Perceived Risk of Alcohol as A Predictor of Alcohol Consumption; Differences in Gender

and Smokers

Claire Callaghan

18328341

Supervisor: Michael Cleary- Gaffney

B.A. (Hons) in Psychology

National College of Ireland

March 2021

Submission of Thesis and Dissertation

National College of Ireland
Research Students Declaration Form
(Thesis/Author Declaration Form)

Name: <u>Claire Callaghan</u>

Student Number: <u>18328341</u>

Degree for which thesis is submitted: <u>Bachelor of Arts in Psychology</u>

Title of Thesis: Perceived Risk of Alcohol as A Predictor of Alcohol

Consumption; Differences in Gender and Smokers

Date: 15/03/2021

Material submitted for award

A. I declare that this work submitted has been composed by myself.   ☑

B. I declare that all verbatim extracts contained in the thesis have been
   distinguished by quotation marks and the sources of information
   specifically acknowledged.   ☑

C. I agree to my thesis being deposited in the NCI Library online
   open access repository NORMA.   ☑

D. ***Either*** *I declare that no material contained in the thesis has been
   used in any other submission for an academic award.
   Or *I declare that the following material contained in the thesis
   formed part of a submission for the award of
   QQI BA (Hons) in Psychology at level 8
   (State the award and the awarding body and list the material below)   ☑

Acknowledgements

I would like to thank my wonderful Mam for her constant support and for telling me how proud she is every step of the way. I'd also like to thank my Uncle, Jimmy, for reading through every assignment I've written and his encouragement. I would like to give a massive thanks to my supervisor, Michael Cleary-Gaffney for his incredible patience and guidance in answering my many questions throughout the year. I would like to give a special thanks to all of my participants who took the time to partake in my study. Finally, I'd like to thank my dog, Maisy, who has put a big smile on my face every day in lockdown, and my friend, Grace, for keeping me sane this year with her encouragement.

Table of Contents

Abstract

Aims: Rates of alcohol consumption are increasingly high in Ireland, and two thirds of males engage in binge drinking regularly. Approximately 1,000 alcohol-related deaths occur annually, placing a significant burden on our human health. The present study sought to provide a greater understanding of perceived risk of alcohol consumption and examine gender differences. This study aimed to explore a gap in the literature, investigating whether concurrent smokers and drinkers have lower perceived risk of alcohol use than alcohol only consumers. Method: A questionnaire was administered to participants (n = 159) through social media on smoking behaviour, the Alcohol Use Disorders Identification Test and Alcohol-Related Risk Perception. Results: Alcohol consumption predicted perceived own vulnerability and peer vulnerability to alcohol, explaining 27% and 26% of the variance. Males were shown to have lower affective risk perception than females. Smokers were shown to have significantly lower perceived own vulnerability and peer vulnerability to alcohol than non-smokers. Conclusions: Concurrent alcohol and tobacco use can lead to underestimation of the harmful effects of alcohol use and demonstrates the need for future longitudinal research. The HSE should publish guidelines on the dangers of misleading risk perceptions of alcohol, and alcohol intervention approaches for men should tackle improving perceived risk.

Perceived Risk of Alcohol Consumption

Alcohol consumption is a serious health problem in Ireland. Rates of consumption have increased from 4.9 litres per person in 1960 to 11.01 litres in 2018 (Alcohol Action Ireland, 2018). As well as this, 58% of men and over a third of women engage in binge drinking, which has resulted in dangerous levels of alcohol-related harm (O'Farrell, Allwright, Downey, Bedford & Howell, 2004). High levels of alcohol consumption have been associated with mental and behavioural disorders such as alcohol dependence (Breese, Sinha, & Heilig, 2011), injuries as a result of violence and road crashes (Watt, Purdie, Roche, & McClure, 2004), and major diseases such as cancer, liver disease and cardiovascular disease (WHO, 2018). 1,000 deaths resulting from alcohol occur annually in Ireland, which are largely due to heart disease and alcohol-related cancers, suicide and accidents (Health Research Board, 2016). Risk perception is referred to as the subjective evaluation which individuals make about the characteristics and severity of a risk (Kahneman & Tversky, 1979). The concept of perceived risk has been linked with various health behaviours, in particular alcohol consumption (Thornton, Baker, Johnson & Lewin, 2013; Lundborg & Lindgren, 2002; Sjoberg, 1998), and acts as a key component of many health behaviour change interventions (Ferrer & Klein, 2015). Hence, risk perceptions are an important aspect of investigating health behaviour and specifically harmful alcohol use.

Risk-taking behaviours include driving fast, unsafe sex, and substance use (Morgenroth, Fine, Ryan, & Genat, 2018). The tendency to engage in these behaviours is influenced by self-perceptions and past experiences with taking risks (Frey, Pedroni, Mata, Rieskamp & Hertwig, 2017). Emotions play a significant role, with distress augmenting perceived risk (Mathur & Levy, 2013). The influence of peers and prominent real life examples also contribute (Tversky & Kahneman, 1973), for example, risk is perceived as higher when a family member has been diagnosed with heart disease, stroke, or cancer

(Acheson et al., 2010). Perceived risk was originally studied to investigate its influence on decision making, revealing that hazards which are out of our control, unfair and potentially catastrophic are perceived as being risky (Slovic, 1987). In addition to disease, nuclear power (Sjöberg, 1999), tsunamis and storms (Stott et al., 2016) have been identified as high risk by public perception. Our risk perceptions may not actually represent the likelihood of a hazard occurring. In particular, many people rate the risk of a terrorist attack as high compared to everyday risks, despite the low likelihood of experiencing these attacks (Zeckhauser & Sunstein, 2008). This demonstrates how irrational fears of large disasters can influence risk perceptions.

There are multiple ways to measure perceived risk, and participants are usually asked to rate their own personal risk or peoples risk in general (Wolff, Larsen & Øgaard, 2019). However, risk perceptions on a personal level are often smaller than general perceived risk, which has been referred to as self-serving bias (Weinstein, 1984). This has also been attributed to unrealistic optimism, which is a cognitive bias leading individuals to believe they are less likely to experience a negative event (Weinstein, 1987). Smokers tend to underestimate their risk of lung cancer compared to other smokers, and believe they are immune to these adverse outcomes (Weinstein, Marcus, & Moser, 2005). It is possible that they convince themselves they are at a lower risk to justify continuing their risky health behaviours. Similarly, frequent and heavy drinkers are more likely to report lower perceived risk about their personal risks concerning alcohol consumption in comparison to experimental drinkers (Leffingwell, Neumann, Leedy & Babitzke, 2007). This heavily suggests that the magnitude of alcohol or tobacco consumption are important factors in determining perceived risk.

The first study on the direct relationship between substance use and perceived risk found that older adolescents reported lower perceived risk of alcohol than younger adolescents

(Novak, Reardon & Buka, 2002), which may have been influenced by higher levels of consumption. Their relationship with alcohol may be healthy so far, with no alcohol-related problems, injuries or aggressive behaviour. As a result, there are no personal negative experiences with alcohol to heighten their risk perception. This finding has been recently highlighted, as students who abstained from alcohol reported significantly higher perceived risk of alcohol than students who reported frequent alcohol use (Merianos, Rosen, Montgomery, Barry & Smith, 2017; Oshi et al., 2018). These studies suggest that there is a negative relationship between alcohol consumption and alcohol-related risk perception. Contrastingly, Lundborg and Lindgren (2002) found a positive relationship among Swedish students. These inconsistencies may be impacted by cultural differences in alcohol acceptance, or increased education regarding substance use. Thus, further research is required on this relationship. As well as alcohol consumption, comparisons among student populations have identified disparities in perceptions and attitudes across various substances. Ecstasy and cannabis users report lower perceived risk of alcohol than alcohol only consumers (Chomynova, Miller & Beck, 2009; Lachenmeier & Rehm, 2015). This may be due to drugs being perceived as more dangerous as alcohol (Cheeta et al., 2018), and those who have experienced no negative past event with drugs may belittle the risks associated with drinking. This is supported by earlier research which found drug users to be more tolerant to alcohol and drug consumption (Paterson & Hammersley, 1991). However, an unexpected finding within the literature is the tendency of drinkers to under-estimate the risks associated with alcohol consumption (Chomynova et al., 2009).

This finding has been supported among a wider range of adults using the Alcohol Use Disorders Identification Test (AUDIT; Babor, 2001), which is a screening tool widely used to identify those at high risk of developing alcohol problems. Adults who scored above the limit according to the AUDIT tended to diminish the risk of alcohol use, with underestimation

being more common among participants of a lower educational level (Gual et al., 2017). This indicates that greater familiarity with alcohol leads to greater acceptance and a lower perception of the risks associated with drinking. Regarding education level, this study on adults is inconsistent with results among students above (Merianos, Rosen, Montgomery, Barry & Smith, 2017; Oshi et al., 2018), which reported differences in perceived risk of alcohol despite having the same level of education. Education level may have a larger impact on adults than adolescents. Older adults are often excluded from this research across substances, and further research should include a wider age range to investigate risk perceptions.

While the majority of studies which focus on individual experiences have identified a negative correlation between perceived risk of alcohol and consumption across a wide age range, a number of other factors have been found to influence perceived risk (Merianos, Rosen, Montgomery, Barry & Smith, 2017; Oshi et al., 2018). Negative experiences can influence our personal risk perceptions, however there has been contrasting evidence to support this. 3 out of 4 studies report that more negative experiences with alcohol-related violence and injury are associated with higher perceived risk of alcohol consumption (Slater & Rasinski, 2005; Karlsson, 2012; Anthenien, Lembo & Neighbors, 2017). On the other hand, one study found no difference in risk perception of alcohol and marijuana use between participants who reported experiencing negative consequences as a result of consumption and those who did not. (Kilmer et al., 2007). Reasons for discrepancies may be due to negative events affecting people in different ways, and the positive consequences of drinking may outweigh the negatives (Lee et al., 2010). Overall, this suggests that consequences can mediate the relationship between drinking and perceptions of drinking, highlighting the importance of our subjective experiences. Among adolescents and young adults, however, peer pressure has been identified as a contributing factor in alcohol consumption (Mekonen,

Fekadu, Chane & Bitew, 2017). Further, students with low perceived risk of alcohol consumption also report high perceived peer alcohol approval and peer alcohol use (Merianos, Rosen, Montgomery, Barry & Smith, 2017). This illustrates how perceptions of peers can influence individual drinking behaviours. A qualitative study has found overestimation of peer alcohol consumption among all age groups (Morris, Larsen, Catterall, Moss & Dombrowski, 2020), which may influence social norms and partially explain the relationship between low perceived risk and high alcohol consumption. Having discussed the factors affecting perceived risk of alcohol consumption, it is important to consider risk factors for harmful alcohol use.

Gender is a major risk factor for both alcohol consumption and alcohol related harm (Rehm et al., 2013), and investigating differences in perceived risk may allow for improved education and interventions to emphasise the dangers of consumption. Global research on gender and alcohol consumption indicate that men exceed women in alcohol consumption quantities (Tabernero, Gutiérrez-Domingo, Luque, García-Vázquez & Cuadrado, 2019; Gómez et al., 2017; Van Gundy, Schieman, Kelley & Rebellon, 2005; Wilsnack, Wilsnack, Kristjanson, Vogeltanz-Holm & Gmel, 2009). The Department of Health reported that 60% of males and 46% of females in Ireland drink alcohol weekly (2015). Few studies have investigated gender differences in perceived risk of alcohol consumption, and there has been conflicting evidence between them. The majority of this research focuses on the adolescent and student population, finding higher levels of alcohol consumption in males and significantly higher perceived risk of alcohol consumption among females (Bocquier, Fressard, Verger, Legleye & Peretti-Watel, 2017; Cail & LaBrie, 2010; Kauffman, Spigner, Hawkins & Loren, 1993; Silver & Poulin, 1997). These results have been replicated with drug use and also found that females report greater perceived risk of illicit drugs (Maričić, Sučić & Šakić, 2013). Additionally, Irish male adolescents report lower perceived risk and

higher levels of consumption of cannabis than females (Barrett & Bradley, 2015). These studies indicate that gender differences in perceived risk can be seen across various substances. In contrast with this, some recent research has reported no gender difference in perceived risk of alcohol (Merianos, Rosen, Montgomery, Barry & Smith, 2017; Pilatti, Read & Pautassi, 2017). This may represent a narrowing gender gap in perceived risk of alcohol consumption, however, further research is required for clarity.

