An investigation into the comorbidity of harmful drinking and gambling behaviour in a general population.

Prof Bev John

&

Dr Gareth Roderique-Davies

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Executive Summary

There is well-documented evidence in both alcohol and gambling behaviours of the potential for dependency with an increasing evidence base of research exploring the comorbidity of pathological alcohol consumption and gambling behaviours.

Many experts see both behaviours as on continuums, with occasional social use at one end and dependency as characterised by compulsion and loss of control at the other.

There are potentially both qualitative and quantitative differences between gambling disorder at the dependent harm of the continuum and gambling related harm in non-dependent gamblers. Broadening the base of what constitutes 'harm' or 'potential harm' will facilitate more accurate identification of trends with both risk behaviours.

This research set out to explore alcohol and gambling behaviours in a more general population. 263 adults drawn from the population of residents in Wales completed an online survey.

The findings from the general population mirrored the findings from the student population with both drinking and gambling behaviour higher than the population norms. The findings demonstrate strong relationships and influences between the key variables measured. Individuals who drink more frequently and consume more alcohol also gamble more often and have less control over their gambling. Women drink and gamble at lower levels than men generally but are more likely to drink and gamble concurrently than men.

Further research should include in-depth investigation of the role of negative reinforces and dysfunctional coping in drinking and gambling behaviour and explore gender differences in concurrent drinking and gambling behaviours.

Introduction/background rationale

There are many commonalities between alcohol consumption and gambling. This is both in relation to potential dependence and harm for individuals and the wider community, and to the influence of powerful industries that have enjoyed a relaxation of regulation over recent decades, and that engage in wide reaching advertising and targeting of existing and new consumer markets.

There is well documented evidence in both alcohol and gambling behaviours of the potential for dependency, with similar pathways and pathology, as set out in the DSM V classification (APA, 2013). Studies in both the US (Welte et al, 2001) and New Zealand (Abbott & Volberg, 1992) established significant relationships between pathological gambling and alcohol dependence.

Many experts see both behaviours as on continuums, with occasional social use at one end and dependency as characterised by compulsion and loss of control at the other. However, there is increasing evidence of both short and long term health and other harms in individuals who identify themselves as social drinkers, a pattern that is potentially the same for those defined as social gamblers. There are potentially both qualitative and quantitative differences between gambling disorder and gambling related harm (e.g Abbot et al 2013), as with problem drinking and alcohol related harm, and broadening the base of what constitutes 'harm' or 'potential harm' will facilitate more accurate identification of trends with both risk behaviours.

Background to current study

The Gambling Commission identifies Wales as the Home Nation with the highest level of problem gambling. The Welsh Gambling Behaviour survey (2016) reports that in 2015, 61.3% of adults had gambled on at least one occasion, 44% if national lottery gambling is excluded.

The UK Gambling Commission report (November 2016) identified an increase in online gambling prevalence, which now accounts for 33% of all gambling in the UK, making this the largest gambling sector by revenue. They identified online gambling as lower in Wales, with poorer distribution of high speed internet connections suggested as a possible reason for this regional difference. A more recent report (John et al, 2017) suggests that on-line gambling in Wales has increased, possibly in line with the increase in accessibility to smart phones and tablets in the Welsh population

Alcohol related harm is well-documented in Wales, and the Welsh Government substance misuse strategy clearly sets out the multifaceted problems of chronic alcohol misuse and the effects on the wider family and community. Recent evidence suggests that Wales is the home nation in the UK with the highest prevalence of binge drinking. Approximately 14% of adults in Wales consume 14 units of alcohol in a single drinking occasion, compared to 13% in Scotland and 8% in England (ONS 2016)

There are clearly worrying trends in both drinking and gambling behaviours in Wales. Additional concern is raised by potentially significant changes in behaviour and 'consumption' patterns, technologies and licencing regulation. People are drinking more at home, and technology is enabling gambling in any location. The potential for the development of 'dual harm' in an environment away from public view, and therefore censure, is evident. There are important questions to be investigated in the potential relationships between 'social' drinkers and 'social' gamblers.

