical accounts of alcohol consumption have advised that due to the era of industrialization across Europe, there was a time of relatively decreased drinking habits. Yet, the 1960s onwards saw a steady increase in the consumption of alcohol at home and in public (Valentine, Holloway & Jane, 2010; Withington and McShane, 2009). Further, this research has noted that the period beginning in the 1970s saw a steading increase per capita of alcohol use, which rose from 5.3 per head in 1970 to 7.41 in 1988. Such generations known as the baby boomers have given insight, acknowledging that engaging in alcohol consumption played a pivotal role in their lives (Valentine, Holloway & Jane, 2010). However, the present

generation's (millennials/generation X) drink of choice would be vodka, as well as wine, alcopops and other spirits. Compared to baby boomers first expected drink would have been a beer or ale.

Alcohol Consumption and Age:

Ireland including Northern Ireland, has a particularly steep alcohol consumption culture, and is ranked the second highest binge drinking culture in the world (WHO, 2014). The (AUDIT) is a tool which can be used to highlight alcohol consumption. Scores above eight indicate increased alcohol consumption (Babor & Robaina, 2016). In 2015, research regarding alcohol attitudes was conducted by Jean Long and Deirdre Mongan on an Irish population. Long & Mongan (2015) measured alcohol consumption both in the year prior to the study. Long & Mongan (2015) found that in Ireland, the median age at when alcohol consumption commenced was 17 years of age. The prevalence of alcohol consumption in the prior 12 months was 77%, whilst over a quarter of participants reported consuming alcohol 2-7 times per week in the seven months prior to the study (Long & Mongan, 2015). Demographically, individuals aged 50-64 years were more inclined to consume alcohol two or more times per week (29.4%) compared to younger cohorts (Long & Mongan, 2015). Moy, Crome & Fisher (2011) investigated alcohol consumption and age in the United Kingdom, and found that in the last ten years, alcohol consumption has increased among older people. For example, individuals who are over the age of 65 have had a 20% escalation in reported drinking habits. Such findings correlate with hospitalisation records, where such age group of 65+ had a 14% hospitalization rate primarily related to alcohol between 2015 and 2016 in the United Kingdom (Moy, Crome & Fisher, 2011). Reasons for increased alcohol consumption varies from socioeconomic problems to personal problems such an employment, health and life course issues (Long &

Mongan, 2015). Further, alcohol related deaths are increasing for individuals aged between 56 and 64 (Long & Mongan, 2015). See table below for age and gender cohort studies.

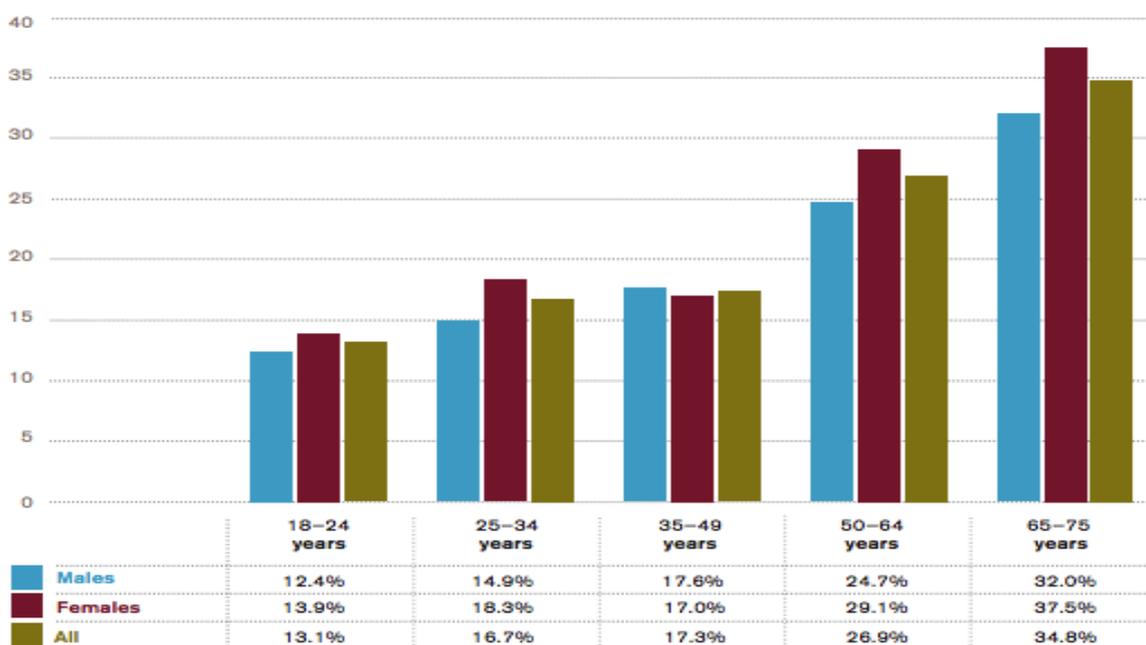


FIGURE 1 Proportion of non-drinkers in the year prior to the survey by gender and age group

Furthermore, they concluded that 75% of alcohol consumed in Ireland was excessive or reckless drinking. (Long & Mongan, 2015). The cohort of drinkers who reported alcohol consumption on a yearly and weekly basis, such behaviour meets the international criteria for harmful drinking habits or dependence problems. Revenue advised that in 2013, 10.6 litres of alcohol was sold per capita which indicates that individuals in Ireland that completed this survey reported only 39% of their alcohol consumption habits (Long & Mongan, 2015). The WHO's (2014) Global status report on alcohol and health advised that individuals who are over the age of fifteen consume 6.2 litres of pure alcohol per annum. The highest alcohol consumption regions internationally are Europe and the Region of the Americas.

Human and Animal Studies on Impulsivity and Alcohol Consumption:

Many human and animal studies highlight links between impulsivity and alcohol consumption, and that increased alcohol use can indicate impulsive behaviours. Marczinski & Fillmore (2005) found alcohol consumption in a challenge behavioural task slowed feedback stimulation as well as increasing the failure to inhibit responses in dose dependent situations. Research conducted on alcohol consumption and related problems has taken a keen interest in the causal role of personality. One of the most prominent personality traits linked to alcohol consumption is impulsivity (Bø, Billieux & Landrø, 2016). Dawe & Loxton (2004) found that impulsivity was pivotal in the development of addictive behaviours such as alcohol consumption, dependence and related problems. Further, Dawe & Loxton (2004) have examined the development of dependence process with regards to heavy alcohol consumption finding that increased dependence on alcohol can also lead to reduced levels of self-discipline, therefore the relationship may be bi-directional. Such research has indicated that heavy alcohol consumption can increase impulsive behaviours (Dick et al., 2010). Additionally, the development of alcohol disorders has been linked in prospective studies to impulsivity. Such findings indicate that impulsivity can mediate the relationship between parental substance abuse disorders and related substance abuse disorders in children (Tarter, Kirisci, Habeych, Reynolds & Vanyukov, 2004).

Potentially, impulsivity may be genetically inherited, whereby individuals who suffer from alcohol use disorders may have a genetic vulnerability. Twin studies support this argument, where personality traits linked to impulsivity impact the inherent genetic factor (Young et al, 2000, Krueger et al. 2002). Further, various twin studies found substance abuse disorders, childhood conduct disorder and adult antisocial behaviour may overlap due to a latent shared genetic liability (Kendler, Prescott, Myers & Neale, 2003). Yet, such literature is

unclear about whether impulsivity actively supports risk factors for alcohol problems. Moreover, as the literature has seen, prominent attempts to view personality overall as a 'stable' characteristic, longitudinal studies have clearly demonstrated that personality is not a stable characteristic, as many changes occur across the life course (Roberts, Walton & Viechtbauer, 2006).