There have been few studies investigating perceived risk of substances from the perspective of smokers. Approximately 17% of Irish people smoke and the majority are aged between 25 and 34 (Healthy Ireland Survey, 2019). While high perceived risk of tobacco use has been consistently found among non-smokers (Aryal & Lohani, 2011; Tomar & Hatsukami, 2007; Murphy-Hoefer, Alder & Higbee, 2004; Patel, Peiper & Rodu, 2012), a gap in the literature has been identified regarding smokers perceived risk of alcohol use. This is concerning given the popularity of concurrent tobacco and alcohol consumption (Britton et al., 2020). A longitudinal study found that perceived risk heavily influenced students' concurrent tobacco and alcohol use, and no gender difference in perceived risk of tobacco consumption was identified (Grevenstein, Nagy & Kroeninger-Jungaberle, 2014). Additionally, adult smokers perceived no difference in the risks of being a heavy smoker or a heavy drinker and smoker (Hermand, Mullet & Coutelle, 1995). However, non-smokers perceived that smokers increase their health risks by consuming both alcohol and tobacco. This suggests a significant difference in perceived risk of alcohol consumption between smokers and non-smokers, but further investigation should be conducted within this area.

The Current Study

Alcohol consumption is an serious public health issue, caused by harmful levels of binge drinking and alcohol related deaths in Ireland. For those who co-use tobacco and alcohol, the danger liver cancer and mouth and throat cancer increases drastically (Falk, Yi,

& Hiller-Sturmhöfel, 2006). This roughly equates to the risks of alcohol multiplied by the risks associated with tobacco. As it is currently unclear whether smokers differ in their beliefs surrounding alcohol related risks compared to non-smokers, it is necessary to conduct further research to understand whether concurrent smokers and drinkers are fully aware of their increased health risks. Chomynova's (2009) study shows strong evidence for underestimation of alcohol consumption among drug users. Hence, the current study aims to reveal this underestimation from the perspective of smokers in a similar way. Through greater understanding of smokers beliefs towards alcohol-related risks, we can improve treatment for co-use smokers and drinkers and emphasise the importance of tackling these substances simultaneously for positive health outcomes. The majority of literature has identified that males have lower perceived risk of alcohol consumption (Cail & LaBrie, 2010; Pilatti et al., 2015; Kauffman, Silver & Poulin, 1997). Although there has been conflicting research, the current study aims to investigate perceived risk of alcohol within an Irish context, where males tend to consume more alcohol than females. Additionally, alcohol plays a large role in Irish culture, by which drinking higher levels of alcohol is more acceptable. Thus, risk perceptions regarding alcohol may be lower in Ireland. Significant gender differences would highlight the necessity for more intensive alcohol intervention approaches for men, with increased education on alcohol-related risks to promote their best health outcome.

Therefore, the aim of the present study is the provide a greater understanding of the relationship between alcohol consumption and perceived risk of alcohol consumption. This study aims to identify gender differences in perceived risk of alcohol consumption, as well as addressing a gap in the literature by investigating whether co-users of alcohol and tobacco underestimate the risks of drinking. The sample of this study will include young adults in Ireland. As the majority of research on perceived risk of alcohol consumption focuses on the student population, this study will provide a more in depth investigation by incorporating a

broader age range. Alcohol consumption will be measured by The Alcohol Use Disorders Identification Test (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, (2001). Perceived risk of alcohol consumption will be measured by the Alcohol-Related Risk Perception Scale (FAR; (Klepper, Odenwald & Rockstroh, 2016). The FAR is an appropriate measure for the current study as it measures perceived risk across four domains. The aims of this study produce the following research questions and hypothesis:

RQ1: Do scores of alcohol consumption predict scores on each of the subscales on a measure of perceived risk of alcohol consumption? Hypothesis for RQ1: Scores of alcohol consumption will predict scores on each subscale on a measure of perceived risk of alcohol consumption

RQ2: Do males have significantly lower scores on each of the subscales of perceived risk of alcohol consumption than females? Hypothesis for RQ2: Males will have significantly lower scores on each of the subscales of perceived risk of alcohol consumption compared to females

RQ:3 Do concurrent smokers and drinkers have significantly lower scores on each of the subscales of perceived risk of alcohol consumption compared to non-smokers? Hypothesis for RQ3: Concurrent smokers and drinkers will have significantly lower scores on each of the subscales of perceived risk of alcohol consumption than non-smokers

Methodology

Participants

The sample for the current study consisted of 159 participants (Females: $n = 108$ (67.9%); Males: $n = 50$ (31.4%); Other: $n = 1$ (0.6%). This was calculated using Tabachnick and Fidell's (2013) formula to calculate minimum sample size for multiple regression analysis: (N > 50 + 8m). N = number of participants and m = number of PVs, therefore the minimum sample size for this study was 66. 35 (22%) of this sample were concurrent smokers and drinkers, 120 (75.48%) were alcohol only consumers, and 4 (2.52%) were abstainers. Participants ranged from 18 to 72 years of age, with an average age of 26 (SD = 9.61). The current study implemented convenience and snowball sampling strategy to recruit participants. These are non-probability sampling methods that recruit participants from the part of the population that is nearby or easy to recruit. Participants were recruited online and they were encouraged to share the link on social media once they had submitted their response.

Materials

The questionnaire included demographic questions and two scales by using the survey creator, Google Forms. The demographic questions on gender, age, employment status, education, and current smoking behaviour were administered to gather a profile of the study participants.

Alcohol use disorders identification test. A screening tool developed to record alcohol consumption and detect harmful drinking (AUDIT; Babor et al, 2001). It was used in the present study to assess participants alcohol consumption during the last year. The AUDIT is valid and has good reliability with a Cronbach's alpha value of between .69 and .87 (So & Sung, 2013). In the current study, the Cronbach alpha coefficient for the AUDIT was .80, indicating good internal consistency. This scale consists of 10 questions and three domains,

assessing an individual's alcohol consumption (Q1-3), dependence (Q4-6) and adverse

consequences of alcohol consumption (Q7-10). Questions 1-8 are scored on a 5 point scale

(0, 1, 2, 3, 4) while questions 9 and 10 are scored on a 3 point scale (0, 2, 4). Each subscale is

added up with a maximum score of 12, which are then added to reflect the individuals alcohol

risk level. A total score of 0 to 7 indicates that the patient is at low risk of alcohol addiction.

A score of 8 to 15 represents a medium risk, and a score of 16 and above suggests the

individual is at high risk of developing an addiction. A recent systematic review of the

AUDIT in primary care settings indicated that this test is the most reliable screening tool for

risks of alcohol consumption (Lange, Shield, Monteiro & Rehm, 2019). It has successfully

been conducted among students (Morales Quintero et al., 2019) and the elderly (Garcia,

Bassitt & Pinto, 2020). See appendix A.

Alcohol-related risk perception. (Far; Klepper et al., 2017) is an adapted version of

the German question of the same name (Klepper, Odenwald & Rockstroh, 2016). The

original version showed good reliability with a Cronbach's Alpha of .90 (Klepper et al.,

2016). This scale measures alcohol related risk-perception across four domains; Perceived

own vulnerability (POV), peer vulnerability (PV), affective risk perception (AR), and

precaution effectiveness (PE) (Agricola, 2015). In the current study, the 20 item version

showed good internal consistency across all four domains, with a Cronbach alpha coefficient

of .87 for the POV subscale, .93 (PV), .98 (AR), and .98 for the PE subscale. There are five

items within each domain. The domains are as follows: (POV): "How do you rate your own

risk if you maintain your drinking habits of…?", (PV): "How high do you rate the risk of a

peer of your age and gender with comparable drinking habits of…?", (AR): "Imagine the

following negative consequences as a result of your alcohol consumption. How threatening

and worrying is the thought of …?", PE: "If you permanently abstain from alcohol, how

much would your personal risk of … decrease?". Participants answer five questions for each

domain on 1. losing a partner, family or friends 2. Getting out of control (embarrassing

yourself) 3. Getting into financial problems 4. Having problems at work (arriving late) 5.

Developing a severe disease. Participants answer each question on a five-level Likert scale

(POV and PV between 1 (very low) and 5 (very high), AR and PE between 1 (very little) and

5 (very strong). A total subscale score of 0-5 represents very low PR, 6-10 represents low

PR, 11-15 represents moderate PR, 16-20 represents high PR, and 21 and above represents

very high PR. See Appendix B.

Design

The study used a quantitative approach with a cross-sectional design. Data was

collected through a survey. The design of this study was mixed. To investigate the first two

hypotheses, a between-participants design was used. The independent variables were gender

and smoking status and the dependent variables were POV, PV, AR and PE. To investigate

the third hypothesis, a within-participants design was used. The predictor variable was

alcohol consumption score and the criterion variables were POV, PV, AR and PE.

Procedure

Data was collected by using an online questionnaire created on Google Forms. This

questionnaire was an anonymous and completed through self-report. A link for the

questionnaire was presented on the researcher's social media account (Instagram). When

participants wished to take part in the study, they clicked the link which brought them to an

information sheet (see appendix C). This contained information on the purpose of the study,

requirements for eligibility to participate, and contact details of the researcher and supervisor

if they had any questions regarding the study. Participants were informed that participation

was voluntary, and they could withdraw consent at any time before submitting their response.

The participant was then presented with the consent form, and were required to consent to

participating in the study by ticking a box and confirm they were over the age of 18 (see appendix D).

The survey consisted of three sections. The first section included demographic questions on gender, age, education, employment status, and smoking behaviour. The second section of the questionnaire was the Alcohol Use Disorders Identification Test (AUDIT), measuring alcohol consumption and behaviour across 10 questions. The final section of the questionnaire was Alcohol-Related Risk Perception (FAR). This included 20 items to assess perceived personal and peer vulnerability to alcohol, affective risk and precaution of the risks. Once participants clicked a button to submit their questionnaire response, they received a debriefing form thanking them for their participation (Appendix E). The survey took approximately 5-10 minutes to complete.

Ethical Considerations

This research study was approved by the National College of Ireland's Ethics Committee and is line with The Psychological Society of Ireland Code of Professional Ethics (2010) and the NCI Ethical Guidelines and Procedures for Research Involving Human Participants. The subject of substance use may be distressing for some participants. In order to address this risk of distress to participants, questionnaire responses were anonymous. Additionally, contact details were provided in the debriefing form for the drug and alcohol helpline and the HSE quit plan to support participants with concerns about their drinking or smoking behaviours.

Results

Descriptive Statistics

The current data is obtained from a sample of 159 participants (*n* = 159). The sample

consisted of 108 (67.9%) females, 50 (31.4%) males, and 1 (0.6%) other. 35 (22%) of this

sample were concurrent smokers and drinkers, 120 (75.48%) were alcohol only consumers,

and 4 (2.52%) were abstainers. Descriptive statistics for all categorical variables are

presented in Table 1.