The current study is the second stage of an ongoing investigation by this research group. The earlier study (John & Roderique-Davies, 2017) explored alcohol and gambling behaviours in students and recent graduates in Wales, and identified interesting trends in patterns of risk in these behaviours. The findings demonstrated strong relationships and influences between the key risk variables measured. Individuals who drink more frequently and consume more alcohol also gamble more often, have less control over their gambling behaviour. Individuals who score highly on the alcohol dependency scale also have high score on the impaired gambling control measure. Women drink and gamble at lower levels than men, but are still exhibiting potential harm. Risk behaviour, especially in relation to alcohol consumption is well documented amongst student populations in Wales (John and Alwyn, 2014). However, our focus on recent graduates as well as current students produced interesting evidence of the maintenance of 'student lifestyles' in the former, with no apparent differences in alcohol consumption levels between these groups. These trends warrant further exploration with other populations, and in the current study, we investigate the same issues in a more general adult population.

This research aims to investigate:

1. The prevalence and patterns of alcohol consumption in Wales, including the proportion of 'home drinking'

2. The prevalence and patterns of gambling behaviour in Wales, including the proportion of 'home gambling'

3. The co-occurrence of drinking and gambling behaviour, and any dose-response relationship i.e. does the amount of alcohol consumed influence gambling behaviour

4. Any relationship between motivations/reasons for drinking (e.g. fun, socialising, coping with stress) to those for gambling?

5. Any noticeable trends/differences between the co-occurrence of drinking and gambling behaviours amongst males and females, and the possible implications of this?

Research Methodology

Sample

Participants were volunteers recruited through the use of a social media snowballing methodology. The inclusion criteria were being over 18 years old and resident in Wales. The final sample of 263 participants consisted of 144 women and 119 men, with the mean age of the sample being 35.5 years old (18-83, SD = 14.96). In terms of qualifications, 46% had a first or higher degree, 32% had GCSEs or lower level qualifications. Occupation was coded using the National Office of Statistic 2011 Census codes: 27% identified as professional or managerial, 15% technical or intermediate, 25% as routine or semi-routine, 6% self-employed, 25% as economically inactive (including students)

Materials

An online survey was created using the "surveymonkey" online platform. The study collected demographic data including age, sex and occupation, marital status, highest academic qualification. Questions related to drinking and gambling patterns (e.g. "Where are you most likely to gamble?" and brand recognition (e.g. "How many betting or gambling organisations can you name?"). Six validated questionnaires regarding alcohol behaviours, motivations and consumption, and gambling behaviours and motivations were utilised:

- The AUDIT (Babor et al, 1993) is a 10 item WHO screening measure of drinking frequency and quantity in relation to hazardous, harmful and dependency indicators

- Participants were asked to complete an alcohol-specific version of the Leeds Dependence Questionnaire (LDQ; Raistrick et al., 1994). The LDQ measures psychological aspects of dependence Scores range from 0 to 30. Less than 10 suggest no or low dependence; 10-22 is medium dependence; and more than 22 is indicative of high dependence;

- The Gambling Motives Questionnaire (Stewart & Zack, 2008) consists of 15 items with 3 subscales. The 3 subscales measure 3 different motives towards gambling: social motives, coping motives, and enhancement/excitement seeking motives.

- The Drinking Motives Questionnaire-revised (Cooper, 1994) is a 12-item measure of motives to drink, and utilises the same 3 subscales as the GMQ

- Frequency and type of gambling behaviour was measured using an adapted version of the Gambling Commission measure (2016).

- The Problem Gambling Severity Index (PGSI, Ferris & Wynne, 2001) measures problem gambling and impaired gambling control in the general population. The PGSI is a 9 item scale derived from the 31 item Canadian Problem Gambling Index (Ferris & Wynne, 2001). Scores of 0 are identified as non-problem gamblers, 1-2 as low risk gamblers, 3-7 as moderate problem gamblers and 8 or above are identified as problem gamblers.

Data analysis

A data base was set up using SPSS statistical analysis software.

Descriptive statistics

Descriptive analyses established percentages, means and standard deviations for demographic data, and for frequency and patterns of alcohol consumption and gambling behaviours

Inferential statistics

Appropriate analyses were conducted to investigate both relationships and differences between variables. These included Pearson correlations, analysis of variance and multiple regression analyses.

