Underestimation of Alcohol Consumption (non-blackout)

Underestimation of Alcohol Consumption

- People underestimate their own consumption by increasing amounts when engaging in heavy drinking. (Northcote, 2011)
- Young people and women are more likely to underestimate how much they drank. (Martin, 2016)
- Female students who reported typically drinking larger amounts of alcohol in party settings were more likely to make errors when estimating their intoxication for moderately high numbers of drinks. (Mallett, 2009)
- Accurate estimation of peer's drinking decreased significantly with increasing personal consumption. (Stock, 2014)

Research Abstracts on Alcohol Consumption Estimates

Self-estimation of blood alcohol concentration: A review.
Aston, Elizabeth R., et. al. Addictive Behaviors, Vol 38(4), Apr, 2013. pp. 1944-1951.
Abstract:

This article reviews the history of blood alcohol concentration (BAC) estimation training, which trains drinkers to discriminate distinct BAC levels and thus avoid excessive alcohol consumption. BAC estimation training typically combines education concerning alcohol metabolism with attention to subjective internal cues associated with specific concentrations. Estimation training was originally conceived as a component of controlled drinking programs. **However, dependent drinkers were unsuccessful in BAC estimation, likely due to extreme tolerance. In contrast, moderate drinkers successfully acquired this ability.** A subsequent line of research translated laboratory estimation studies to naturalistic settings by studying large samples of drinkers in their preferred drinking environments. Thus far, naturalistic studies have provided mixed results regarding the most effective form of BAC feedback. BAC estimation training is important because it imparts an ability to perceive individualized impairment that may be present below the legal limit for driving. Consequently, the training can be a useful component for moderate drinkers in drunk driving prevention programs.

Have I had one drink too many? Assessing gender differences in misperceptions of intoxication among college students.
Mallett, Kimberly A., et. al. Journal of Studies on **Alcohol** and Drugs, Vol 70(6), Nov, 2009. pp. 964-970.
Abstract:

Objective: The present study extends the literature on factors involved in college students' drinking tendencies by examining differences between men and women in their ability to accurately estimate personal intoxication. The study also assessed whether men and women who typically consume large quantities of alcohol when they attend parties have more difficulty accurately assessing intoxication compared with lighter drinkers. Method: The research used the external cueing approach (ECA) of Turrisi and colleagues as the informational paradigm to examine 3,707 college students' gender, typical drinking at parties, and how they relate to perceptions of intoxication. Results: **The study revealed that approximately 20% (*n* = 710) of participants underestimated their blood alcohol concentration using the ECA. Among participants who made underestimation errors, gender differences were observed in that women made significantly more underestimation errors in the scenarios that contained four to five drinks and men made more underestimation errors in the scenarios that contained six to seven drinks. In addition, a three-way interaction revealed that female students who reported typically drinking larger amounts of alcohol in party settings were more likely to make errors when estimating their intoxication for moderately high numbers of drinks (e.g., four to five drinks).** Conclusions: The results are discussed in terms of examining the importance of college student

drinking, gender, typical alcohol consumption at a party, and estimation of intoxication. Implications of gender effects in relation to high-risk drinking activities (i.e., pregaming and drinking games) as well as prevention efforts are discussed.

Perceptions of breath alcohol concentration (BrAC) levels among a sample of bar patrons with BrAC values of 0.08% or higher.

Martin, Ryan J., et al.

Psychology of Addictive Behaviors, Vol 30(6), Sep, 2016. pp. 680-685.

Abstract:

Breath alcohol concentration (BrAC) is a commonly used measure of alcohol intoxication. Because of the potential negative consequences of excessive alcohol consumption, it is important to examine how accurately intoxicated individuals can estimate their BrAC values, especially individuals over the legal BrAC driving threshold (i.e., 0.08%). To better understand perceptions of BrAC values among intoxicated individuals, this field study examined actual BrAC values and BrAC range estimates (0.08% and above, 0.02–0.07%, less than 0.02%) among a sample of bar patrons (N = 454) with BrAC levels at 0.08% or higher. Bivariate and multivariate analyses were conducted to examine the relationship between actual BrAC values and perceived BrAC levels. We also examined whether the following demographic and drinking variables were associated with underestimating BrAC in this sample: gender, age, race, college student status, plans to get home, and hazardous drinking. Results indicated that the majority (60.4%) of participants underestimated their BrAC (i.e., less than 0.08%) and lower BrAC values correlated with underestimating BrAC ranges ($p < .001$, 95% CI[0.2, 0.6]). Further, females ($p = .001$, 95% CI[1.3, 3.3]) and participants under 21 ($p = .039$, 95% CI = 1.0, 2.6) were significantly more likely to estimate their BrAC to be less than 0.08%, which is concerning given that young (less than 21) intoxicated females are a group at high risk for sexual assault on college campuses.

Accuracy of Self-Reported Drinking: Observational Verification of 'Last Occasion' Drink Estimates of Young Adults

Northcote, J.; Michael Livingtson

Alcohol and Alcoholism (2011) 45 (6): 709-713.