Moreover, the connection between alcohol and impulsivity is not unique to human research. Animal studies have also highlighted such correlation, notably in primates, rats and mice. Where mice that exhibit higher impulsive actions, measured by a delay discounting tasks, shown prominently reduced locomotor activation on first ethanol induction, indicating reduced alcohol susceptibility (Mitchell, Reeves & Phillips, 2006). A major advantage of animal studies in the area of impulsivity, is that the subjects are naïve to the research process. Research conducted on rats of the alcohol-preferring and high alcohol consumption portray an increase in impulsive behaviours compared to low alcohol consumption counterparts, on delay discounting and behaviour inhibition tasks (Steinmetz, Blankenship, Green, Smith & Finn, 2000). Similar to human studies, it is difficult to distinguish which facets of impulsivity are resulting in the behaviours of the animals due to the lack of coherence of questionnaire assessments and behavioural paradigms. For animal research it is extremely important to adhere to ethical guidelines when handling animals, in relation to care, experimental process, handling/environment and most importantly justification of the research (Ghasemi & Dehpour, 2009). In light of extant research, increased alcohol related intervention programmes have been established due to the number of risk factors highlighted in the literature where impulsivity has been unavoidable in the examination of alcohol consumption, dependence and alcohol related problems.

Sensation Seeking:

Further, such paradigms have implicated sensation seeking in the examination of impulsivity and alcohol. Alcohol consumption, dependence and alcohol-related problems are expressed along a continuum, where much research suggests it is worth clarifying which exact sub dimensions of the UPPS-P are attributable to the relationship between impulsivity and alcohol. Sensation seeking and impulsivity are terms are used interchangeably in the literature (Zuckerman, 1996). Magid, MacLean & Colder (2007) hypothesized that though moderately correlated, sensation seeking and impulsivity are linked to alcohol consumption, but through different mediational pathways. Findings from this research indicated 79% of sensation seeking effects on alcohol consumption were mediated by enhancement motives and the remainder was a direct effect. This can be explained when individuals who have elevated levels of sensation seeking have low arousal, which may increase the likelihood to consume alcohol to achieve an optimum stimulation (Magid, MacLean & Colder, 2007). For example, individuals with diagnosed/undiagnosed ADHD. They can consume too much alcohol, caffeine, drugs (cocaine, etc.) to try and maintain arousal and focus. However, impulsivity did not significantly influence alcohol consumption (Pironti, Lai, Müller, Bullmore & Sahakian, 2016). Furthermore, Magid, MacLean & Colder (2007) explained that sensation seekers may seek exciting and novel experiences, they may also intend to minimise negative outcomes, for example organise a method of getting home, they may not consume alcohol before exams and so forth, i.e., they can plan and control their alcohol consumption, more than impulsive individuals.

A recent meta-analysis by Stautz & Cooper (2013) examined the relationship between UPPS-P and alcohol consumption. They found all UPPS-P traits significantly positively related to alcohol consumption with small to moderate effect sizes. Positive urgency and sensation seeking were correlated strongly with alcohol consumption (Stautz & Cooper, 2013). Such data

corroborated with previous research, where sensation seeking is best at predicting frequency of engaging in risk related behaviours, including alcohol consumption. Whereas urgency traits indicate problematic participation in risk-related behaviours (Smith et al., 2007). Further, substantial research has further implicated sensation seeking in the development of alcohol consumption and related problems. Leeman, Fenton & Volpicelli (2006) found across 312 university students, sensation seeking and intensity of best friends' drinking were prominent predictors for binge drinking behaviours. In balance, Pilatti, Cupani & Pautassi (2015) examined 298 females using the big five questionnaires. They found that binge drinkers and moderate drinkers had higher scores in extroversion, sensation seeking and alcohol expectancies than non-drinkers. Shin, Hong & Jeon (2012) examined 268 young people with a mean age of 22 years using UPPS-P, and found that negative urgency and sensation seeking were positively linked to binge drinking and alcohol related disorders. Conversely, Lannoy et al., (2017) investigated 867 binge drinkers compared to non-binge drinkers, and found binge drinkers had lower scores of negative urgency and sensation seeking and higher scores on lack of premeditation than non-binge drinkers. Hence, the link is unclear, and warrants further research.

Remaining UPPS-P Traits

Positive and Negative Urgency:

The UPPS-P impulsivity traits negative and positive urgency are both linked to excessive alcohol use and negative outcomes. This relationship was explained by Papachristou, Nederkoorn & Jansen (2016); where intense negative affect may be problematic for self-discipline. Moreover, such research examined negative urgency as distress; indicating that it is not distress itself which makes for problematic drinking, it is acting impulsively when

distressed which may cause an individual to partake in excessive alcohol consumption and related problems. Particularly, negative urgency has been strongly correlated with drink driving, alcohol-related dependence, and negative outcomes (Coskunpinar et al., 2013; Settles et al., 2012; Treloar et al., 2012). In addition, positive urgency has been linked in college cohorts with negative outcomes such as alcohol excess leading to personal injury (Cyders et al., 2009). Furthermore, Dinc & Cooper (2015) hypothesised that individuals who had increased positive urgency scores would be more likely to engage in increased alcohol consumption when in an extremely positively aroused emotional state. 106 participants were measured on the AUDIT and UPPS-P. Their hypothesis was supported, positive urgency significantly mediated the relationship between emotion and alcohol consumed. Cyders et al., (2010), also hypothesized and found that positive urgency increased alcohol consumption, even when controlling for all other UPPS-P impulsivity traits.

Lack of Perseverance and Lack of Premeditation:

Contrary to previous findings, Lannoy et al., (2017) investigated 867 binge drinkers versus non-binge drinkers, and found binge drinkers had lower negative urgency and sensation seeking and increased lack of premeditation compared with non-binge drinkers. Concerning major public health problems; Treloar, Morris, Pederson & Mccarthy (2012) investigated drink driving and impulsivity using UPPS-P, and found lack of perseverance mediates the relationship between impulsivity and drink-driving. Lack of perseverance and lack of premeditation have small to insignificant statistical correlations with alcohol consumption, whereas lack of perseverance is more highly correlated with the amount of alcohol consumed (Coskunpinar, Dir & Cyders, 2013; MacKillop et al., 2007). Premeditation has been prominently linked as a mediating role with sensation seeking and other impulsivity facets.

Therefore, it is difficult to analyse the literature regarding premeditation as it rarely features as a unitary construct.

Gap in the Literature and Present Study

Despite a myriad of research on impulsivity and alcohol consumption, this relationship needs clarification, as impulsivity remains ambiguous regarding which dimensions predict alcohol consumption, dependence and alcohol related problems. Previous research has also implicated alcohol use as a unitary construct without disentangling it into consumption, dependence and alcohol-related problems. As a result, this study aimed to examine the relationship between impulsivity and alcohol consumption on a multi-dimensional level using all five impulsivity UPPS-P facets to predict alcohol consumption, dependence and alcohol related problems. Considering the conceptual differences of the five sub-dimensions of impulsivity, it is critical to examine the impact of each sub-dimension on alcohol consumption, dependence and alcohol related problems.