Table 1
Frequencies for Gender, Education Level, Employment Status, and Smoking Status (N = 159)

Variable	N	Valid %
Gender		
Female	108	67.9
Male	50	31.4
Other	1	.6
Education		
Primary School	2	1.3
Secondary School	89	56
Bachelor's Degree	53	33.3
Master's Degree	5	3.1
PhD or higher	1	.6
Prefer not to say	9	5.7
Employment Status		
Employed full-time	66	41.5
Employed part-time	32	20.1
Student	54	34
Retired	3	1.9
Prefer not to say	4	2.5
Smoking Status		
Smoker and drinker	35	22
Non-Smoker	120	75.5
Abstainer	4	2.52

Descriptive statistics were conducted for all continuous variables including age,

alcohol consumption, and perceived risk of alcohol consumption across four domains, which

are presented in Table 2. These domains include perceived own vulnerability (POV), peer

vulnerability (PV), affective risk perception (AR), and precaution effectiveness (PE). The

mean age of participants was 25.96 (SD = 9.61), which ranged from 18 to 72. Means (M),

Standard Deviations (SD), Medians (MD), and Range were obtained, along with tests of

normality. The Kolmogorov-Smirnov result was significant ($p < .05$) for the alcohol-related

risk perception scale, suggesting that data was non-normally distributed. Inspection of

histograms demonstrated that POV and PV were positively skewed, however in line with the

central limit theorem the current sample size was large enough that the distribution of sample

means are well approximated by a normal distribution. Therefore the distribution of scores

will be treated as normal. (See Appendix F for evidence of data).

Table 2

Descriptive statistics for all continuous variables (N = 159)

Variable	*M* [95% CI]	Median	*SD*	Range
Age	25.96 [24.46, 27.47]	22	9.61	18 - 72
Alcohol Consumption	8.30 [7.47, 9.13]	7	5.29	0 – 24
Perceived Own Vulnerability	7.08 [6.54, 7.60]	6	3.36	5 - 20
Peer Vulnerability	8.68 [7.93, 9.42]	6	4.75	5 - 23
Affective Risk Perception	13.53 [12.29, 14.77]	10	7.92	5 - 25
Precaution Effectiveness	12.11 [10.90, 13.33]	8	7.80	5 - 25

Inferential Statistics

Hypothesis 1

To determine whether scores of alcohol consumption predict perceived risk of alcohol

consumption across four domains, four hierarchical multiple regressions were conducted.

Preliminary analyses were conducted to ensure no violation of the assumptions of normality,

linearity, and homoscedasticity. Data was non-normally distributed for each subscale (POV,

PV, AR, and PE) of perceived risk of alcohol. Tests for multicollinearity indicated that all

tolerance and VIF values were in an acceptable range for all subscales. This indicated that the

data was suitable for multiple regression analysis.

Hierarchical multiple regression was performed to investigate whether alcohol

consumption predicts perceived own vulnerability (POV) to alcohol, and whether smoking

status adds predictive utility to a model of POV when controlling for alcohol consumption

and gender. Correlations amongst the predictor variables (alcohol consumption, gender, and

smoking status) and the criterion variable were examined and these are presented in table 3.

Two of the three predictor variables were significantly correlated with the criterion variable;

alcohol consumption ($r = .52$, $p = < .001$) and smoking status ($r = .22$, $p = .002$).

Table 3

Correlations for alcohol consumption, gender, smoking status on perceived own vulnerability

Variable	1.	2.	3.	4.
1. Perceived own vulnerability	-			
2. Alcohol consumption	.52***	-		
3. Gender	.09	.17*	-	
4. Smoking status	.22*	.33***	.11	-

Note: * p < .05, *** p < .001

In the first step, one predictor variable was entered; alcohol consumption. The model

was statistically significant ($F (1, 157) = 56.63$; $p < .001$) and explained 27% of the variance

in perceived own vulnerability (see table 4 for full details). After the entry of gender in step

2, the total variance explained by the model was 27% ($F (2, 156) = 28.14$; $p < .001$). The

introduction of gender explained no additional variance in POV, after controlling for alcohol

consumption, a change that was not statistically significant (R^2 Change = .000; $F (1, 156) =$

.00; $p = .968$). In step 3, smoking status was entered which explained 25.4% of the total

variance of the model ($F (3, 155) = 18.93$; $p < .001$). The introduction of smoking status

explained .3% additional variance in POV, after controlling for alcohol consumption and

gender, a change that was not statistically significant (R^2 Change = .003; $F (1, 155) = .65$; $p =$

.423). The final model explained 27% of the variance in POV, and one of the three predictor

variables, alcohol consumption, was found to uniquely predict POV to a statistically

significant degree. Alcohol consumption was a positive predictor of POV ($\beta = .50$, $p < .001$).

Table 4
Hierarchical regression model predicting perceived own vulnerability to alcohol

Variable	R^2	R^2 Change	B	SE	β	t	p
Step 1	.265	-					
Alcohol consumption			.33	.04	.52***	7.53	< .001
Step 2	.265	0					
Alcohol consumption			.33	.04	.51***	7.39	< .001
Gender			.02	.49	.00	.04	.968
Step 3	.268	0					
Alcohol consumption			.32	.05	.50***	6.73	< .001
Gender			-.00	.49	.00	-.01	.993
Smoking Status			.48	.59	.06	.80	.423

Note. R2 = R-squared; Adj R2 = Adjusted R-squared; β = standardized beta value; B = unstandardized beta value; SE = Standard errors of B; CI 95% (B) = 95% confidence interval for B; N = 213; Statistical significance: * p < .05, *** p < .001

Hierarchical multiple regression was performed to investigate whether alcohol consumption predicts peer vulnerability (PV) to alcohol, and whether smoking status adds predictive utility to a model of PV when controlling for alcohol consumption and gender. One outlier was identified on the scatterplot with a standard residual of more than 3.3, however this score was valid and within the possible range and was used in the analysis. Correlations amongst the predictor variables (alcohol consumption, gender, and smoking status) and the criterion variable were examined and these are presented in table 5. Two of the predictor variables were significantly correlated with PV and ranged from weak to strong; alcohol consumption (r = -.51, p < .001) and smoking status (r = -.25, p < .001).

Table 5
Correlations for alcohol consumption, gender, smoking status on peer vulnerability

Variable	1.	2.	3.	4.
1. Peer vulnerability	-			
2. Alcohol consumption	.51***	-		
3. Gender	.07	.17*	-	
4. Smoking status	.25*	.33***	.11	-

Note: * p < .05, *** p < .001

In the first step, one predictor variable was entered; alcohol consumption. The model was statistically significant (F (1, 157) = 53.97; p < .001) and explained 26% of the variance in PV (see table 6 for full details). After the entry of gender in step 2, the total variance explained by the model was 26% (F (2, 156) = 26.84; p < .001). The introduction of gender

explained 0% additional variance in PV, after controlling for alcohol consumption and this

change was not significant (R^2 Change = .000; F (1, 156) = .05; p = .830). In step 3, smoking

status was entered which explained 26.3% of the total variance of the model (F (3, 155) =

18.47; p < .001). The introduction of smoking status explained 0.1% additional variance in

PV, after controlling for alcohol consumption and gender, a change that was not statistically

significant (R^2 Change = .007; F (1, 155) = 1.53; p = .218). In the final model, one of the

three predictor variables, alcohol consumption, was found to uniquely predict PV to a

statistically significant degree. Alcohol consumption was a positive predictor of PV (β = .51,

p < .001).

Table 6
Hierarchical regression model predicting peer vulnerability to alcohol

Variable	R^2	R^2 Change	B	SE	β	t	p
Step 1	.256	-					
Alcohol consumption			.45	.06	.51***	7.35	< .001
Step 2	.256	0					
Alcohol consumption			.46	.06	.51***	7.26	< .001
Gender			-.15	.69	-.02	-.22	.830
Step 3	.263	.01					
Alcohol consumption			.43	.07	.48***	6.50	< .001
Gender			-.20	.69	-.02	-.29	.772
Smoking Status			1.04	.84	.09	1.24	.218

Note. R2 = R-squared; Adj R2 = Adjusted R-squared; β = standardized beta value; B = unstandardized beta value; SE = Standard errors of B; CI 95% (B) = 95% confidence interval for B; N = 213; Statistical significance: * p < .05, *** p < .001

Hierarchical multiple regression was performed to investigate whether alcohol

consumption predicts affective risk perception (AR) of alcohol, and whether smoking status

adds predictive utility to a model of AR when controlling for alcohol consumption and

gender. One outlier was identified on the scatterplot with a standard residual of more than

3.3, however this score was valid and within the possible range and was used in the analysis.

Correlations amongst the predictor variables (alcohol consumption, gender, and smoking

status) and the criterion variable were examined and these are presented in table 7. There was

a weak, negative correlation between gender and AR (r = -.23, p = .017).

Table 7
Correlations for alcohol consumption, gender, smoking status on affective risk perception

Variable	1.	2.	3.	4.
1. Affective risk perception	-			
2. Alcohol consumption	.13	-		
3. Gender	-.23*	.17*	-	
4. Smoking status	.08	.33***	.11	-

Note: * p < .05, *** p < .001

In the first step, alcohol consumption was entered. The model was non-significant (F (1, 157) = 2.51; p = .115) and explained 1.6% of the variance in AR (see table 8 for full details). After the entry of gender in step 2, the total variance explained by the model was 8.3% (F (2, 156) = 7.02; p = .001). The introduction of gender explained 6.7% additional variance in AR, after controlling for alcohol consumption, a change that was statistically significant (R^2 Change = .067; F (1, 156) = 11.37; p = .001). In step 3, smoking status was entered which explained 8.5% total variance of the model (F (3, 155) = 4.82; p = .003). The introduction of smoking status explained 0% additional variance in AR, after controlling for alcohol consumption and gender, a change that was not statistically significant (R^2 Change = .003; F (1, 155) = .46; p = .500). In the final model, one of the three predictor variables, gender, was found to uniquely predict AR to a statistically significant degree. Gender was a negative predictor of AR (β = -.26, p = .001).

Table 8
Hierarchical regression model predicting affective risk perception

Variable	R^2	R^2 Change	B	SE	β	t	p
Step 1	.016	-					
Alcohol consumption			.19	.12	.13	1.59	.115
Step 2	.083	.067					
Alcohol consumption			.25	.17	.17*	2.18	.031
Gender			-4.30	1.27	-.26***	-3.37	.001
Step 3	.085	.003					
Alcohol consumption			.23	.12	.15	1.85	.067
Gender			-4.35	1.28	-.27***	-3.40	< .001
Smoking Status			1.05	1.56	.06	.68	.500

Note. R2 = R-squared; Adj R2 = Adjusted R-squared; β = standardized beta value; B = unstandardized beta value; SE = Standard errors of B; CI 95% (B) = 95% confidence interval for B; N = 213; Statistical significance: * p < .05, *** p < .001

Hierarchical multiple regression was performed to investigate whether alcohol consumption predicts precaution effectiveness (PE) of alcohol, and whether smoking status adds predictive utility to a model of PE when controlling for alcohol consumption and gender. Correlations amongst the predictor variables (alcohol consumption, gender, and smoking status) and the criterion variable were examined and these are presented in table 9. There was no statistically significant correlation between the predictor variables and PE.

Table 9
Correlations for alcohol consumption, gender, smoking status on precaution effectiveness

Variable	1.	2.	3.	4.
1. Affective risk perception	-			
2. Alcohol consumption	.10	-		
3. Gender	-.02	.17*	-	
4. Smoking status	.-00	.33***	.11	-

Note: * p < .05, *** p < .001

In the first step, alcohol consumption was entered. Gender was entered in the second step, and smoking status was entered in the third step. In the final model, none of the three predictor variables were found to significantly predict precaution effectiveness (PE) of alcohol to a significant degree. Smoking status did not significantly add predictive variability to the model (See table 10 for full details).