Results

1. **The prevalence and patterns of alcohol consumption in Wales, including the proportion of 'home drinking'**

Patterns of frequency and consumption of alcohol

Figures 1 – 5 below set out the descriptive statistics in terms of drinking patterns of the sample. People appear equally likely to drink in an external social environment and at home/with friends.

This is a heavy drinking sample, with 60% classifying as AUDIT positive in terms of hazardous drinking patterns. Approximately 70% drink more regularly than monthly, with a third drinking on a number of days each week. The majority exceed government guidelines on single occasion drinking, with a third consuming 10 or more units on a typical drinking occasion.
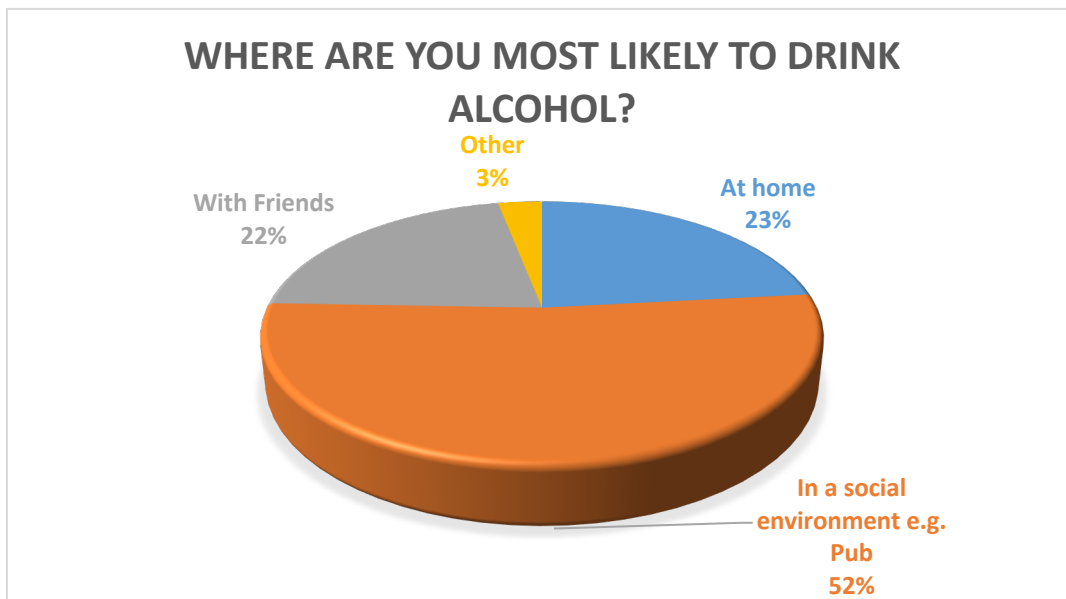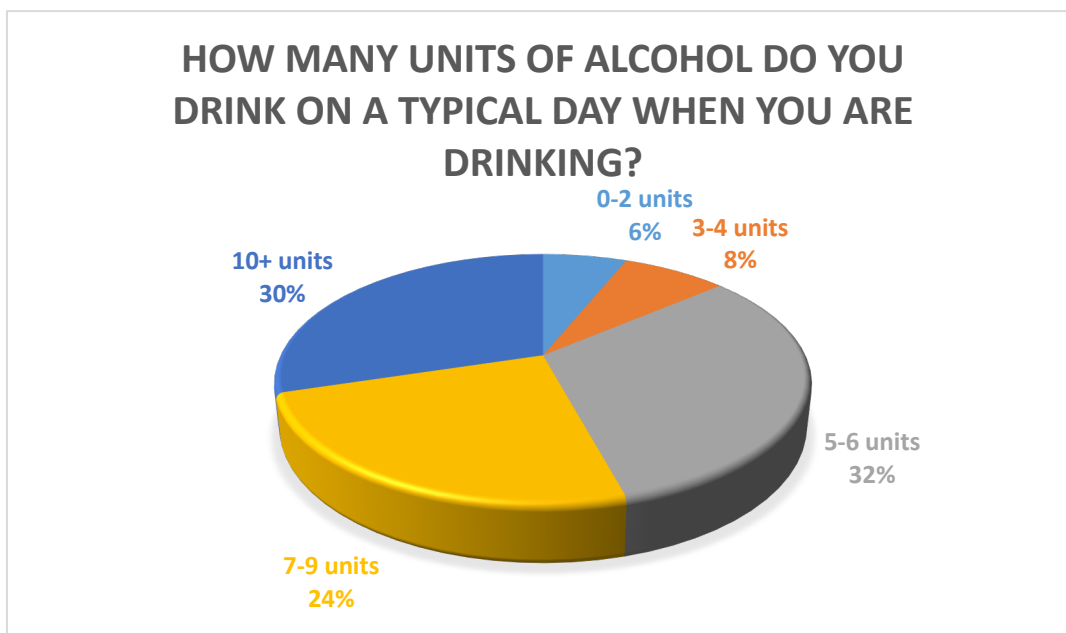