Research Aims

As per the literature, notably, sensation seeking has made critical implications in the relationship between impulsivity and alcohol use (Stautz & Cooper, 2013). The first research aim is to clarify the relationship impulsivity dimensions have with alcohol use. The second aim is to examine the importance of sensation seeking relationship with alcohol consumption, dependence and alcohol-related problems. The third aim is to assess which age cohorts engage in alcohol-related behaviours. Finally, this research aims to crystallise which age groups in the literature excessively use alcohol in terms of consumption, dependence and related problems. The gap in the literature is supported by Dick et al., (2010) where the research on this area should focus on, clearly depicting impulsivity and its sub-dimensions, while analysing

distinctly which facets are most predictive of alcohol use. Further, Adan, Forero & Navarro (2017) advised that epidemiological factors such as age are rarely analysed as predictive factors in alcohol use and misuse. Previous research was merely descriptive in nature.

Chapter 2 Method

Design:

This study employed across-sectional correlational design using a quantitative online self-report questionnaire survey methodology. Surveys completed online have been shown to counteract socially desirable responses to questionnaires by establishing anonymity (Booth-Kewley, Larson, & Miyoshi, 2007). Although cross-sectional designs collect data only once, and thus cannot infer cause and effect between impulsivity predictors and alcohol-related outcomes (which requires a longitudinal study measuring effects over time) (Bowling, 2005), cross-sectional research was justified due to time constraints of the undergraduate thesis. An experimental design was not considered appropriate due possible issues such as attrition and order effects. The five predictor variables were the UPPS-P impulsivity facets: negative urgency, positive urgency, lack of premeditation, lack of perseverance, and sensation seeking. The four dependent variables were age and the AUDIT sub dimensions: alcohol consumption, dependence and alcohol related problems, and total AUDIT score, as previous literature found these variables predict alcohol consumption. Scoring on the AUDIT can be viewed in Appendix 3.

Participants:

No power analysis was conducted to determine the minimum appropriate sample size, however, Stevens (1996, p.72) recommended approximately 15 participants per predictor for multiple regression. Given five predictors, a minimum target sample of N=75 participants was determined. Participants were recruited using non-random convenience/opportunity sampling via the researchers' social network. Participants voluntarily participated by responding to a recruitment post placed the social media platform: Facebook as well as an email, inviting

individuals to participate in a study regarding drinking habits, emails were acquired through personal and work contacts. It allowed the potential participants to decide whether or not they would like to participate without having to decide urgently. Self-selecting participants introduce sampling bias, as the researchers' social network may not represent all demographic segments of the general population (Bowling, 2005). Before completing the self-report questionnaire, individuals were briefed about the study purpose (see Participant Information Sheet, Appendix 1), and were required to give informed consent by selecting a box outlining conditions of the study. Inclusion criteria included individuals who were over the age of 18 years of age and consumed alcohol. In total, the study included 138 participants (mean age 26.10 years, range: 18-71 years).

Measures:

Alcohol Consumption:

The participant's levels of alcohol consumption in the past year were measured using the 10-item self-report Alcohol Use Disorder Identification Test (AUDIT) (see Appendix 3). The AUDIT is a screening tool for alcohol related problems, in which such research used the AUDIT for research purposes and not diagnostic purposes. AUDIT measures three dimensions: alcohol consumption, dependence, and alcohol related problems. Questions 1-3 assessed alcohol consumption (maximum score of 12), questions 4-6 assessed alcohol dependence (maximum score of 12) and questions 7-10 assessed alcohol-related problems, any score on the AUDIT on such sub scale required further investigation. Refer to Appendix 3 for scoring instructions. Higher scores reflect higher levels of alcohol consumption, dependence, alcohol related problems, and total alcohol. The total AUDIT score range is 0-40. A score of 0-7 is recommended by WHO, which signifies low risk, where harm reduction advise may be appropriate. Scores of 8-15, signify risky/harmful alcohol use, a brief intervention is necessary.

Scores of 16-29 highlight that there is a harmful level of alcohol consumption as well as a high risk for dependency. Scores of 20 or more signify high risk which almost certain dependency.

UPPS-P Impulsivity Scale

Impulsivity was measured using the 59-item self-report Urgency, (lack of) Premeditation, (lack of) Perseverance, Sensation Seeking and Positive Urgency impulsivity scale (UPPS-P) designed by (Cyders et al., 2007; Whiteside & Lynam, 2007). The UPPS-P impulsivity model highlights that impulsivity is a multidimensional construct encompassing five impulsive personality traits. Example of questions asked by the UPPS-P; I have a reserved and cautious attitude toward life and I have trouble controlling my impulses. Higher scores on the UPPS-P reflect increased impulsivity levels. For scoring instructions see appendix 4

Procedure:

This study followed NCI ethical guidelines for research with human participants and the Psychology Society of Ireland's code of ethics. Participants completed an anonymous survey online which was created using Google Docs. As some participants may have issues or concerns about alcohol consumption, a list of resources were provided by the researcher (see Appendix 1). The data was collected between November 2017 and January 2018. When all survey questions were completed, a final box was ticked to advise that once submitted, responses could not be withdrawn. To prevent response bias, deception was an important aspect of the UPPS-P to avoid any Hawthorn effect. The Hawthorn effect is defined as the problem that participants' knowledge that they are in an experiment modifies their behaviour from what it would have been without the knowledge (McCambridge, Witton & Elbourne, 2014). Therefore, UPPS-P was presented in the survey as assessing 'lifestyle'. Deception in this

research study did not cause harm, participants were made aware of the scientific importance of studying impulsivity post completion of the questionnaire. To address the possibility of harm, this study utilised debriefing procedures. Information regarding the true analysis of impulsivity and true study aims were made known to participant in a debriefing form at the end of the questionnaire once submitted. As per the consent form, relevant resources were made available to participants in the consent form see appendix 1. All online survey responses were downloaded and saved on a password protected external hard drive which was stored in a safety deposit box at all times.

Ethical Considerations:

Confidentiality and anonymity of participants were protected (place references to these above here, and delete above). Participants did/did not have the right to withdraw from this study, and have their data destroyed. Informed consent was obtained (Appendix 1). Participants were fully briefed and debriefed (Appendix 1&2). All data collected from participants was stored securely on a password protected computer external hard drive. Participants identity was anonymized by requiring participants to check boxes without asking for personal data. There was low risk of harm assessed for participants and the researcher in this study. The data were collected for research purposes only, and results analysed in aggregate form in this thesis. Specifically, the ethical guidelines which were adhered to were:

Principle 1: Respect for the rights and dignity of the person: This principle requires of psychologists that they treat their clients as persons of intrinsic worth with a right to determine their own priorities, that they respect clients' dignity, and give due regard to their moral and cultural values. Psychologists shall take care not to intrude inappropriately on clients' privacy. They shall treat as confidential all information (including oral, verbal, written and electronic)

obtained in the course of their work, except where the law requires disclosure. As far as possible, they shall ensure that clients understand and consent to whatever professional action they propose. **Principle 2: Competence:** Psychologists must constantly maintain and update their professional skills and ethical awareness. They shall recognise that psychological knowledge and their own expertise and capacity for work are limited, and take care not to exceed the limits. **Principle 3: Responsibility:** In their professional and scientific activities, psychologists are required to act in a trustworthy, reputable, and accountable manner towards clients and the community. They shall avoid doing harm to clients and research participants, and act to prevent harm caused by others. They shall co-operate with colleagues and other professionals to ensure the best service to clients, and act positively to resolve ethical dilemmas. They shall ensure that those whom they supervise act ethically. In research with animals, they shall take care to treat the animals humanely. **Principle 4. Integrity:** Psychologists are obliged to be honest and accurate about their qualifications, the effectiveness of the services which they offer, and their research findings. They shall take steps to manage personal stress and maintain their own mental health. They shall treat others in a fair, open and straightforward manner, honour professional commitments, and act to clarify any confusion about their role or responsibilities. Where possible, they shall avoid the use of deception with research participants. They shall not use the professional relationship to exploit clients, sexually or otherwise, and they shall deal actively with conflicts of interest. They shall take action against harmful or unethical behaviour in colleagues or members of other professions. (PSI Code of Professional Ethics, 2018)

Statistical Analysis:

The survey data were analysed using IBM SPSS version 23, for MAC version 23. Preliminary data cleansing screened for missing values, outliers, and test assumptions of

normality, linearity, and homoscedasticity. Descriptive statistics were generated for all variables and reliability analysis of the UPPS-P was assessed using Cronbach's alpha internal consistency. Pearson correlation examines relationships among AUDIT dimensions. Three separate linear multiple regression analyses (Enter method) were conducted to test effects of five UPPS-P predictors on AUDIT alcohol consumption, alcohol problems, and dependence scores.

Results

Descriptive Statistics and Reliability Analysis

The sample (N=138) ranged in age from 18 to 71 years, with an average age of 26 years (M=26.10, SD=11.06). Table 1 presents the descriptive statistics for the study variables. All five UPPS impulsivity variables had good to excellent internal consistency (α .802 to α .937).

Table 1

Descriptive statistics and reliability analysis

Variables	Mean	SD	Reliability α
Age in years	26.10	11.06	
UPPS-P			
Negative urgency	2.79	0.54	.855
Lack of perseverance	2.10	0.47	.802
Lack of premeditation	2.02	0.50	.866
Sensation seeking	2.94	0.55	.822
Positive urgency	2.34	0.76	.937
AUDIT			
Alcohol consumption	8.41	1.28	
Alcohol problem	6.78	2.47	
Alcohol dependence	4.26	1.55	

Correlation Analysis

A Pearson correlation analysis was performed to examine relationships between the three alcohol audit variables. Table 2 presents the correlation results. Significant positive correlations

were found amongst all variables at $p < .05$ to $p < .001$. Higher alcohol consumption scores were associated with higher alcohol problems scores, $r(138) = .255$, $p = .003$, and higher alcohol dependence scores, $r(138) = .217$, $p = .011$. In addition, higher alcohol problems scores were strongly correlated with higher alcohol dependence scores, $r(138) = .741$, $p = .001$. Thus, alcohol consumption is linked to both alcohol problems and alcohol dependence, and participants with alcohol problems tend to be alcohol dependent.

Table 2

Pearson correlation matrix for alcohol audit variables

		consumption total score	problem score	total dependence total score
Consumption score	Pearson Correlation	1	.255**	.217*
	Sig. (2-tailed)		.003	.011
	N	138	138	138
Problem total score	Pearson Correlation	.255**	1	.741**
	Sig. (2-tailed)	.003		.000
	N	138	138	138
Dependence total score	Pearson Correlation	.217*	.741**	1
	Sig. (2-tailed)	.011	.000	
	N	138	138	138

* $p < .01$, ** $p < .001$

Multiple Linear Regression Models

The first regression analysis (see Table 3) considered the five UPPS impulsivity variables as predictors of the alcohol consumption score. The model was not significant, $F(5,132) = .297$,

$p=.914$. Together the five predictors explained only 1.1% of alcohol consumption scores ($R^2=.011$), and none of these five predictors significantly influenced alcohol consumption.

Table 3

Multiple linear regression with alcohol consumption as the dependent variable

Variables	B	S.E.	t	Beta	p	Sr2
Constant	8.443	0.873		9.675	.000	
Negative urgency	-0.087	0.355	-0.036	-0.245	.807	
Lack of perseverance	-0.092	0.263	-0.034	-0.349	.727	
Lack of premeditation	-0.092	0.268	-0.036	-0.344	.731	
Sensation seeking	0.014	0.225	0.006	0.061	.951	
Positive urgency	0.235	0.246	0.140	0.957	.340	
R	.105					
R2	.011					
Adj. R2	-.026					
F	(5,132)=.297, $p=.914$					

Dependent variable: Alcohol consumption

The second regression analysis (see Table 4) considered the five UPPS impulsivity variables as predictors of the alcohol problem score. The model was significant, $F(5,132) = 2.976$, $p=.014$. The five predictors as a group explained only 10.1% of alcohol problem scores ($R^2=.101$). Although no impulsivity facet predicted alcohol problem scores, two predictors approached the significance level of 0.05 in a positive direction, including negative urgency ($B=1.26$, $p=.055$), and lack of perseverance ($B=0.928$, $p=.056$).

Table 4

Multiple linear regression with alcohol problem as the dependent variable

Variables	B	S.E.	t	Beta	p	Sr2
Constant	1.585	1.599		0.991	.323	
Negative urgency	1.261	0.650	0.275	1.940	.055	
Lack of perseverance	0.928	0.482	0.178	1.927	.056	
Lack of premeditation	-0.759	0.492	-0.155	-1.542	.126	
Sensation seeking	0.599	0.413	0.133	1.451	.149	
Positive urgency	-0.209	0.450	-0.065	-0.465	.643	
R	.318					
R2	.101					
Adj. R2	.067					
F	(5,132)=2.976, p=.014					

Dependent variable: Alcohol problem

The third regression analysis (see Table 5) considered the five UPPS impulsivity variables as predictors of the alcohol dependence score. The model was significant, $F(5,132) = 3.085$, $p = .011$. The five predictors combined accounted for 10.5% of alcohol dependence scores ($R^2 = .105$). Sensation seeking scores significantly predicted alcohol dependence scores in a positive direction ($B = .516$, $p = .049$). For every one-unit increase in sensation seeking score, alcohol dependence increased by .516 points, based on the unstandardized B coefficient. No other UPPS impulsivity predictor significantly influenced alcohol dependence.

Table 5

Multiple linear regression with alcohol dependence as the dependent variable

Variables	B	S.E.	t	Beta	p	Sr2
Constant	1.276	1.006		1.269	.207	
Negative urgency	0.642	0.409	0.222	1.571	.119	
Lack of perseverance	0.380	0.303	0.116	1.255	.212	
Lack of premeditation	-0.608	0.309	-0.197	-1.966	.051	
Sensation seeking	0.516	0.259	0.181	1.988	.049*	
Positive urgency	0.048	0.283	0.024	0.170	.865	
R	.323					
R2	.105					
Adj. R2	.071					
F	(5,132)=3.085, p=.011					

Dependent variable: Alcohol dependence, * $p < .0$

Correlation Analysis:

A Pearson correlation analysis was conducted to examine the relationships between the three levels of the AUDIT and two age categories in this research (18-30 and 31-71 years). Table 6 presents the correlation results. Significant positive results were found for the age cohort of 31-71 years. Where each AUDIT sub dimension has medium to strong effect sizes ($r=.533$, $r=.763$, $r=.600$)

Table 6:

Correlations

Age Group			consumption totalscore	problemtotals core	dependenceto talscore
.	consumptiontotalscore	Pearson Correlation	1	.361	.062
		Sig. (2-tailed)		.204	.834
		N	14	14	14
	problemtotalscore	Pearson Correlation	.361	1	.753**
		Sig. (2-tailed)	.204		.002
		N	14	14	14
	dependencetotalscore	Pearson Correlation	.062	.753**	1
		Sig. (2-tailed)	.834	.002	
		N	14	14	14
18-30 years	consumptiontotalscore	Pearson Correlation	1	.206*	.201*
		Sig. (2-tailed)		.039	.044
		N	101	101	101
	problemtotalscore	Pearson Correlation	.206*	1	.749**
		Sig. (2-tailed)	.039		.000
		N	101	101	101
	dependencetotalscore	Pearson Correlation	.201*	.749**	1
		Sig. (2-tailed)	.044	.000	
		N	101	101	101
31-71 years	consumptiontotalscore	Pearson Correlation	1	.600**	.533**
		Sig. (2-tailed)		.002	.009
		N	23	23	23
	problemtotalscore	Pearson Correlation	.600**	1	.763**
		Sig. (2-tailed)	.002		.000
		N	23	23	23
	dependencetotalscore	Pearson Correlation	.533**	.763**	1
		Sig. (2-tailed)	.009	.000	
		N	23	23	23

‡

** . Correlation is significant at the 0.01 level (2-tailed).

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

Chapter 4 Discussion:

Introduction:

The present study extended existing research by disentangling the AUDIT into three dimensions of self-reported levels of alcohol consumption, dependence and alcohol related problems and regressing these on five UPPS-P impulsivity facets. To the researcher's best knowledge, studies have not disentangled the AUDIT into its three distinct categories of assessment for assessment. This chapter discusses key findings from this study, and how they relate to literature previously reviewed; as well as methodological limitations of this study, suggestions for future research, and implications for theory, policy and practice. To reiterate, the present study investigated the influence of five self-report UPPS-P impulsivity dimensions on. Previous research showed conflicting results. For example, one study found positive relationships between binge drinking with negative urgency and sensation seeking (Shin et al., 2012, N=268, mean age 22 years); whereas another study found binge drinkers had lower negative urgency and sensation seeking scores (Lannoy et al., 2017, N=867). The first research aim is to clarify the relationship impulsivity dimensions have with alcohol use. The second aim is to examine the importance of sensation seeking relationship with alcohol consumption, dependence and alcohol-related problems. The third aim is to assess which age cohorts engage in alcohol-related behaviours. Finally, this research aims to crystallise which age groups in the literature excessively use alcohol in terms of consumption, dependence and related problems.

Discussion of the Key Findings and Their Importance

The first aim was not supported, as multiple linear regression found none of the five UPPS-P predictors significantly influenced alcohol consumption scores, and together explained only 1.1% of the variation in these scores. Thus other unknown variables not included in this study must influence alcohol consumption in this sample. These results suggest

that a person's level of impulsivity on any of these five facets have no impact on their level of alcohol consumption. These findings are not corroborative of past research; majority of the research had implicated more than one UPPS-P trait in the prediction of alcohol related behaviours. This research as discussed below shows only one score predictive of alcohol dependency specifically and no other AUDIT score. Reasoning behind such finding may be due to the fact that the AUDIT was disentangled into its sub-categories and if had assessed total scores on the AUDIT, results may have been noteworthy.

Similarly, the second multiple regression model found the five impulsivity facets together explained only 1.1% of the variation in alcohol problem scores, and no individual impulsivity facet significantly influenced these scores. Thus, impulsivity facets were neither associated with level of alcohol consumption or related problems. Interestingly, the third regression model found the five impulsivity facets explained a larger, but still small 10.5% of the variation in alcohol dependence scores, and showed sensation seeking scores positively influenced alcohol dependence, with higher sensation seeking levels associated with higher alcohol dependence scores. This finding supports the secondary hypothesis that sensation seeking plays an important role in potential alcohol dependence.

Further, normative data was reviewed and compared to the results found in this research. Findings in this research corroborates with normative data gathered by Chamorro et al. (2012) who advised that impulsivity and young people were prominently related. Moreover, Chan, Neighbors, Gilson, Larimer & Marlatt (2009) indicated that age differences in alcohol consumption frequency increases dramatically at the legal age, while later a drop in alcohol consumption frequency followed by an increase again close to retirement age. Normative data provides an excellent platform to base research results from.

Moreover, such findings partially support previous research on the role of sensation seeking and alcohol dependence, but not alcohol consumption per se (Stautz & Cooper, 2013). Specifically, among younger individuals, those with higher sensation seeking scores had increased alcohol dependence. Shin, Hong & Jeon (2012) examined 268 young people with a mean age of 22 years using UPPS-P found sensation seeking was positively associated with excessive alcohol consumption and alcohol related problems such as dependence. The present study did not focus on this young age group, which may explain the differential results, i.e., age group may moderate the relationship between sensation seeking and alcohol use or dependence. This could be tested using factorial ANOVA, after dichotomizing the sensation seeking scores into high/low groups, and crossing them with age groups to see if the impact of sensation seeking on alcohol use/dependence is strongest among specific age groups. This pattern of results possibly indicates individuals who score highly on sensation seeking are more prone to dependence on alcohol consumption perhaps for reasons such as arousal, stimulation, boredom and to activate novel and exciting experiences which can come from alcohol consumption (Comeau, Stewart & Loba, 2011). Meta-analyses Stautz & Cooper (2013), have implicated sensation seeking as a prominent risk factor in over consumption, dependence and alcohol related problems compared to the other UPPS-P scores. In terms of insignificant findings with the other hypotheses, a myriad of research has found unsystematic results in relation to the influence of impulsivity based on the UPPS-P. Further, different research has taken various demographics such as age, gender, ethnicity, educational attainment, marital status and socioeconomic status into account, which the present study largely omitted. These may impact researchers finding a demographic pattern in relation to impulsivity traits with alcohol-related behavior and outcomes. Additionally, changing social norms (context) may be influencing alcohol consumption patterns, e.g., the prevalence of online social media strongly influences how young people behave in public and actively manage their online image, with a

predominant focus on attractiveness, achievement, popularity and success over enjoyment, rebellion, recklessness and irresponsible behavior. Western youth have become highly conformist (Toivonen, Norasakkunkit & Uchida, 2011). Additionally, there are many competing rewards now available for sensation seekers, besides alcohol (e.g., stimulant drugs, high sugar/fat foods, video games, gambling, online porn, casual sex). Additionally, the enduring economic recession may be restricting alcohol consumption across many age groups, regardless of impulsiveness levels; alcohol consumption is a high expense.