Table 10
Hierarchical regression model predicting precaution effectiveness

Variable	R^2	R^2 Change	B	SE	β	t	p
Step 1	.009	-					
Alcohol consumption			.14	.12	.10	1.20	.233
Step 2	.010	.001					
Alcohol consumption			.15	.12	.10	1.24	.216
Gender			-.51	1.30	-.03	-.39	.694
Step 3	.011	.001					
Alcohol consumption			.17	.13	.11	1.32	.190
Gender			-.48	1.31	-.03	-.37	.715
Smoking Status			-.71	1.59	-.04	-.45	.655

Note. R2 = R-squared; Adj R2 = Adjusted R-squared; β = standardized beta value; B = unstandardized beta value; SE = Standard errors of B; CI 95% (B) = 95% confidence interval for B; N = 213; Statistical significance: * p < .05, *** p < .001

Hypothesis 2

To determine whether males have significantly lower perceived risk of alcohol than females, an independent samples t-test was conducted. Males and females perceived risk of alcohol scores were compared across four domains. Preliminary analyses were performed to ensure no violation of the assumptions of normality and homogeneity of variance. Five participants were excluded as four were abstainers and one identified as other. There was a significant difference in consumption scores, with males (M = 5.70, SD = 2.41) scoring higher than females (M = 4.51, SD = 1.80); $t(71.72)$ = -2.92, p = .005). The magnitude of the differences in the means (mean difference = -1.14, 95% CI = -1.91, -.36) was moderate (Cohen's d = .56). There was a significant difference in affective risk perception of alcohol scores, with males (M = 12.14, SD = 7.95) scoring lower than females (M = 16.70, SD = 6.97); $t(156)$ = -3.48, p = .001). The magnitude of the differences in the means (mean difference = -4.56, 95% CI = -7.15, -1.98) was moderate (Cohen's d = .61). There was no statistically significant difference between males and females within the three remaining domains; POV, PV and PE. These results indicate that males have moderate AR of alcohol consumption while females have high AR. See table 11 for further details.

Table 11
Group differences between males and females for perceived risk of alcohol (N = 159)

	Male			Female							
	M	SD	n	M	SD	n	t	df	p	95% CI	Cohens d
POV	22.42	3.83	50	23.15	3.14	108	-1.26	156	.21	-1.87, .41	
PV	20.78	4.77	50	21.56	4.76	108	-.962	156	.34	-2.40, .83	
AR	12.14	7.95	50	16.70	6.97	108	-3.48	156	.001	-7.15, -1.98	0.61
PE	18.18	7.58	50	17.78	7.96	108	.31	156	.77	-2.25, 3.05	

Note: CI = confidence interval for mean difference

Hypothesis 3

An independent samples t-test was conducted to determine whether smokers have significantly lower perceived risk of alcohol consumption than non-smokers. Preliminary analyses were performed to ensure no violation of the assumptions of normality and

homogeneity of variance. Four participants were excluded as they were abstainers. There was

a significant difference in perceived own vulnerability to alcohol scores, with smokers (M =

21.51, SD = 3.92) scoring lower than non-smokers (M = 23.28, SD = 3.14); $t(47.45)$ = 2.45, p

= .018). The magnitude of the differences in the means (mean difference = 1.77, 95% CI

=.32, 3.22) was medium (Cohen's d = .50). There was also a significant difference in peer

vulnerability to alcohol scores, with smokers (M = 19.11, SD = 5.32) scoring lower than non-

smokers (M = 21.84, SD = 4.44); $t(48.63)$ = 2.76, p = .008). The magnitude of the differences

in the means (mean difference = 2.73, 95% CI = .74, 4.71) was medium (Cohen's d = .56).

There was no statistically significant difference between smokers and non-smokers for AR

and PE. These results indicate that smokers have lower perceived own vulnerability and peer

vulnerability to alcohol consumption than non-smokers. See table 12 for further details.

Table 12

Group differences between smokers and non-smokers for perceived risk of alcohol (N = 159)

	Smoker			Non-Smoker							
	M	SD	n	M	SD	n	t	df	p	95% CI	Cohens d
POV	21.51	3.92	35	23.28	3.14	120	2.45	47.45	.018	.32, 3.22	0.50
PV	19.11	5.32	35	21.84	4.44	120	2.76	48.63	.008	.74, 4.71	0.56
AR	12.40	6.87	35	13.98	8.15	120	1.42	64.46	.258	-1.18, 4.33	
PE	17.94	7.16	35	18.07	7.92	120	.08	153	.934	-2.82, 3.07	

Note: * p < .05, *** p < .001

To summarise, alcohol consumption significantly predicts perceived own

vulnerability (POV) and peer vulnerability (PV) to alcohol consumption. Gender also

significantly predicts AR. Males were shown to have significantly lower AR than females.

POV and PV were also lower for males compared to females, however this finding was not

significant. Smokers were shown to have significantly lower POV and PV than non-smokers.

Smokers also have lower AR than non-smokers but not to a statistically significant level.

Discussion

The current study aimed to investigate the relationship between alcohol consumption and perceived risk of alcohol consumption. It also sought to examine gender differences as well as disparities between tobacco and alcohol co-users and alcohol only consumers in perceived risk of alcohol consumption. Prior findings showed that alcohol consumption plays an important role in perceiving the risks associated with alcohol (Leffingwell, Neumann, Leedy & Babitzke, 2007; Sjoberg, 1998; Oshi et al., 2018). With regards to gender differences, males have been shown to have lower perceived risk of drinking compared to females (Bocquier et al., 2017; Silver & Poulin, 1997; Cail & LaBrie, 2010). Previous research has suggested that concurrent smokers and drinkers have lower perceived risk of alcohol consumption than alcohol only consumers (Hermand, Mullet & Coutelle, 1995; Grevenstein, Nagy & Kroeninger-Jungaberle, 2014), and particularly high perceived risk among non-smokers (Aryal & Lohani, 2011; Patel, Peiper & Rodu, 2012). From this research, three hypotheses were formed to address the aims for this study.

It was hypothesized, from prior literature, that (H1) alcohol consumption scores would predict scores on each subscale on perceived risk of alcohol consumption, and smoking status would add predictive utility to a model of perceived risk when controlling for alcohol consumption and gender. This was explored using four hierarchical multiple regression analyses. Smoking status and gender did not add significant predictive variability in the majority of these analyses. In the final model, alcohol consumption was a positive predictor of POV, accounting for 27% of the variance, but smoking status and gender were not associated with any changes. In the final model, alcohol consumption was a positive predictor of PV and accounted for 26% of the variance in the model. In AR, alcohol consumption was not a significant predictor, however gender was associated with a negative change in the model (This signifies males as they were coded as 0). None of the variables

were significantly associated with a change in PE in the final model and only accounted for

1.1% of the variance in PE. These findings suggest that a tendency towards higher alcohol

consumption can predict higher perceived personal and vulnerability alcohol consumption.

This is consistent with numerous studies which have also found alcohol consumption to be

related with personal alcohol risks in a positive manner (Room, Bondy, & Ferris, 1995;

Sjoberg, 1998; Lundborg & Lindgren, 2002). These results contrast with some prior research,

which found that half of participants in Australia who reported high levels of alcohol

consumption did not perceive their drinking to be harmful (Pettigrew et al., 2016). This may

be due to cultural differences in beliefs towards alcohol, or methodological differences as

Pettigrew (2016) failed to define the risk target as individual and questions may be

misinterpreted.

For H2, an independent samples t-test was conducted to investigate whether males

had lower scores on each subscale of perceived risk of alcohol consumption compared to

females. Results showed that males scored lower on AR than females. This suggests that

although males tend to drink more than females, they are not as aware of the health risks

associated with harmful drinking as females. This may be closely linked with biological

differences and stereotypes. This current finding is consistent with past research which also

found lower perceived risk of alcohol consumption in males compared to females (Bocquier,

Fressard, Verger, Legleye & Peretti-Watel, 2017; Cail & LaBrie, 2010; Pilatti et al., 2015).

Lastly, H3 stated that concurrent smokers and drinkers would have lower scores on

each subscale of perceived risk of alcohol consumption than only drinkers. This was

investigated using an independent samples t-test; from this it was found that concurrent

smokers and drinkers have significantly lower POV and PV to alcohol consumption than

drinkers. These findings suggest that individuals who smoke are more accepting of the risks

associated with harmful drinking than those who do not smoke. Concurrent smokers and

drinkers may be in denial of their risky health behaviours and unwilling to accept the health consequences of harmful drinking, which is closely tied with unrealistic optimism (Weinstein, Marcus, & Moser, 2005). This is consistent with prior research which found that smokers did not perceive themselves to be at higher risk of developing severe health issues than those who consume alcohol alone (Hermand, Mullet, & Coutelle, 1995). Based on the above findings, all three hypotheses are partially accepted.

As alcohol consumption is exceptionally high in Ireland, it is surprising to find that those with high levels of consumption have high perceived personal and peer vulnerability to alcohol. Hence, there is a certain level of rationality in risk ratings. Indeed, individual perceived risk may be disproportionate to reality even if it is correlated with alcohol consumption levels (Ferrer & Klein, 2015). 67% of Irish adults who consume harmful alcohol levels inaccurately labelled themselves as moderate drinkers (Mongan, Millar, O'Dwyer, Long, & Galvin, 2020). Therefore, it is possible that some current participants under-reported their alcohol use. However, self-report data on alcohol consumption is reasonably valid (Del Boca & Darkes, 2003). The current findings are incongruent with prior research finding alcohol consumption to be negatively associated with perceived risk of alcohol use (Merianos et al., 2017; Oshi et al., 2018). This may be influenced by age differences, as prior studies focus on students, while the current study included those aged 18 to 72. This suggests that adults perceive alcohol risks more accurately than students and adolescents, which may be due to more past experiences, particularly negative experiences while drinking. The current findings raise the question as to why harmful drinkers continue to drink, despite being aware of the risks. The main motivations for drinking alcohol include internal coping, improving emotional state, and external sociability (Arterberry et al., 2012).

Additionally, motivation to drink alcohol may depend on the subjective response to individual experiences. It may be the case that the social outlet of alcohol use and other

positive consequences outweigh their negative past experiences and they continue to drink

(Lee et al., 2010). Further, this study revealed that as personal consumption increases, as does

perceived peer vulnerability to alcohol. This is inconsistent with research finding a negative

relationship between alcohol consumption and peer perceived risk (Merianos et al., 2017),

which suggests that adults view themselves as experiencing similar negative consequences of

drinking as their peers. Overestimation of peer drinking can influence personal drinking

behaviours (Cox et al., 2019), however this is unknown within the current results. Future

research should measure peer perceived risk within friend groups to investigate

overestimation of peer consumption. Longitudinal research would identify whether perceived

risk alters with consumption changes throughout the lifespan.

It is concerning that the current findings revealed that men are not as aware of the

health risks of alcohol use as women. These findings are inconsistent with a recent study

finding no gender difference in perceived risk of alcohol use (Pilatti et al., 2017). This may

be due to methodological differences, as Pilatti (2017) measured perceived risk of the general

population, whereas the current study measured affect associated with personal risk. An

inverse relationship has consistently been found between perceived risk and benefit

(Alkahami & Slovic, 1994; Mostafapour, Meyer, & Scholer, 2019; Markiewicz, Muda,

Kubińska, & Augustynowicz, 2020). Related, women tend to be less tolerant of risks

associated with health, social and financial domains than men (Rolison & Shenton, 2019),

and gender differences in risk and benefit may be partly responsible for this. It is possible that

males perceive the benefits of alcohol use as greater than females, which would in turn lead

them to believe there are less risks involved in drinking. Additionally, males are more

inclined to take risks in relation to conflict (Campbell, 1999; Staniloiu & Markowitsch, 2012)

and drug use (Maričić, Sučić & Šakić, 2013; Barrett & Bradley, 2015), as well as smaller

everyday risks such as crossing a busy road (Pawlowski, Atwal, & Dunbar, 2008). This has

been partly explained by differences in the insula and dorsal striatum, brain regions

responsible for computing risk and preparing to take action (Mather & Lighthall, 2012). They

also found that during times of acute stress, males tend to gravitate towards a risk while

females tend to shy away from a risk, which is significant considering the stressful nature of

our lives today.