Figure 1: Usual drinking context

Figure 2: consumption frequency

Figure 3: Units per drinking occasion

Indicators of hazardous drinking, harm and dependency

The mean AUDIT total score is 9.5 (SD 5.6), which is above the standard cut offs of hazardous consumption patterns (6 or above for women and 8 or above for men).

60% of the sample categorise as AUDIT positive in terms of hazardous drinking using the more parsimonious cut off of 8 for the total sample; this rises to 70% if the 6 or more cut off is applied to women.
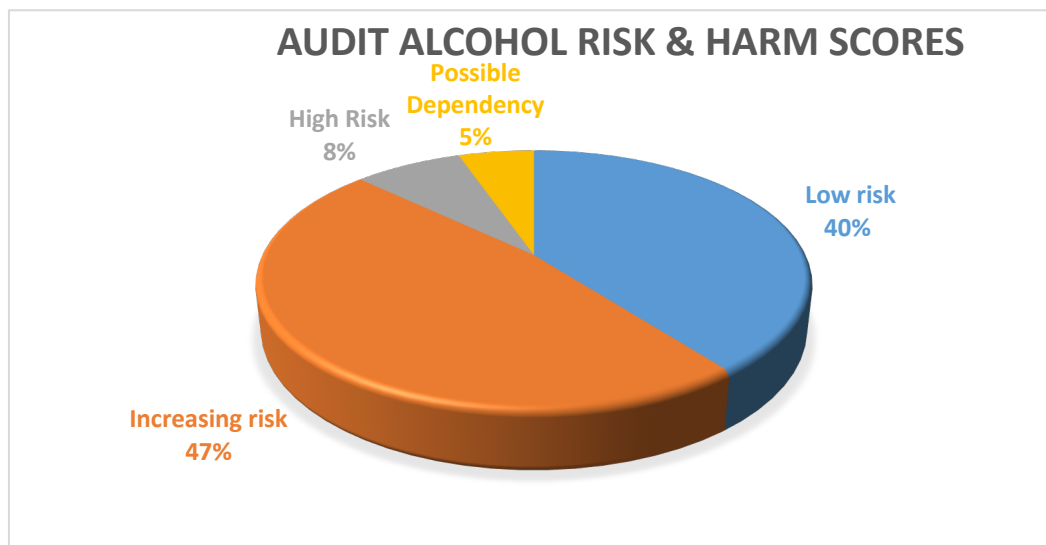