Age and Alcohol

The sole demographic that this study measured was age. Age was the only demographic collected to ensure all participants were of legal drinking age. Much of the literature on alcohol consumption studies college/university students as their primary age demographic (typically 18-25 years) (Shin, Hong & Jeon, 2012). Reasoning behind this may be due to the stereotypical view of young people and alcohol consumption present in the media. Students are also generally willing to participate in research compared to any other groups in society due to common needs for research participants. Research regarding the link between alcohol and impulsivity is lacking in knowledge beyond the present millennials or generation X (Magid, MacLean & Colder, 2007) Further, the present study had a wide age range, from 18-71 years, which were split into two cohorts of age, 18-30 (young adult) and 31-71 (mature adult) years. Findings from the present correlation analysis showed medium to strong effect sizes. This finding indicated that individuals aged between 18 and 30 years in this study engage in alcohol consumption. This finding supports the hypothesis in this research in relation to age cohorts differing in alcohol related behaviours. Furthermore, the age group 31-71 years were strongly positively correlated with all three AUDIT dimensions of the AUDIT, consumption, dependence and alcohol related problems, suggesting mature adults are a higher risk group in

this research. Supporting the idea that there has been a social change over time in alcohol consumption norms, with young adults consuming less. This is an important finding with regards to previous literature as mentioned, the primary demographic was age, related to college or university students. The present research had previously assumed before conducting any data collection, analysis or interpretation, that the younger cohort would be highly correlated with all three categories of the AUDIT. This warrants further research with regards to older age cohorts and alcohol consumption. In terms of generational affects, this study included individuals from both Baby boomer generations (born 1946-1964) to Generation Z (born 1995-2012), and suggests a generational change in alcohol norms

As per the discussion, much of the research conducted has implicated lower age cohorts as highly impulsive as well as being prominent alcohol consumers. Reports of the main catalyst for drinking in young people today is to be intoxicated as possible. Where individuals have quoted 'you can't have fun unless you are off your head' (Valentine, Holloway & Jane, 2010). Further to this point, the products the individuals in each generational cohort were consuming were drastically different, coupled with the differences in motivations of drinking. As mentioned, the youth generation have acknowledged going out just to be intoxicated, compared to millennials and baby boomers, who do not explicitly remember attending public houses to consume enough alcohol to be intoxicated. It was an unforeseen outcome (Valentine, Holloway & Jane, 2010). Yet, the younger generations have reported having a responsible relationship with alcohol, being aware of limits and other responsibilities, where individuals choose the social events in which they achieve their most intoxicated state (Honest, Seymour & Webster, 2000; Valentine, Holloway & Jane, 2010). This supports the idea that current social-media raised youth, strongly manage their public image and can regulate planned episodes of intoxication. Reasons behind such statements related to academic or work related

responsibilities. Individuals of this generation were very much aware of the possibility of appearing on social media intoxicated or under the influence of other substances (Dunne & Katz, 2015). Therefore, based on the results of this study, it is plausible to suggest that current young adults consciously control their drinking behaviors compared to older generations, regardless of impulsivity levels, the risk of negative social media exposure is a deterrent. However, this also increases the risk of socially desirable responding, it is possible that youth in the present study have under-reported their actual alcohol consumption/problems/dependence in the past year, to present a positive self-image.

Implications:

Overall, the findings in this research highlight that impulsivity is not predictive of alcohol consumption, dependence and alcohol related problems. Where sensation seeking as discussed was the only significant predictor of alcohol dependency. Moreover, a greater understanding of impulsivity and its relationship to alcohol consumption is warranted. Although this research had limited significant findings, ultimately, scores on the AUDIT were problematic for majority of the participants in this research. Therefore, some prevention or intervention programs to increased alcohol consumption, dependency and alcohol related problems. For example, current intervention techniques for drinkers of all ages are advised to visit their GP, as well as availing of services such as counselling for addiction, medication, group support and other private intervention programmes that are advertised. For long term or urgent care, rehab facilities are available throughout Ireland. For individuals who have mental health problems as well as a comorbid alcohol or substance abuse problem are advised to seek help from mental health services. Therefore, intervention and treatment programmes are designed to aid in alcohol related problems. Those who have increased sensation seeking scores relevant to

alcohol dependency may thus benefit from counselling or visiting their local GP in order to assess any possible underlying conditions.

Suggestions for future research:

Future research should examine proposed mediation and moderation effects of premeditation and age group, respectively, on hypothesized relationships, and include additional demographic variables to comprehensively profile the sample, identify additional contributing factors, and control for any potential covariates and confounding factors. Further, scholars conducting longitudinal research on such topic would benefit from assessing the AUDIT as per this research, in order to assess whether changes in alcohol consumption, dependency and problems change over time. Potentially, the amalgamation of animal and human studies on impulsivity to give a greater understanding and possibly a more comprehensive assessment of impulsivity.

Methodological Limitations of This Study

Methodological limitations of this study may affect internal and external validity of the results (Bowling, 2005). The cross-sectional data collection is a limitation as scores collected represent a ‘current snapshot’ and cannot be used to infer causation between impulsivity facets and AUDIT outcomes. These can only be determined using a prospective longitudinal cohort study, involving baseline and repeated measures, collected over 5-10 years, or over lifetime. Some major methodological issues with this research were due to the use of the UPPS-P impulsivity behavioral scale. Although it is a widely used measure of impulsivity, it provides an increased probability of both human and computer error when analyzing in software such as SPSS. As mentioned, it is a 59 item questionnaire in which majority of the items in the scale

are reverse scored. The likelihood of incorrectly reverse scoring an item is extremely high and in completing the current research it is a mistake which has happened, resulting in manually re-entering data into SPSS for re-analysis. Therefore, it would make logical sense to address the questions from the outset rather than reverse scoring majority of the questions. In many psychological measures, across many different assessments, the number of questions on the scale is approximately 30 items or less. The UPPS-P has almost double the amount of the average. Further, for individuals taking the assessment, where on the 4 item Likert scale, 1 indicates strong agreement and 4 indicates strong disagreement. This is potentially confusing for individuals who may assume, as the scale moves on that 1 denotes disagreement and 4 refers to agreement. Therefore, this scale may need revision in terms of finalization of key items necessary and to change the current scoring system that is in place.

Further, the number of items on each sub-dimension warrants further investigation, sensation seeking has the largest number of related questions whereas lack of premeditation is not as well represented in the model. This is problematic for interpreting results, where if each sub-dimension had the same allocation of questions would the other sub-dimensions be more significant? A power analysis was not conducted, which is a limitation. Additionally, a non-random self-selecting sample was used, which introduces sampling bias, and reduces external validity (the ability to generalize results to the target population). The sample were recruited from the researchers' social network, and are thus likely to represent White, middle-class adults of Irish and/or European ethnic descent. Given increasing diversity in Ireland, data on country of origin/ethnicity would have helped to inform cultural alcohol consumption patterns. Ireland now has a large Eastern European ethnic representation, many of whom exhibit high alcohol consumption and associated domestic violence problems (Gebara et al., 2015) Although age and alcohol consumption was a key focus in this study, the sample age range was too large,

and was not purposively recruited to ensure equivalent numbers of young versus mature adults to aid comparison. Furthermore, in line with the research process, diagnostic assessment data of alcohol consumption was not gathered which may in future research, provide a critical explanation for the relationship between alcohol consumption and impulsivity. This would be pivotal for treatment plans and interventions for individuals who have scored highly on the AUDIT especially with regards to alcohol related problems.

Conclusion:

To conclude, this research has delved into impulsivity and alcohol use in order to assess their bidirectional relationship. Although there were a limited number of significant findings, it is a topic that warrants further investigation for relevance in fields of health psychology, counseling psychology, forensic psychology, social policy, police organizations, and substance misuse workers, all of which endeavour to address alcohol-related problems in society and individuals. Sensation seeking has primarily been the most important facet in the examining of impulsivity and its relationship to alcohol, therefore it is important for future researchers to carefully assess this construct.