       In addition to biological differences, gender differences in affective risk perception

may be influenced by stereotypes. An experiment in which participants made theoretical

risky decisions, such as gambling, for themselves and others found that women were more

risk averse than men, which is consistent with the current findings (Ball, Eckel, &

Heracleous, 2010). However, they also found that predictions of others choices reflected

stereotypes about gender; so that stronger people, typically male, took more risks than

women. This perception bias may influence how women report their drinking behaviours. A

study interviewed students on the extent to which they endorse gender-double standards for

alcohol use (Visser & McDonnell, 2012). Although they identified few gender differences in

consumption, drinking, binge drinking and drunkenness were perceived as masculine, and

even the most egalitarian participants reported increased judgement of women's drinking.

Further, women reported altering their drinking style to maintain a desired gender identity.

This evidence may facilitate in explaining why females have higher affective perceived risk

of alcohol consumption. From the current findings, making men more informed of the

negative consequences of alcohol is necessary to increase their affective risk perception.

Intervention programmes which target harmful alcohol consumption should be more

thorough for men, and include risk perception questionnaires to increase their perceived risk

and diminish the perceived benefits of alcohol use.

       While there has been little prior research conducted on concurrent smokers and

drinkers perceived risk of alcohol, students who smoke were found to have increased

perceived benefit of alcohol and drug use. (Copeland, Kulesza, Patterson, & Terlecki, 2009).

This supports the current findings, such that high perceived benefit is associated with

diminished perceived risk, and those who smoke perceived lower vulnerability to alcohol

than non-smokers. Additionally, a similar pattern of results were obtained for drug use, with

ecstasy (Chomynova et al., 2009) and cannabis users (Paterson & Hammersley, 1991;

Lachenmeier & Rehm, 2015) reporting lower perceived risk of alcohol than non-drug users.

The current findings build upon prior research by comparing tobacco and alcohol co-users

with alcohol consumers, which suggests that underestimation of alcohol risks are common

among those who consume additional substances believed to more dangerous, such as

tobacco and drugs.

Individuals who believe themselves to be at lower risk for outcomes than is warranted

is termed unrealistic optimism (Weinstein, 1987), which is common and transcends gender,

age, ethnicity and nationality (Waters et al., 2011). Explanations for this theory come from

personal goals and outcomes we want from our lives, including self-enhancement and

perceived control (Shepperd et al., 2002). Individuals will believe in more positive outcomes

as this is what they would like the outcome to be, and they are more optimistic when they feel

they have control over a situation (Klein & Helweg-Larsen, 2002). This may explain why

concurrent smokers and drinkers are unrealistically optimistic about experiencing alcohol-

related issues in the future. These explanations may suggest why concurrent smokers and

drinkers are unrealistically optimistic about experiencing alcohol-related issues in the future.

The current findings also revealed that smokers have lower perceived peer vulnerability to

alcohol, which may influence their own perceived risk. Thus, if a smokers peer smokes and

drinks with no negative health outcomes, they may believe they will have the same fate.

Concurrent smokers and drinkers reporting lower perceived vulnerability than drinkers alone

is concerning, and can be severely damaging to their health if they are in denial of adverse

outcomes. Possible risk denial may result in larger consumption and greater susceptibility of detrimental health outcomes. Future research should control for smoking behaviour and investigate unrealistic optimism as a mediator of perceived risk and health behaviours. By tackling unrealistic optimism of substance use, this may allow for more balance of realistic perspectives on alcohol-related harm and other health behaviours.

Strengths and Limitations

A strength of this study was the sensitivity of the FAR scale (Klepper et al., 2016), used to measure perceived risk of alcohol consumption. Although males were disproportionately represented in the sample, females (67.9%) and males (31.4%), the FAR revealed gender differences in AR. This highlights the advantages of using this scale to measure perceived risk of alcohol, as it has good reliability across four subdomains; POV (.87), PV (.93), AR (.98), and PE (.98). Future research would benefit from developing a similar scale to measure perceived risk of other substances, as it is suitable for a wide age range compared to scales aimed at students. Another strength of this study is that it attempts to build upon prior research in a novel way. To the researchers knowledge, previous studies have not investigated if concurrent smokers and drinkers differ on scores of perceived risk of alcohol compared to alcohol only consumers. Future research could aim to replicate the current differences between smokers and non-smokers with a longitudinal design to investigate whether smokers perceived risk of substances alters over time in comparison to non-smokers.

This study identifies several limitations. First, drug consumption was not accounted for, which may have been a confounding variable in the current study. As prior research has found significantly lower perceived risk of alcohol use among those who take drugs (Chomynova et al., 2009), drug use may have influenced the current differences found between males and females, and concurrent smokers and drinkers on perceived risk of

alcohol. Future research could investigate disparity between abstainers, drinkers, smokers, and drug users on their perceived risk of alcohol, tobacco, and illicit drugs. This would provide a wider, more in depth investigation of perceived risk across substances and substantially build upon literature published to date in this field. The current study did not account for participants motivations for alcohol and tobacco consumption, which may have explained why both males and those who smoke reported lower scores.

Both of the scales relied on self-report measures which was also a limitation of the current study. Using self-report scales makes data more vulnerable to self-selecting bias, and responses may have been influenced by how the participant was feeling at the time, rather than their overall feelings regarding the variables measured. Although responses were anonymous, some participants may have felt embarrassed or in denial of their risky alcohol consumption, and as a result marked themselves higher on questions about alcohol related risks. Perhaps qualitative research would provide more in depth results on risk perceptions of alcohol consumption.

Implications

There is a growing body of evidence which strongly suggests, and in the present studies case, how ones alcohol consumption predicts their personal perceived risk of alcohol consumption. Hence, the practical implications of this study are that lower perceived risk of alcohol, particularly with males, should be tackled to increase their awareness of the risks associated with alcohol. 64% of young males in Ireland engage in binge drinking, and 52% of older males continue to binge drink later in life (Alcohol Action Ireland, 2018). Therefore, it would be beneficial to implement more rigorous, thorough intervention approaches for males seeking assistance for harmful alcohol consumption. Keeping a record of patients perceived risk of alcohol would be useful to track how effective these programmes are. Based on the findings from the current study, the broader implications from a societal point of view are

that the minister for health (Stephen Donnelly TD) could implement a new policy outlining underestimation of alcohol risks among males and smokers, and provide education on risk perceptions surrounding the negative health consequences of drinking in the 'Reducing Harm, Supporting Recovery 2017-2025' strategy for the Healthy Ireland Framework. Additionally, the Health Service Executive (HSE) may consider publishing health guidelines regarding the danger of concurrent drinking and smoking, and the negative impact this can have on how accepting we are of the detrimental health outcomes related to alcohol. This would be mutually beneficial and in the best interest of both the government and general public, as recommendations may decrease the rates of alcohol-related harm, and may lead to additional funding for the Department of Health to spend on preventative measures of alcohol and tobacco addiction instead of treatment alone, as co-use can lead to liver cancer, and mouth and throat cancer (Falk, Yi, & Hiller-Sturmhöfel, 2006).

Conclusion

The current study contributes to the limited literature surrounding beliefs and perceptions of alcohol related risks from the perspective of concurrent smokers and drinkers. This study also builds upon previous research by examining four domains of risk perceptions within an Irish context. The study revealed that those who smoke and drink are more tolerant of alcohol-related risks than drinkers. Future studies may employ longitudinal research to clearly determine the factors, including optimism, which may influence this underestimation of alcohol risks and how this develops over an individual's lifetime. The current findings provide support for prior studies which have found that higher alcohol consumption is predictive of higher personal and peer perceived vulnerability to alcohol, suggesting a level of rationality in perceptions of alcohol risks. The current study also found that males have lower affective perceived risk of alcohol than females, which is consistent with previous findings that males tend to diminish the risks of drinking. Rates of alcohol consumption in

Ireland are increasingly high, particularly rates of binge drinking among males (Alcohol Action Ireland, 2018). Therefore these findings highlight the importance of informing males of the risk of adverse health outcomes as a result of harmful alcohol consumption in order to increase their affective risk perceptions of alcohol use. Harmful alcohol consumption has been associated with violence, heart disease, cancer and suicide (Breese et al., 2011; WHO, 2018). Hence, the broader implications of this study are how the government could adopt a new policy on Irish peoples risk perceptions regarding alcohol, and the HSE could write new health guidelines surrounding the impact that concurrent smoking and drinking can have on both perceptions of our health and alcohol-related harm.

References

Acheson, L. S., Wang, C., Zyzanski, S. J., Lynn, A., Ruffin, M. T., Gramling, R., Rubinstein, W. S., O'Neill, S. M., & Nease, D. E. (2010). Family history and perceptions about risk and prevention for chronic diseases in primary care: a report from the family healthware impact trial. *Genetics in medicine : official journal of the American College of Medical Genetics, 12*(4), 212–218. https://doi.org/10.1097/GIM.0b013e3181d56ae6

Agricola, C. (2015). Entwicklung und Validieren einer Kurzversion eines Fragebogens zur Erfassung Alkoholassoziierter Risikowahrnehmung – Untersuchung an einer Stichprobe Alkoholkranker und Gesunder Personen. *Master'S Thesis, University Of Konstanz, Konstanz.*.

Alcohol Action Ireland. (2018). How much are we really drinking? Retrieved from https://alcoholireland.ie/how-much-are-we-really-drinking/

Anthenien, A., Lembo, J., & Neighbors, C. (2017). Drinking motives and alcohol outcome expectancies as mediators of the association between negative urgency and alcohol consumption. *Addictive Behaviors*, *66*, 101-107. doi:10.1016/j.addbeh.2016.11.009

Arterberry, B. J., Martens, M. P., Cadigan, J. M., & Smith, A. E. (2012). Assessing the Dependability of Drinking Motives via Generalizability Theory. *Addiction research & theory, 45*(4), 292–302. https://doi.org/10.1177/0748175612449744

Aryal, R. R., & Lohani, S. P. (2011). Perceived risk of cigarette smoking among college students. *Journal of Nepal Health Research Council*, *9*(2), 176–180. doi:10.33314/jnhrc.v0i0.267

Babor, T. F., Higgins-Biddle, J. C., Saunders, J. B., & Monteiro, M. G. (2001). The alcohol use disorders identification test: Guidelines for use in Primary Health Care. *World Health Organisation.* doi:10.1.1.505.4146

Ball, S., Eckel, C. C., & Heracleous, M. (2010). Risk aversion and physical prowess: Prediction, choice and bias. *Journal of Risk and Uncertainty*, *41*(3), 167–193. https://doi.org/10.1007/s11166-010-9105-x

Barrett, P., & Bradley, C. (2015). Attitudes and perceived risk of cannabis use in Irish adolescents. *Irish Journal Of Medical Science*, *185*(3), 643-647. doi: 10.1007/s11845-015-1325-2

Bocquier, A., Fressard, L., Verger, P., Legleye, S., & Peretti-Watel, P. (2017). Alcohol and cancer: risk perception and risk denial beliefs among the French general population. *European Journal Of Public Health*, *27*(4), 705-710. doi: 10.1093/eurpub/ckx024

Breese, G. R., Sinha, R., & Heilig, M. (2011). Chronic alcohol neuroadaptation and stress contribute to susceptibility for alcohol craving and relapse. *Pharmacology & therapeutics, 129*(2), 149–171. https://doi.org/10.1016/j.pharmthera.2010.09.007

Britton, M., Derrick, J., Shepherd, J., Haddad, S., Garey, L., Viana, A., & Zvolensky, M. (2020). Associations between alcohol consumption and smoking variables among Latinx daily smokers. *Addictive Behaviors*, *113*, 106672. doi: 10.1016/j.addbeh.2020.106672

Cail, J., & LaBrie, J. (2010). Disparity between the perceived alcohol-related attitudes of parents and peers increases alcohol risk in college students. *Addictive Behaviors*, *35*(2), 135-139. doi: 10.1016/j.addbeh.2009.09.019

Campbell, A. (1999). Staying alive: Evolution, culture and women's intrasexual aggression. Behavioral and Brain Sciences, 22, 203-267.