AUDIT ALCOHOL RISK & HARM SCORES

- Possible Dependency 5%
- High Risk 8%
- Low risk 40%
- Increasing risk 47%

Figure 4: AUDIT total scores

The mean dependency score as assessed by the LDQ is 2.96 (SD 3.77). This is lower than the student/recent graduate sample scores on dependency indicators. The majority of participants (94%) were in the no-low dependency on alcohol category.
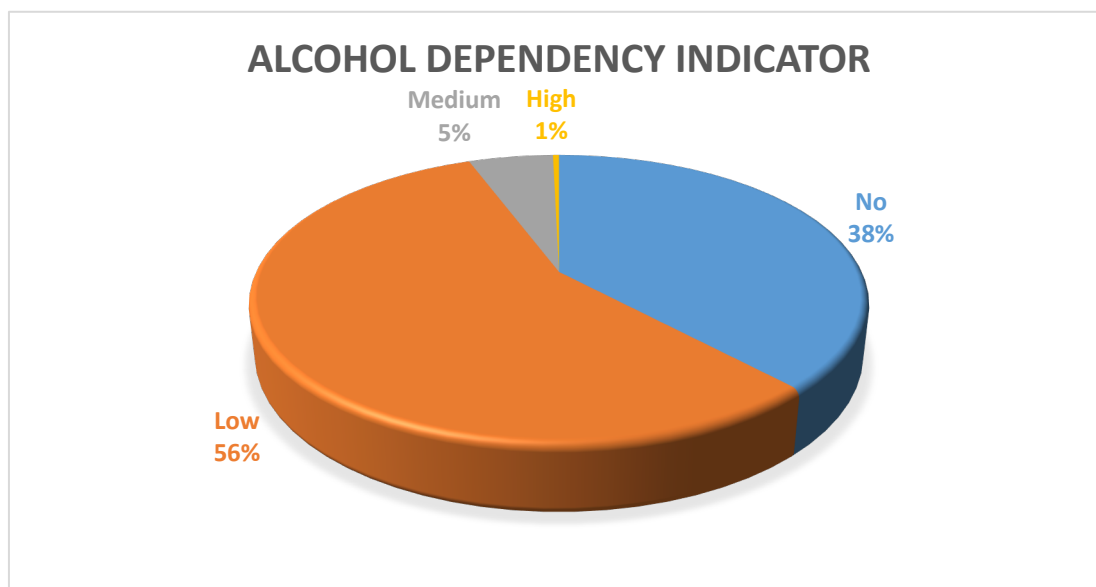

ALCOHOL DEPENDENCY INDICATOR

- Medium 5%
- High 1%
- No 38%
- Low 56%

Figure 5: Categorisation of alcohol dependence (LDQ)

2. The prevalence and patterns of gambling behaviour in Wales, including the proportion of 'home gambling'

Eighty per cent of this sample have engaged in some form of gambling behaviour in the previous 12 months. The most common gambling activities are the National Lottery, bingo in bingo halls, online sports event betting and slot machines in physical locations. 40% of people gamble at home or elsewhere on-line. 49% of participants report that they gamble alone. Younger individuals engage in more frequent gambling than older people.

Figure 6: Percentage of individuals engaging in particular gambling behaviour in the past 12 months

Problem gambling

On a standard validated measure of risk of problem gambling and impaired gambling control (PGSI), 25% have some level of risk indicators for problem gambling: 15% low risk, 5% medium risk, and 5% high risk. This is in line with other recent research on general population gambling behaviour.

PROBLEM GAMBLING RISK

Figure 7: PGSI total scores

3. **The co-occurrence of drinking and gambling behaviour, and any dose-response relationship i.e. does the amount of alcohol consumed influence gambling behaviour**

There are strong relationships between key gambling and drinking variables measured in this study. Overall, 24% of participants always drink alcohol when they are gambling. Interestingly, more women (27%) than men (21%) report this to be the case. Gambling frequency is highly correlated with both hazardous drinking patterns and indicators of alcohol dependence; with gambling harm and impaired control. Gambling harm and impaired control is not correlated with drinking frequency or dependency scores. These findings suggest that individuals who are frequent gamblers have risky drinking patterns and are also at higher risk of gambling harm. However, those with high gambling harm scores do not necessarily have higher levels of risky drinking patterns.

Age is negatively correlated with all the above variables, apart from gambling impaired control where there is no relationship. Younger individuals are drinking and gambling more frequently; and have higher indicators of alcohol dependence than older people. However, they do not have higher levels of gambling dependence or impaired control than older individuals.

4. Any relationship between motivations/reasons for drinking (e.g. fun, socialising, coping with stress) to those for gambling?

The scales measuring motivations for engaging in both drinking and gambling utilise 3 subscales: drinking/gambling for excitement/enhancement (increasing fun); drinking/gambling for social reasons (fitting in with friends, evening out activities, etc.); and drinking/gambling as a coping strategy. Overall, there are strong relationships between all 3 motivations/reasons for drinking and all 3 motivations/reasons for gambling. In terms of these motivations' relationships with other key variables there are some differences as reported below.