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Appendices:

Appendix 1: Consent Form

RESEARCH PARTICIPANT INFORMED CONSENT FORM

Please read this consent form carefully and ask as many questions as you like before you decide whether you want to participate in this research study. You are free to ask questions at any time before, during, or after your participation in this research.

Project Information

Project Title: The investigation of possible mediators related to alcohol consumption.

Principal Investigator: Clíodhna Hunt

Location: National College of Ireland

Email: x15728695@student.ncirl.ie

1. PURPOSE OF THIS RESEARCH STUDY

You are being asked to participate in a research study which is designed to investigate possible mediators related to alcohol consumption. Mediators explain the relationship between variables. E.g. investigating mediators associated with health, these would likely to be; diet, exercise or stress.

2. PROCEDURES

You are invited to take part in this final year research project. The duration of this questionnaire will be approximately 10 minutes. Participation in this study involves completing the Alcohol Use Disorders Identification Test (AUDIT) which is a screening tool developed by the World Health Organisation to assess alcohol consumption, drinking behaviours and alcohol related

problems. This assessment is not diagnostic and in the current study is being used for research purposes only. Therefore, the scores calculated on this assessment will not be relayed to participants. However, certain questions may cause you to question your drinking habits. To address this, relevant resources are attached for any participant who feels they may need to discuss this with a professional. The remaining questions address different aspects of your lifestyle where you assess how strongly the questions relate to how you think, feel and behave.

3. POSSIBLE RISKS OR DISCOMFORT

There are no real risks associated with completing this study.

4. POSSIBLE BENEFITS

While there will be no direct benefit from participation studies like this can make an important contribution to our understanding of some of the processes underlying alcohol consumption. As such, the findings from this study may be presented at national and international conferences and may be submitted for publication in peer-reviewed journals. Interim and final reports will be prepared. However, no individual participant will be identified in any publication or presentation. Individuals will not be offered any monetary or other rewards for their participation.

5. FINANCIAL CONSIDERATIONS

There is no financial compensation for your participation in this research.

6. Deception

Some details of this project may not be made known to you until the session is completed.

7. CONFIDENTIALITY

Your identity in this study will be treated as confidential. The results of the study may be published for scientific purposes but will not give your name or include any identifiable references to you.

However, any records or data obtained as a result of your participation in this study may be inspected by the sponsor, by any relevant agency (e.g., by the National College of Ireland Institutional Review Board), or by the persons conducting this study, (provided that such inspectors are legally obligated to protect any identifiable information from public disclosure, except where disclosure is otherwise required by law or a court of competent jurisdiction).

In addition, all individual information collected as part of the study will be de-identified. It will be stored safely and will not be publicly displayed or published without prior consent.

8. TERMINATION OF RESEARCH STUDY

**You are free to choose whether or not to participate in this study. There will be no penalty or loss of benefits to which you are otherwise entitled if you choose not to participate. In addition, your participation in the study may be terminated by the investigator without your consent. **

9. AVAILABLE SOURCES OF INFORMATION

Any further questions you have about this study will be answered by the Principal Investigator:

Name: Clíodhna Hunt

Email: x15728695@student.ncirl.ie

Any questions you may have about your rights as a research subject will be answered by:

Name: Clíodhna Hunt

Dr April Hargreaves has been assigned as my supervisor and can be contact at:
april.hargreaves@ncirl.ie

10. In case of a research-related emergency:

<https://www.samaritans.org/your-community/samaritans-ireland-scotland-and-wales/samaritans-ireland>

<https://www.jigsaw.ie/>

<https://www.aware.ie/>

<http://www.drinkaware.ie/support-services>

11. AUTHORIZATION

I have read and understand this consent form, and I volunteer to participate in this research study. I voluntarily choose to participate, but I understand that my consent does not take away any legal rights in the case of negligence or other legal fault of anyone who is involved in this study.

Thank you for taking the time to complete this research study :)

By ticking this box, you are confirming you are over the age of 18 and you are confirming you have read and understood the information form provided. Therefore, consent to participate in this study.

Appendix 2

Debriefing Procedure:

Thank you for participating in my research study!

The purpose of the study is to investigate possible mediators associated with alcohol consumption, the mediator in which I am interested in investigating is Impulsivity. The questions which assessed your "lifestyle" were actually questions from the UPPS-P Impulsivity behaviour scale, which is a 59-item self-report that assesses five sub scales:

1. Negative urgency: tendency to act rashly under extreme negative emotions
2. Lack of Premeditation: tendency to act without thinking
3. Lack of Perseverance: inability to remain focused on a task
4. Sensation Seeking: tendency to seek out novel and thrilling experiences
5. Positive Urgency: tendency to act rashly under extreme positive emotions

If you have any questions in relation to this, please do not hesitate to contact me:

x15728695@student.ncirl.ie/cliodhnahunt@icloud.com

Appendix 3: AUDIT:

	Questions	0	1	2	3	4	Score Totals	Sub Scores
1	How often do you have a drink containing alcohol?	NEVER	Monthly or less	2 to 4 times a month	2 to 3 times a week	4 or more times a week		
2	How many standard drinks containing alcohol do you have on a typical day when you are drinking?	1 or 2	3 or 4	5 or 6	7 to 9	10 or more		
3	How often do you have 5 or more drinks in one occasion?	NEVER	Less than monthly	Monthly	Weekly	Daily or almost daily		
4	How often during the last year have you found that you were not able to stop drinking once you started?	NEVER	Less than monthly	Monthly	Weekly	Daily or almost daily		
5	How often in the last year have you failed to do what was normally expected of you because of drinking?	NEVER	Less than monthly	Monthly	Weekly	Daily or almost daily		
6	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	Less than monthly	Monthly	Weekly	Daily or almost daily		
7	How often during the last year have you had a feeling of guilt or remorse after drinking?	NEVER	Less than monthly	Monthly	Weekly	Daily or almost daily		
8	How often during the last year have you been unable to remember what happened the night before because of your drinking?	NEVER	Less than monthly	Monthly	Weekly	Daily or almost daily		
9	Have you or someone else been injured because of your drinking?	NO		Yes, but not in last year		Yes, during the last year		
10	Has a relative, friend, doctor or other health care worker been concerned about your drinking or suggested you cut down?	NO		Yes, but not in last year		Yes, during the last year		
Total								

AUDIT Questions Classifications

Questions 1 – 3 assesses drinking behaviour

Questions 4 – 6 assesses dependence

Questions 7 – 10 assesses consequences or problems related to drinking

AUDIT Scoring Guidance Scoring the AUDIT

The columns in the AUDIT are scored from left to right.

Questions 1 to 8 are scored on a five-point scale from 0, 1, 2, 3, and 4.

Questions 9 & 10 are scored on a three -point scale from 0, 2 and 4.

Record the score for each question in the “score” column on the right, including a • zero for questions 2 to 8 if ‘skipped’.

Record a total score in the “TOTAL” box at the bottom of the column.

The maximum score is 40. Consumption score

Add up questions 1 to 3 and place this sub-score in the adjacent single box in the far right column (maximum score possible = 12). A score of 6 or 7 may indicate a risk of alcohol-related harm, even if this is also the total score for the AUDIT (e.g. consumption could be over the recommended weekly intake of 28 for men and 14 for females in the absence of scoring on any other questions).