Cheeta, S., Halil, A., Kenny, M., Sheehan, E., Zamyadi, R., Williams, A. L., & Webb, L. (2018). Does perception of drug-related harm change with age? A cross-sectional online survey of young and older people. BMJ open, 8(11). https://doi.org/10.1136/bmjopen-2017-021109

Chomynova, P., Miller, P., & Beck, F. (2009). Perceived risks of alcohol and illicit drugs: relation to prevalence of use on individual and country level. *Journal Of Substance Use*, *14*(3-4), 250-264. doi: 10.1080/14659890802668797

Cooney, N., Litt, M., Sevarino, K., Levy, L., Kranitz, L., Sackler, H. and Cooney, J., 2015. Concurrent alcohol and tobacco treatment: Effect on daily process measures of alcohol relapse risk. *Journal of Consulting and Clinical Psychology, 83*(2), 346-358. doi:10.1037/a0038633

Copeland, A. L., Kulesza, M., Patterson, S. M., & Terlecki, M. A. (2009). College student smokers' cognitive appraisal of high-risk activities. *Journal of American college health : J of ACH*, *58*(3), 203–212. https://doi.org/10.1080/07448480903295300

Cox, M. J., DiBello, A. M., Meisel, M. K., Ott, M. Q., Kenney, S. R., Clark, M. A., & Barnett, N. P. (2019). Do misperceptions of peer drinking influence personal drinking behavior? Results from a complete social network of first-year college students. *Psychology of addictive behaviors : journal of the Society of Psychologists in Addictive Behaviors, 33*(3), 297–303. https://doi.org/10.1037/adb0000455

Del Boca, F. K., & Darkes, J. (2003). The validity of self-reports of alcohol consumption: state of the science and challenges for research. *Addiction, 98,* 1-12. Doi: 10.1046/j.1359-6357.2003.00586.x

Department of Health. (2015). *Healthy Ireland Survey*. Retrieved from https://assets.gov.ie/16210/525a06d3aaef4f23889c8fbdcc40d40a.pdf

Department of Health. (2019). *Healthy Ireland Survey*. Retrieved from https://assets.gov.ie/41141/e5d6fea3a59a4720b081893e11fe299e.pdf

Falk, D. E., Yi, H. Y., & Hiller-Sturmhöfel, S. (2006). An epidemiologic analysis of co-occurring alcohol and tobacco use and disorders: findings from the National Epidemiologic

Survey on Alcohol and Related Conditions. *Alcohol research & health : the journal of the National Institute on Alcohol Abuse and Alcoholism*, *29*(3), 162–171.

Ferrer, R., & Klein, W. M. (2015). Risk perceptions and health behavior. *Current opinion in psychology, 5*, 85–89. https://doi.org/10.1016/j.copsyc.2015.03.012

Frey, R., Pedroni, A., Mata, R., Rieskamp, J., & Hertwig, R. (2017). Risk preference shares the psychometric structure of major psychological traits. *Science Advances*, *3*(10), 1701381. doi: 10.1126/sciadv.1701381

Galimov, A., Steinberg, J., Unger, J., Cruz, T., Idrisov, B., & Baezconde-Garbanati, L. et al. (2018). No-Smoking Policy in Russia: Awareness and Perceptions Among Bashkortostan Adolescents. *Current Addiction Reports*, *5*(1), 1-9. doi:10.1007/s40429-018-0181-3

Garcia, P., Bassitt, D. P., & Pinto, F. (2020). Alcohol use, abuse and dependence among elderly in outpatient treatment through the application of AUDIT. Revista da Associacao Medica Brasileira, 66(3), 307–313. https://doi.org/10.1590/1806-9282.66.3.307

Gómez, P., Moure-Rodríguez, L., López-Caneda, E., Rial, A., Cadaveira, F., & Caamaño-Isorna, F. (2017). Patterns of Alcohol Consumption in Spanish University Alumni: Nine Years of Follow-Up. *Frontiers in psychology, 8,* 756. doi:10.3389/fpsyg.2017.00756

Greillier, L., Cortot, A., Viguier, J., Brignoli-Guibaudet, L., Lhomel, C., & Eisinger, F. (2018). Perception of Lung Cancer Risk: Impact of Smoking Status and Nicotine Dependence. *Current Oncology Reports*, *20*(1). doi: 10.1007/s11912-017-0650-1

Grevenstein, D., Nagy, E., Kroeninger-Jungaberle, H. (2014). Development of Risk Perception and Substance Use of Tobacco, Alcohol and Cannabis Among Adolescents and Emerging Adults: Evidence of Directional Influences. *Substance Use & Misuse*, *50*(3), 376-386. doi:10.3109/10826084.2014.984847

Gual, A., Ángel Arbesú, J., Zarco, J., Balcells-Oliveró, M., López-Pelayo, H., Miquel, L., & Bobes, J. (2017). Risky Drinkers Underestimate their Own Alcohol Consumption. *Alcohol And Alcoholism*, *52*(4), 516-517. doi: 10.1093/alcalc/agx029

Health Research Board. (2016) Alcohol in Ireland: consumption, harm, cost and policy response Retrieved from https://alcoholireland.ie/download/reports/alcohol_health/Overview-Series 10_Alcohol_in_Ireland_consumption-harm-cost-and-policy

Hermand, D., Mullet, E. and Coutelle, B., 1995. Perception of the Combined Effect of Smoking and Alcohol on Health. *The Journal of Social Psychology*, 135(2), pp.167-174.

Kahneman, D., & Tversky, A. (1979). On the interpretation of intuitive probability: A reply to Jonathan Cohen. *Cognition, 7*(4), 409–411. doi:10.1016/0010-0277(79)90024-6

Karlsson, P. (2012). Personal experiences of drinking and alcohol-related risk perceptions: The importance of the subjective dimension. *Nordic Studies On Alcohol And Drugs*, *29*(4), 413-428. doi: 10.2478/v10199-012-0036-5

Kauffman, S., Silver, P., & Poulin, J. (1997). Gender Differences in Attitudes toward Alcohol, Tobacco, and Other Drugs. *Social Work*, *42*(3), 231-241. doi:10.1093/sw/42.3.231

Kilmer, J. R., Hunt, S. B., Lee, C. M., & Neighbors, C. (2007). Marijuana use, risk perception, and consequences: is perceived risk congruent with reality. *Addictive behaviors*, *32*(12), 3026–3033. https://doi.org/10.1016/j.addbeh.2007.07.009

Klein, C. T., & Helweg-Larsen, M. (2002). Perceived control and the optimistic bias: A meta-analytic review. *Psychology and health*, *17*(4), 437-446. https://doi.org/10.1080/0887044022000004920

Klepper, S., Odenwald, M., & Rockstroh, B. (2016). Risikowahrnehmung und Alkoholabhängigkeit. *SUCHT*, *62*(6), 374-382. doi: 10.1024/0939-5911/a000457

Klepper, S., Odenwald, M., Rösner, S., Senn, S., Menning, H., Pereyra-Kröll, D. and Rockstroh, B. (2017). Experience-Induced Change of Alcohol-Related Risk Perception in Patients with Alcohol Use Disorders. *Frontiers in Psychology*, 8. Doi:10.3389/fpsyg.2017.01967

Lachenmeier, D., & Rehm, J. (2015). Comparative risk assessment of alcohol, tobacco, cannabis and other illicit drugs using the margin of exposure approach. *Scientific Reports*, *5*(1). doi: 10.1038/srep08126

Lange, S., Shield, K., Monteiro, M., & Rehm, J. (2019). Facilitating Screening and Brief Interventions in Primary Care: A Systematic Review and Meta-Analysis of the AUDIT as an Indicator of Alcohol Use Disorders. Alcoholism, clinical and experimental research, 43(10), 2028–2037. https://doi.org/10.1111/acer.14171

Lee, C., Patrick, M., Neighbors, C., Lewis, M., Tollison, S., & Larimer, M. (2010). Exploring the role of positive and negative consequences in understanding perceptions and evaluations of individual drinking events. *Addictive Behaviors*, *35*(8), 764-770. doi: 10.1016/j.addbeh.2010.03.003

Leffingwell, T., Neumann, C., Leedy, M., & Babitzke, A. (2007). Defensively biased responding to risk information among alcohol-using college students. *Addictive Behaviors*, *32*(1), 158-165. doi: 10.1016/j.addbeh.2006.03.009

Lundborg, P., & Lindgren, B. (2002). Risk Perceptions and Alcohol Consumption among Young People. *Journal Of Risk And Uncertainty*, *25*(2), 165-183. doi: 10.1023/a:1020695730192

Maričić, J., Sučić, I., & Šakić, V. (2013). Risk Perception Related To Illicit Substance Use and Attitudes Towards Its Use and Legalization – the Role of Age, Gender and Substance Use. *Drustvena Istrazivanja*, *22*(4), 579-599. doi: 10.5559/di.22.4.02

Markiewicz, L., Muda, R., Kubińska, E., & Augustynowicz, P. (2020). An explanatory analysis of perceived risk decision weights (perceived-risk attitudes) and perceived benefit decision

weights (perceived-benefit attitudes) in risk-value models, *Journal of Risk*

Research, 23(6), 739-761, doi: 10.1080/13669877.2019.1628089

Mather, M., & Lighthall, N. R. (2012). Risk and Reward Are Processed Differently in Decisions

Made Under Stress. Current Directions in Psychological Science, 21(1), 36–41.

https://doi.org/10.1177/0963721411429452

Mathur, S., & Levy, M. (2013). Lung cancer risk perception and distress: difference by smoking

status, and role of physical activity and race among US population. *Epidemiology,*

Biostatistics and Public Health, 10(2). Doi: 10.2427/8839

Mekonen, T., Fekadu, W., Chane, T., & Bitew, S. (2017). Problematic Alcohol Use among

University Students. *Frontiers In Psychiatry*, *8,* 86. doi: 10.3389/fpsyt.2017.00086

Merianos, A., Rosen, B., Montgomery, L., Barry, A., & Smith, M. (2017). Impact of Perceived

Risk and Friend Influence on Alcohol and Marijuana Use Among Students. *The Journal Of*

School Nursing, *33*(6), 446-455. doi: 10.1177/1059840517717591

Mongan D., Millar, S. R., O' Dwyer, C., Long, J., & Galvin, B. (2020) Drinking in denial: a

cross-sectional analysis of national survey data in Ireland to measure drinkers' awareness of

their alcohol use. *Health Research Board,* doi: 10.1136/bmjopen-2019-034520

Morales Quintero, L. A., Moral Jiménez, M. V., Rojas Solís, J. L., Bringas Molleda, C., Soto

Chilaca, A., & Rodríguez Díaz, F. J. (2019). Psychometric properties of the Alcohol Use

Disorder Identification Test (AUDIT) in adolescents and young adults from Southern

Mexico. Alcohol (Fayetteville, N.Y.), 81, 39–46.

https://doi.org/10.1016/j.alcohol.2019.05.002

Morgenroth, T., Fine, C., Ryan, M. K., & Genat, A. E. (2018). Sex, drugs, and reckless driving:

Are measures biased toward identifying risk-taking in men?. *Social Psychological and*

Personality Science, *9*(6), 744-753. Doi: 10.1177/1948550617722833

Morris, H., Larsen, J., Catterall, E., Moss, A., & Dombrowski, S. (2020). Peer pressure and alcohol consumption in adults living in the UK: a systematic qualitative review. *BMC Public Health*, *20*(1). doi: 10.1186/s12889-020-09060-2

Mostafapour, M., Meyer, S. B., & Scholer, A. (2019). Exploring the effect of risk and benefit information provision on vaccination decision-making. *Vaccine*, *37*(44), 6750-6759.