Gambling frequency has a strong relationship with all drinking motives (enhancement, social and coping); and with all gambling motives (enhancement, social and coping).

Individuals with higher impaired control of gambling scores have higher motivation for gambling in terms of enhancement, social reasons and coping reasons. However, these individuals appear to drink as a coping strategy, with enhancement and social motives not reasons for their drinking. Age is negatively correlated with all 3 drinking motives (younger people have higher levels of motivation for drinking); and gambling for enhancement/excitement, but not gambling for social or coping reasons.

All drinking motives are correlated with drinking frequency and with dependency indicators. The only gambling motive related to these is enhancement.

It appears that individuals with high risk gambling behaviour drink alcohol as a coping strategy, whilst high risk drinkers gamble for enhancement. Further analysis would be sensible to investigate these relationships and possible moderating factors in more depth.

5. Any noticeable trends/differences between the co-occurrence of drinking and gambling behaviours amongst males and females, and the possible implications of this?

Analysis of variance tests were conducted to investigate gender differences in all key variables.

There are gender differences in many of the risk behaviours under investigation in this study. Men have higher scores in hazardous drinking than women, and in total AUDIT scores. In terms of gambling behaviour, men gamble more frequently than women overall, and in all types of gambling apart from playing bingo in bingo halls, where women do this more, and in the national lottery where there are no gender differences. Men also have higher levels of risk of impaired control and harm in terms of their gambling.

There are no gender differences in alcohol dependency indicators, nor in motivation and reasons to either gamble or drink. Women have higher frequencies of drinking and gambling together than men, with 27% reporting that they always drink when gambling, compared to 21% of men. This is an interesting finding that could be illustrative of changing patterns of gambling through new technology, and the targeting of women as a new market.

Risks and predictors of gambling harm and impaired control

In order to explore specific drivers or predictors of harm, a series of regression analyses were performed. These investigated:

1. Which types of gambling behaviour are the highest risk in terms of impaired control?
2. Which risk behaviours are most likely to predict impaired control?
3. Which risk behaviours are most likely to predict higher levels of gambling?

1. In terms of the types of gambling that lead to impaired control, all gambling behaviours measured were included as possible predictors. The analysis shows that the gambling behaviours that predict levels of dependence are Fixed Odds Betting Terminals (FOBTs); online gaming; and fruit machines. These were the only significant behaviours in the model. Individuals who engage in these types of gambling are much more likely to have impaired control of their gambling behaviour.

2. In terms of the risk behaviours that lead to impaired control, we included drinking patterns, alcohol dependency, motives for drinking, motives for gambling, overall gambling frequency and age. The most significant factor was the motive of gambling as a coping strategy, with gambling for enhancement/excitement and gambling for social reasons as additional significant predictors. This finding suggests that using gambling as a means of coping is a risky strategy, and likely to lead to problematic gambling behaviour.

3. In terms of identifying the risk behaviours that lead to higher levels of gambling behaviour, the same variables were included as in 2 above. The significant behaviours were hazardous drinking patterns, drinking for enhancement motives and gambling for enhancement motives. The other risk behaviours were not significant. This finding suggests that heavy drinking, and using alcohol and

gambling for excitement/enhancement is a risky strategy, and likely to lead to high levels of gambling behaviour. Interestingly, age and other motivation factors for both drinking and gambling did not contribute to the model.

Conclusions

This exploratory study reports some interesting trends and overlapping influences in two behaviours with high potential for harm. Many of the findings are similar to the trends identified in an earlier study by this research group investigating alcohol and gambling in a student/recent graduate population. This is surprising to some extent, as the latter are well documented in terms of alcohol and other risk behaviours, and the population in the current study is a broader sample of a wide age range of adults.

Overall, this is a heavy drinking population. The number of drinks people report consuming on a typical drinking occasion are higher than government guidelines. The use of a parsimonious government definition of binge drinking for men (8 units or more) within a predominately female population (where the cut off should be lower), still results in more than 60% of the sample being classified as binge or hazardous drinkers, and 10% of these are drinking at harmful or dependency levels, according to the AUDIT screening test scores. This is corroborated by the Leeds Dependency Questionnaire scores, with 60% in the possible indicators of low dependence, and 5% in the medium range.