Scores of 6 to 7 may also indicate potential harm for those groups more susceptible to the effects of alcohol, such as young people, women, the elderly, people with mental health problems and people on medication. Further inquiry may reveal the necessity for harm reduction advice. Dependence score

Add up questions 4 to 6 and place this sub-score in the adjacent single box in the far right column (maximum score possible = 12). In addition to the total AUDIT score, a secondary ‘dependence’ score of 4 or more as a subtotal of questions 4 to 6, suggests the possibility of alcohol dependence (and therefore the need for more intensive intervention if further assessment confirms dependence). Alcohol-related problems score Any scoring on questions 7

to 10 warrants further investigation to determine whether the problem is of current concern and requires intervention.

Appendix 4:

Below are a number of statements that describe ways in which people act and think. For each statement, please indicate how much you agree or disagree with the statement. If you **Agree Strongly** circle **1**, if you **Agree Somewhat** circle **2**, if you **Disagree somewhat** circle **3**, and if you **Disagree Strongly** circle **4**. Be sure to indicate your agreement or disagreement for every statement below. Also, there are questions on the following pages.

1. I have a reserved and cautious attitude toward life.	1	2	3	4
2. I have trouble controlling my impulses.	1	2	3	4
3. I generally seek new and exciting experiences and sensations.	1	2	3	4
4. I generally like to see things through to the end.	1	2	3	4
5. When I am very happy, I can't seem to stop myself from doing things that can have bad consequences.	1	2	3	4
6. My thinking is usually careful and purposeful.	1	2	3	4
7. I have trouble resisting my cravings (for food, cigarettes, etc.).	1	2	3	4
8. I'll try anything once.	1	2	3	4
9. I tend to give up easily.	1	2	3	4
10. When I am in great mood, I tend to get into situations that could cause me problems.	1	2	3	4
11. I am not one of those people who blurt out things without thinking.	1	2	3	4
12. I often get involved in things I later wish I could get out of.	1	2	3	4
13. I like sports and games in which you have to choose your next move very quickly.	1	2	3	4
14. Unfinished tasks really bother me.	1	2	3	4
15. When I am very happy, I tend to do things that may cause problems in my life.	1	2	3	4
16. I like to stop and think things over before I do them.	1	2	3	4
17. When I feel bad, I will often do things I later regret in order to make myself feel better now.	1	2	3	4
18. I would enjoy water skiing.	1	2	3	4
19. Once I get going on something I hate to stop.	1	2	3	4
20. I tend to lose control when I am in a great mood.	1	2	3	4
21. I don't like to start a project until I know exactly how to proceed.	1	2	3	4

	Agree Strongly	Agree Some	Disagree Some	Disagree Strongly
22. Sometimes when I feel bad, I can't seem to stop what I am doing even though it is making me feel worse.	1	2	3	4
23. I quite enjoy taking risks.	1	2	3	4
24. I concentrate easily.	1	2	3	4
25. When I am really ecstatic, I tend to get out of control.	1	2	3	4
26. I would enjoy parachute jumping.	1	2	3	4
27. I finish what I start.	1	2	3	4
28. I tend to value and follow a rational, "sensible" approach to things.	1	2	3	4
29. When I am upset I often act without thinking.	1	2	3	4
30. Others would say I make bad choices when I am extremely happy about something.	1	2	3	4
31. I welcome new and exciting experiences and sensations, even if they are a little frightening and unconventional.	1	2	3	4
32. I am able to pace myself so as to get things done on time.	1	2	3	4
33. I usually make up my mind through careful reasoning.	1	2	3	4
34. When I feel rejected, I will often say things that I later regret.	1	2	3	4
35. Others are shocked or worried about the things I do when I am feeling very excited.	1	2	3	4
36. I would like to learn to fly an airplane.	1	2	3	4
37. I am a person who always gets the job done.	1	2	3	4
38. I am a cautious person.	1	2	3	4
39. It is hard for me to resist acting on my feelings.	1	2	3	4
40. When I get really happy about something, I tend to do things that can have bad consequences.	1	2	3	4
41. I sometimes like doing things that are a bit frightening.	1	2	3	4
42. I almost always finish projects that I start.	1	2	3	4
43. Before I get into a new situation I like to find out what to expect from it.	1	2	3	4
44. I often make matters worse because I act without thinking when I am upset.	1	2	3	4
45. When overjoyed, I feel like I can't stop myself from going overboard.	1	2	3	

Agree Agree Disagree Disagree

	Strongly	Some	Some	Strongly
46. I would enjoy the sensation of skiing very fast down a high mountain slope.	1	2	3	4
47. Sometimes there are so many little things to be done that I just ignore them all.	1	2	3	4
48. I usually think carefully before doing anything.	1	2	3	4
49. When I am really excited, I tend not to think of the consequences of my actions.	1	2	3	4
50. In the heat of an argument, I will often say things that I later regret.	1	2	3	4
51. I would like to go scuba diving.	1	2	3	4
52. I tend to act without thinking when I am really excited.	1	2	3	4
53. I always keep my feelings under control.	1	2	3	4
54. When I am really happy, I often find myself in situations that I normally wouldn't be comfortable with.	1	2	3	4
55. Before making up my mind, I consider all the advantages and disadvantages.	1	2	3	4
56. I would enjoy fast driving.	1	2	3	4
57. When I am very happy, I feel like it is ok to give in to cravings or overindulge.	1	2	3	4
58. Sometimes I do impulsive things that I later regret.	1	2	3	4
59. I am surprised at the things I do while in a great mood.	1	2	3	4

Scoring Instructions

This is a revised version of the UPPS Impulsive Behavior scale (Whiteside & Lynam, 2001). This version, UPPS-P (Lynam, Smith, Whiteside, & Cyders, 2006), assesses Positive Urgency (Cyders, Smith, Spillane, Fischer, Annus, & Peterson, 2007) in addition to the four pathways assessed in the original version of the scale-- Urgency (now Negative Urgency), (lack of) Premeditation, (lack of) Perseverance, and Sensation Seeking. The scale uses a 1 (agree strongly) to 4 (disagree strongly) response format. Because the items from different scales run in different directions, it is important to make sure that the correct items are reverse-scored. We suggest making all of the scales run in the direction such that higher scores indicate more impulsive behavior. Therefore, we include the scoring key for, (Negative) Urgency, (lack of) Premeditation, (lack of) Perseverance, Sensation Seeking, and Positive Urgency. For each scale, calculate the mean of the available items; this puts the scales on the same metric. We recommend requiring that a participant have at least 70% of the items before a score is calculated.

(Negative) Urgency (all items except 1 are reversed)

items 2 (R), 7(R), 12 (R), 17 (R), 22 (R), 29 (R), 34 (R), 39 (R), 44 (R), 50 (R), 53, 58 (R)

(lack of) Premeditation (no items are reversed)

items 1, 6, 11, 16, 21, 28, 33, 38, 43, 48, 55.

(lack of) Perseverance (two items are reversed)

items 4, 9 (R), 14, 19, 24, 27, 32, 37, 42, 47 (R)

Sensation Seeking (all items are reversed)

items 3 (R), 8 (R), 13 (R), 18 (R), 23 (R), 26 (R), 31 (R), 36 (R), 41 (R), 46 (R), 51 (R), 56 (R)

Positive Urgency (all items are reversed)

items 5 (R), 10 (R), 15 (R), 20 (R), 25 (R), 30 (R), 35 (R), 40 (R), 45 (R), 49 (R), 52 (R), 54 (R), 57 (R), 59 (R)

(R) indicates the item needs to be reverse scored such 1=4, 2=3, 3=2, and 4=1.