Murphy-Hoefer, R., Alder, S., & Higbee, C. (2004). Perceptions about cigarette smoking and risks among college students. *Nicotine & Tobacco Research*, *6*(6), 371-374. doi: 10.1080/14622200412331320770

Novak, S., Reardon, S., & Buka, S. (2002). How Beliefs about Substance Use Differ by Socio-Demographic Characteristics, Individual Experiences, and Neighbourhood Environments among Urban Adolescents. *Journal Of Drug Education*, *32*(4), 319-342. doi: 10.2190/gj7d-n0kf-nw64-klw0

O'Farrell, A., Allwright, S., Downey, J., Bedford, D., & Howell, F. (2004). The burden of alcohol misuse on emergency in-patient hospital admissions among residents from a health board region in Ireland. *Addiction*, *99*(10), 1279-1285. doi: 10.1111/j.1360-0443.2004.00822.x

Oshi, S. N., Abel, W. D., Ricketts-Roomes, T., Meka, I. A., Harrison, J., Weaver, S., (2018). Does risk perception affect alcohol consumption among secondary school students in Jamaica?. *Asian Pacific journal of cancer prevention*, *19*(1), 13-18. Doi:10.22034/APJCP.2018.19.S1.13

Patel, D., Peiper, N., & Rodu, B. (2012). Perceptions of the health risks related to cigarettes and nicotine among university faculty. *Addiction Research & Theory*, *21*(2), 154-159. doi:10.3109/16066359.2012.703268

Paterson, A. D., & Hammersley, R. (1991). The attitudes of heroin users and matched non-users to drugs and drug users. Drug and alcohol dependence, 28(3), 283-289.

Pawlowski, B., Atwal, R., & Dunbar, R. I. M. (2008). Sex differences in everyday risk-taking

behavior in humans. *Evolutionary Psychology*, *6*(1), 147470490800600104.

Pettigrew, S., Jongenelis, M., Pratt, I. S., Liang, W., Slevin, T., Chikritzhs, T., & Glance, D.

(2016). Australian drinkers' perceptions of alcohol-related risk by consumption status.

Addiction Research & Theory, 24(6), 507-513.

Pilatti, A., Read, J., & Pautassi, R. (2017). ELSA 2016 Cohort: Alcohol, Tobacco, and

Marijuana Use and Their Association with Age of Drug Use Onset, Risk Perception, and

Social Norms in Argentinean College Freshmen. *Frontiers In Psychology*, *8*. doi:

10.3389/fpsyg.2017.01452

Rehm, J., Borges, G., Gmel, G., Graham, K., Grant, B., & Parry, C. (2013). The comparative

risk assessment for alcohol as part of the Global Burden of Disease 2010 Study: What

changed from the last study?. *The International Journal Of Alcohol And Drug

Research*, *2*(1), 1-5. Doi: 10.7895/ijadr.v2i1.132

Rolison, J., Shenton, J. (2019). How much risk can you stomach? Individual differences in the

tolerance of perceived risk across gender and risk domain. *Behavioural Decision Making,

33*(1), 63-85. https://doi.org/10.1002/bdm.2144

Room, R., Bondy, S. J., & Ferris, J. (1995). The risk of harm to oneself from drinking, Canada

1989. *Addiction (Abingdon, England)*, *90*(4), 499–513. https://doi.org/10.1046/j.1360-

0443.1995.9044994.x

Shepperd, J., Carroll, P., Grace, J., & Terry, M. (2002). Exploring the Causes of Comparative

Optimism. *Psychological Belgica. 42*, 65-98 Doi: 10.5334/pb.986.

Sjoberg, L. (1998). Risk Perception of Alcohol Consumption. *Alcoholism: Clinical And

Experimental Research*, *22*(7), 277-284. doi: 10.1111/j.1530-0277.1998.tb04380.x

Sjöberg, L. (1999). Risk perception by the public and by experts: A dilemma in risk

management. *Human Ecology Review,* 1-9.

Slater, M., & Rasinski, K. (2005). Media Exposure and Attention as Mediating Variables

Influencing Social Risk Judgments. *Journal Of Communication*, *55*(4), 810-827. Doi:

10.1111/j.1460-2466.2005.tb03024.x

Slovic, P. (1987). Perception of risk. *Science*, *236*(4799), 280-285. DOI:

10.1126/science.3563507

So, K. and Sung, E., 2013. A Validation Study of the Brief Alcohol Use Disorder Identification

Test (AUDIT): A Brief Screening Tool Derived from the AUDIT. *Korean Journal of Family

Medicine*, 34(1), p.11. doi: 10.4082/kjfm.2013.34.1.11

Spigner, C., Hawkins, W., & Loren, W. (1993). Gender Differences in Perception of Risk

Associated with Alcohol and Drug Use Among College Students. *Women & Health*, *20*(1),

87-97. Doi: 10.1300/j013v20n01_06

Staniloiu, A., Markowitsch, H. (2012). Gender differences in violence and aggression – a

neurobiological perspective. *Social and Behavioral Sciences, 33*, 1032-1036

https://doi.org/10.1016/j.sbspro.2012.01.279.

Stott, P. A., Christidis, N., Otto, F. E., Sun, Y., Vanderlinden, J. P., van Oldenborgh, G. J.,

Vautard, R., von Storch, H., Walton, P., Yiou, P., & Zwiers, F. W. (2016). Attribution of

extreme weather and climate-related events. Wiley interdisciplinary reviews. *Climate change,

7*(1), 23–41. https://doi.org/10.1002/wcc.380

Tabachnick, B. G., & Fidell, L. S. (2013). *Using Multivariate Statistics* (6th ed.). Boston, MA:

Pearson.

Tabernero, C., Gutiérrez-Domingo, T., Luque, B., García-Vázquez, O., & Cuadrado, E. (2019).

Protective Behavioral Strategies and Alcohol Consumption: The Moderating Role of

Drinking-Group Gender Composition. *International Journal Of Environmental Research And

Public Health*, *16*(5), 900. Doi: 10.3390/ijerph16050900

Thornton, L., Baker, A., Johnson, M., & Lewin, T. (2013). Perceived risk associated with

tobacco, alcohol and cannabis use among people with and without psychotic

disorders. *Addictive Behaviors*, *38*(6), 2246-2251. Doi: 10.1016/j.addbeh.2013.02.003

Tomar, S., & Hatsukami, D. (2007). Perceived risk of harm from cigarettes or smokeless

tobacco among U.S. high school seniors. *Nicotine & Tobacco Research*, *9*(11), 1191-1196.

Doi: 10.1080/14622200701648417

Tversky, A., & Kahneman, D. (1973). Availability: A heuristic for judging frequency and

probability. *Cognitive psychology, 5*(2), 207-232.

Van Gundy, K., Schieman, S., Kelley, M., & Rebellon, C. (2005). Gender role orientations and

alcohol use among Moscow and Toronto adults. *Social Science & Medicine*, *61*(11), 2317-

2330. Doi: 10.1016/j.socscimed.2005.07.033

Visser, R., & McDonnell, E. (2012) 'That's OK. He's a guy': A mixed-methods study of gender

double-standards for alcohol use. *Psychology & Health, 27*(5), 618-

639, doi: 10.1080/08870446.2011.617444

Waters, E. A., Klein, W. M., Moser, R. P., Yu, M., Waldron, W. R., McNeel, T. S., &

Freedman, A. N. (2011). Correlates of unrealistic risk beliefs in a nationally representative

sample. *Journal of behavioral medicine*, *34*(3), 225–235. https://doi.org/10.1007/s10865-010-

9303-7

Watt, K., Purdie, D. M., Roche, A. M., & McClure, R. J. (2004). Risk of injury from acute

alcohol consumption and the influence of confounders. Addiction, 99(10), 1262-1273.

Weinstein N. D. (1987). Unrealistic optimism about susceptibility to health problems:

conclusions from a community-wide sample. *Journal of behavioral medicine, 10*(5), 481–

500. https://doi.org/10.1007/BF00846146

Weinstein, N. (1984). Why it won't happen to me: Perceptions of risk factors and

susceptibility. *Health Psychology*, *3*(5), 431-457. Doi: 10.1037/0278-6133.3.5.431

Weinstein, N. D., Marcus, S. E., & Moser, R. P. (2005). Smokers' unrealistic optimism about

their risk. *Tobacco control, 14*(1), 55-59.

Wilsnack, R., Wilsnack, S., Kristjanson, A., Vogeltanz-Holm, N., & Gmel, G. (2009). Gender

and alcohol consumption: patterns from the multinational Genacis project. *Addiction*, *104*(9),

1487-1500. Doi: 10.1111/j.1360-0443.2009.02696.x

Wolff, K., Larsen, S., & Øgaard, T. (2019). How to define and measure risk perceptions. *Annals

Of Tourism Research*, *79*, 102759. Doi: 10.1016/j.annals.2019.102759

World Health Organization. (2018) Global status report on alcohol and health Retrieved from

https://www.who.int/en/news-room/fact-sheets/detail/alcohol

Zeckhauser, R. J., & Sunstein, C. R. (2008). Overreaction to fearsome risks.

Appendices

Appendix A

Alcohol Use Disorders Identification Test (AUDIT)

Babor, Higgins-Biddle, Saunders, & Monteiro, (2001)

Please select the answer which best describes your alcohol use

1. How often do you have a drink containing alcohol?
   - Never
   - Monthly or less
   - 2-4 times a month
   - 2-3 times a week
   - 4 or more times a week

2. How many 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 six or more drinks on 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 had started?
   - Never
   - Less than monthly
   - Monthly
   - Weekly
   - Daily or almost daily

5. How often during 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 the 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 the last year
- Yes, during the last year

Calculating Scores
Add questions one, two and three together for alcohol consumption score. A score of five or above requires the remaining 7 questions to be answered. Add both of these scores together to identify necessary action.

Appendix B

Questionnaire on Alcohol-Related Risk Perception
(Klepper, Odenwald & Rockstroh, 2016)

Read through the questions carefully and tick the answer which applies to you. The terms "drinking behaviour" and "drinking habits" always relate exclusively to alcoholic beverages in this questionnaire.

If you maintain your drinking behaviour, how would you rate your personal risk of…

Items

1. If you maintain your drinking behaviour, how would you rate your personal risk of…
2. How would you rate the risk of a person of your age and gender with comparable drinking habits of…
3. Imagine the following negative consequences as a result of your alcohol consumption. How threatening and worrying is the thought of…
4. If you permanently abstained from alcohol, how much would your personal risk of… decrease?

Responses

Losing a partner, family or friends?

Very Low   1 2 3 4 5   Very High

Getting out of control (eg. Verbally reacting with anger to strangers, embarrassing yourself)?

Very Low   1 2 3 4 5   Very High

Getting into financial problems (eg. Debt, to spend money on alcohol which is required elsewhere)?

Very Low   1 2 3 4 5   Very High

Having problems at work (eg arriving late, performing poorly, losing your job)?

Very Low   1 2 3 4 5   Very High

Developing a severe disease (eg, Cancer, liver disease, heart attack, stroke)?

Very Low   1 2 3 4 5   Very High

Scoring

Add up scores of the five questions for each item. A total subscale score of 0-5 represents very low PR, 6-10 represents low PR, 11-15 represents moderate PR, 16-20 represents high PR, and 21 and above represents very high PR.