Gambling prevalence is also above population averages when compared with a recent national survey of gambling behaviour in Wales. This earlier survey did not measure frequency within the 12 month window utilised in the current study, but did break down behaviour across age groups and specific gambling behaviours which was not within the scope of the current research. Problem gambling and impaired control is also higher than population averages. 44% of the sample gamble alone, and when the national lottery is excluded, online gambling is the most common gambling behaviour, with a quarter of the sample engaging in this form of gambling. A similar percentage report that they always drink alcohol when gambling. The importance of certain types of gambling behaviours is confirmed in this study, as in the previous one with students; the gambling behaviours that predict risk of gambling harm or impaired control are Fixed Odds Betting Terminals (FOBTs); online gaming; and fruit machines.

There are gender differences in the frequency of both alcohol and gambling behaviour, with men engaging in higher risks and more frequently than women. Despite this,

women in this sample are demonstrating indicators of harm, and are drinking considerably over the government guidelines for units on a single occasion. There are no gender differences in motives for either drinking or gambling, or in indicators of alcohol dependency. Women are more likely than men to drink alcohol when gambling, which could indicate a perception of gambling as a social activity with friends, but could also suggest a trend of drinking and gambling at home. It is beyond the scope of this study to disentangle the possible trends indicated by this finding, which suggests the need for an in-depth investigation into the relationship between alcohol, gambling and socialising in women, and the possible impact of technology as a moderator.

A key objective of this research was to explore the potential relationships between risky and harmful drinking, and risky and harmful gambling. The findings demonstrate strong associations and influences between the key variables measured. Individuals who drink more frequently and consume more alcohol also gamble more often and have less control over their gambling behaviour. Those who score highly on the alcohol dependency scale also have high scores on the impaired gambling control scale. An interesting observation within these relationships is that individuals with high risk gambling behaviour appear to drink alcohol as a coping strategy, whilst high risk drinkers gamble for enhancement. Further analysis would be sensible to investigate these relationships and possible moderating factors in more depth.

The main predictors of impaired gambling control in this sample are using gambling as a coping strategy, and also for excitement and social reasons. This finding generates a number of questions for further investigation, such as the relevance of negative reinforcers and dysfunctional coping to gambling and drinking related harm. High frequency of gambling behaviour is predicted by hazardous drinking patterns and using both alcohol and gambling as enhancement or excitement. This finding is potentially indicative of a high risk mind-set across these behaviours, and this also warrants further research.

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About the Authors

Prof Bev John is Professor of Addictions and Health Psychology at the University of South Wales and a HCPC-registered Health Psychologist. Prof John has worked in the field of psychological health for many years, in research, teaching and treatment delivery, developing and evaluating health related interventions. She has also delivered psychological therapies. Her main focus is applied research in psychological health, in particular promoting positive behaviour change in mental and physical health and substance misuse; and the development and evaluation of psychological interventions. She has developed assessment and screening instruments that are now recommended in NICE guidelines (e.g. FAST alcohol screening test). She has extensive expertise in a wide range of research methodologies, including quantitative, qualitative and desk-based approaches. She has contributed to policy developments and the public debate on alcohol interventions; and has published widely in peer reviewed journals and other relevant media. In 2017 she co-led an investigation of the social impact of problem gambling in Wales for a consortium of Welsh Assembly members.

Dr Gareth Roderique-Davies is Reader in Psychology at the University of South Wales and a HCPC-registered Health Psychologist. Dr Roderique-Davies has developed expertise in substance misuse, behavioural addiction and craving and the long-term effects of recreational drug use. In addition, Dr Roderique-Davies was until recently a non-executive director of the Pobl Group - a third sector organisation that provides a broad range of social care and homelessness services for people who are vulnerable, homeless or at risk of homelessness, including accommodation, support, advice, education, training and employment. In 2017 he co-led an investigation of the social impact of problem gambling in Wales for a consortium of Welsh Assembly members.