Appendix C

Participant Information Sheet

Perceived Risk of Tobacco and Alcohol Consumption – Differences in Gender and Smokers

You are being invited to take part in a research study. Before you decide to take part, please take the time to understand why the research is being conducted and what it would involve for you. My name is Claire Callaghan and I am conducting a research project on perceived risk of alcohol consumption as part of my final year project. I aim to investigate how individuals judge the severity of alcohol consumption, and whether a gender difference exists. I also aim to investigate differences between smokers and non-smokers in their perceived risk of alcohol consumption. This research project is being conducted as part of my final year project at National College of Ireland, which will result in a qualification of a BA honours degree in Psychology.

Participation in this study involves an online survey which will take 5-10 minutes to complete. This survey will discuss topics of substance use, including your current status on tobacco and alcohol consumption, and your attitudes and beliefs regarding risks associated with substance use. The survey is anonymous and participation in the study is voluntary. You have the right to refuse participation and withdraw from the study prior to submitting your response. However, once you have submitted your response, it will not be possible to retrieve or withdraw your data. To ensure that the confidentiality and anonymity of the participant is protected, responses will be anonymous and only the researcher and their supervisor will have access to the data. To participate in this study you must be over the age of 18 and currently living in Ireland/an Irish citizen. You cannot take part if you are below the age of 18 and are not living in Ireland/an Irish citizen.

The results of this study will be presented as my final year project for my degree. If you have any questions or concerns regarding this study, please contact the researcher, Claire Callaghan: x18328341@student.ncirl.ie, or my supervisor Michael Cleary-Gaffney: Michael.Cleary-Gaffney@ncirl.ie

The benefit of taking part in this study is contributing to research on perceived risk of alcohol consumption. The topic of substance use may cause minor distress for some participants, and

it may be difficult to answer questions on personal tobacco and alcohol consumption. To address this risk of distress, I will provide debriefing sheets at the end of the survey with my contact details if you have any questions or concerns. You can also contact the available support services , which will be provided at the end of the study. This will contain contact details of the drug and alcohol helpline and the HSE quit plan.

Appendix D

<div align="center">

Consent Form

</div>

In agreeing to participate in this research I understand the following:

This research is being conducted by Claire Callaghan, an undergraduate student at the School of Business, National College of Ireland. The method proposed for this research project has been approved in principle by the Departmental Ethics Committee, which means that the Committee does not have concerns about the procedure itself as detailed by the student. It is, however, the above-named student's responsibility to adhere to ethical guidelines in their dealings with participants and the collection and handling of data.

If I have any concerns about participation I understand that I may refuse to participate or withdraw from the study before I submit my response. I understand that once I have submit my response it will not be possible to retrieve or withdraw my data from the study. My response will be anonymous and confidential. I have been informed as to the general nature of the study and agree voluntarily to participate. There are no known expected discomforts or risks associated with participation.

All data from the study will be treated confidentially. The data from all participants will be compiled, analysed, and submitted in a report to the Psychology Department in the School of Business. No participant's data will be identified by name at any stage of the data analysis or in the final report.

At the conclusion of my participation, I can contact the researcher with any questions or concerns I have and these will be fully addressed. By signing the consent form I agree to give informed consent of this study and have read the participant information sheet.

I have read and agree with all the information above

- Yes

Please tick this box to provide your consent to participate in this study

- I give informed consent

Appendix E

Debrief Sheet

Perceived Risk of Tobacco and Alcohol Consumption – Differences in Gender and Smokers

Thank you for taking part in this study. This sheet will provide you with full details of the study in which you participated. The purpose of this study was to investigate perceived risk of substance use, in particular, whether there is a gender difference in perceived risk of alcohol consumption and whether smokers differ in their perceived risk associated with alcohol consumption compared to non-smokers. Risk perception is the subjective judgement that individuals make about the characteristics and the severity of a risk.

You were required to complete a questionnaire on your consumption of tobacco and alcohol, and on your perceived risk of alcohol consumption. This task was the same for all participants. I expected that females would report a higher perceived risk associated with alcohol consumption than males. I also expected that smokers would report a lower perceived risk associated with alcohol consumption than non-smokers, thus underestimating the risks of alcohol.

Thank you again for taking part. If there is anything you would like to discuss in relation to this study, please feel free to do so by contacting me. If you are concerned about drinking or smoking, I have provided contact details for the HSE drug and alcohol helpline. I have also provided contact details for the HSE quit plan for anyone who has concerns about smoking or wishes to quit smoking.

Claire Callaghan,

x18328341@student.ncirl.ie
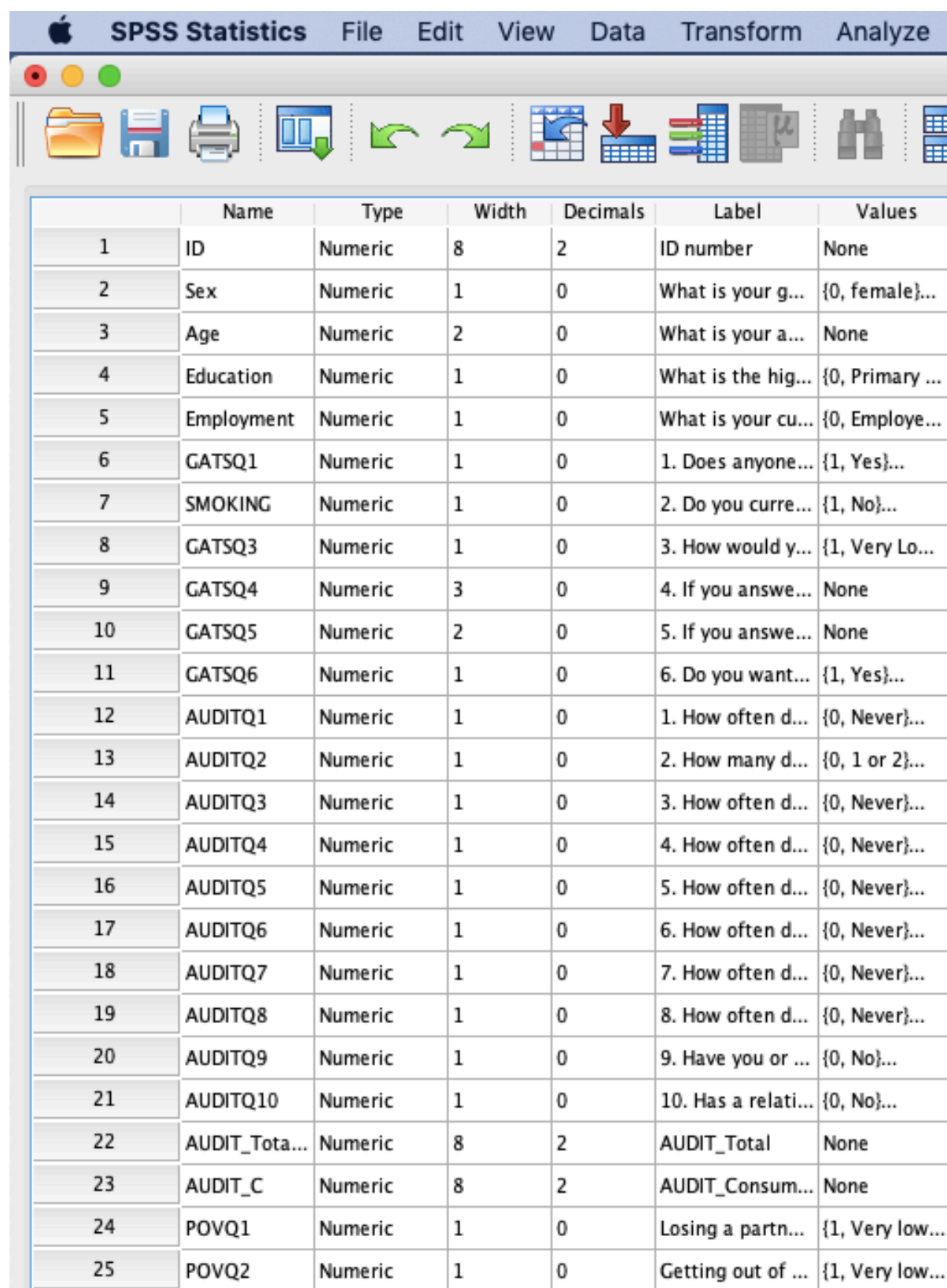
HSE Drug and alcohol helpline:

1800 459 459 is available from Monday to Friday between 9:30 am and 5:30 pm.

Email at any time on helpline@hse.ie

HSE quit plan: 1800 201 203

Appendix F

Evidence of data and SPSS output

	Name	Type	Width	Decimals	Label	Values
1	ID	Numeric	8	2	ID number	None
2	Sex	Numeric	1	0	What is your g...	{0, female}...
3	Age	Numeric	2	0	What is your a...	None
4	Education	Numeric	1	0	What is the hig...	{0, Primary ...
5	Employment	Numeric	1	0	What is your cu...	{0, Employe...
6	GATSQ1	Numeric	1	0	1. Does anyone...	{1, Yes}...
7	SMOKING	Numeric	1	0	2. Do you curre...	{1, No}...
8	GATSQ3	Numeric	1	0	3. How would y...	{1, Very Lo...
9	GATSQ4	Numeric	3	0	4. If you answe...	None
10	GATSQ5	Numeric	2	0	5. If you answe...	None
11	GATSQ6	Numeric	1	0	6. Do you want...	{1, Yes}...
12	AUDITQ1	Numeric	1	0	1. How often d...	{0, Never}...
13	AUDITQ2	Numeric	1	0	2. How many d...	{0, 1 or 2}...
14	AUDITQ3	Numeric	1	0	3. How often d...	{0, Never}...
15	AUDITQ4	Numeric	1	0	4. How often d...	{0, Never}...
16	AUDITQ5	Numeric	1	0	5. How often d...	{0, Never}...
17	AUDITQ6	Numeric	1	0	6. How often d...	{0, Never}...
18	AUDITQ7	Numeric	1	0	7. How often d...	{0, Never}...
19	AUDITQ8	Numeric	1	0	8. How often d...	{0, Never}...
20	AUDITQ9	Numeric	1	0	9. Have you or ...	{0, No}...
21	AUDITQ10	Numeric	1	0	10. Has a relati...	{0, No}...
22	AUDIT_Tota...	Numeric	8	2	AUDIT_Total	None
23	AUDIT_C	Numeric	8	2	AUDIT_Consum...	None
24	POVQ1	Numeric	1	0	Losing a partn...	{1, Very low...
25	POVQ2	Numeric	1	0	Getting out of ...	{1, Very low...

Group Statistics

	2. Do you currently smoke cigarettes?	N	Mean	Std. Deviation	Std. Error Mean
POV_Recoded	No	120	23.2833	3.14144	.28677
	Yes	35	21.5143	3.92107	.66278
PEER_Recoded	No	120	21.8417	4.44007	.40532
	Yes	35	19.1143	5.32349	.89983
affect recoded	No	120	13.9750	8.14518	.74355
	Yes	35	12.4000	6.87365	1.16186
ABSTAIN_Recoded	No	120	18.0667	7.92160	.72314
	Yes	35	17.9429	7.15765	1.20986

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
POV_Recoded	Equal variances assumed	4.221	.042	2.765	153	.006	1.76905	.63981	.50505	3.03305
	Equal variances not assumed			2.450	47.447	.018	1.76905	.72216	.31661	3.22149
PEER_Recoded	Equal variances assumed	4.573	.034	3.053	153	.003	2.72738	.89347	.96225	4.49251
	Equal variances not assumed			2.764	48.625	.008	2.72738	.98691	.74373	4.71103
affect recoded	Equal variances assumed	6.840	.010	1.040	153	.300	1.57500	1.51387	−1.41578	4.56578
	Equal variances not assumed			1.142	64.463	.258	1.57500	1.37941	−1.18031	4.33031
ABSTAIN_Recoded	Equal variances assumed	1.736	.190	.083	153	.934	.12381	1.49042	−2.82066	3.06828
	Equal variances not assumed			.088	60.429	.930	.12381	1.40950	−2.69521	2.94283