Abstract

Aims: As a formative step towards determining the accuracy of self-reported drinking levels commonly used for estimating population alcohol use, the validity of a 'last occasion' self-reporting approach is tested with corresponding field observations of participants' drinking quantity. This study is the first known attempt to validate the accuracy of self-reported alcohol consumption using data from a natural setting. **Methods:** A total of 81 young adults (aged 18–25 years) were purposively selected in Perth, Western Australia. Participants were asked to report the number of alcoholic drinks consumed at nightlife venues 1–2 days after being observed by peer-based researchers on 239 occasions. Complete observation data and self-report estimates were available for 129 sessions, which were fitted with multi-level models assessing the relationship between observed and reported consumption. **Results:** Participants accurately estimated their consumption when engaging in light to moderate drinking (eight or fewer drinks in a single session), with no significant difference between the mean reported consumption and the mean observed consumption. **In contrast, participants underestimated their own consumption by increasing amounts when engaging in heavy drinking of more than eight drinks.** Conclusion**:** It is suggested that recent recall methods in self-report surveys are potentially reasonably accurate measures of actual drinking levels for light to moderate drinkers, but that underestimating of alcohol consumption increases with heavy consumption. Some of the possible reasons for underestimation of heavy drinking are discussed, with both cognitive and socio-cultural factors considered.

College students' estimation and accuracy of other students' drinking and believability of advertisements featured in a social norms campaign.

Park, Hee Sun., et. al. Journal of Health Communication, Vol 16(5), May, 2011. pp. 504-518.

Abstract:

Social norms campaigns, which are based on correcting misperceptions of alcohol consumption, have frequently been applied to reduce college students' alcohol consumption. This study examined estimation and accuracy of normative perceptions for students during everyday drinking occasions. **Students who reported having 4 or fewer drinks underestimated the percentage of other students who had 4 or fewer drinks, while those who drank 5 or more drinks overestimated the percentage of other students who had 5 or more drinks.** Believability of advertisements featured in social norms campaigns also played a crucial role in this process. Those who believed the ad more closely estimated alcohol consumption by their peers while ad believability moderated the relation between drinking behaviors and accuracy.

Examining alcohol and alcohol-free versions of a Simulated Drinking Game Procedure.
Silvestri, Mark M., et. al. Journal of Studies on **Alcohol** and Drugs, Vol 74(2), Mar, 2013. pp. 329-336.
Abstract:

Objective: Drinking games contribute to heavy drinking on college campuses because the rules often result in rapid alcohol consumption and increased risk of negative consequences. The current study used the Simulated Drinking Game Procedure (SDGP) to observe and describe drinking game behavior under controlled laboratory conditions. Method: Participants ($N = 40$) age of 21 and older played a laboratory version of beer pong. Participants were randomly assigned to play with either beer or water, and the study examined the differences in consumption, blood alcohol concentration (BAC) estimates, and subjective experiences within and across the beverage conditions. Results: Participants in both beverage conditions viewed the sessions as realistic simulations of actual drinking games. Participants who played with beer consumed more drinks and refused fewer drinks than those served water. Two measures of BAC (calculated formula and breath alcohol device) were correlated with one another and with the amount of alcohol consumed. **BAC estimates based on the formula tended to be higher than readings obtained from the breath alcohol device, and the discrepancies between the two measures were higher among female participants.** Conclusions: The findings suggest that both the alcohol and alcohol-free versions of the SDGP are safe and ecologically valid research tools for examining drinking game behavior. The study highlights the features and limitations of both versions of the SDGP and provides a platform for continued development of the methodology, allowing researchers to address a range of clinically relevant research questions.

Student estimations of peer alcohol consumption: Links between the Social Norms Approach and the Health Promoting University concept.
Stock, Christiane, et. al. Scandinavian Journal of Public Health, Vol 42(15, Suppl), Nov, 2014. pp. 52-59.
Abstract:

Background: The Social Norms Approach, with its focus on positive behaviour and its consensus orientation, is a health promotion intervention of relevance to the context of a Health Promoting University. In particular, the approach could assist with addressing excessive alcohol consumption. Aim: This article aims to discuss the link between the Social Norms Approach and the Health Promoting University, and analyse estimations of peer alcohol consumption among European university students. Methods: A total of 4392 students from universities in six European countries and Turkey were asked to report their own typical alcohol consumption per day and to estimate the same for their peers of same sex. Students were classified as accurate or inaccurate estimators of peer alcohol consumption. Socio-demographic factors and personal alcohol consumption were examined as predictors for an accurate estimation. Results: 72% of male and 51% of female students were identified as having accurate estimations about the amount of alcoholic drinks consumed per day by their peers. Male students, older students, those studying year 3 and above, and Turkish and Danish students were more likely to accurately estimate their peers' alcohol consumption. Independent from these factors, **students' accurate estimation of peers' drinking decreased significantly with increasing personal consumption.** Conclusions: As accurate estimates of peer alcohol consumption appear to affect personal drinking behaviour positively, Social Norms interventions targeted at correcting possible misperceptions about peer alcohol use among students may be a useful health promotion tool in the context of a Health Promoting University.

Who under-reports their alcohol consumption in telephone surveys and by how much? An application of the 'yesterday method' in a national Canadian substance use survey.

Tim Stockwell, et. al. Addiction, Vol. 109, issue 10. Oct. 2014. Pages 1657-1666.

Abstract

Background and Aims

Adjustments for under-reporting in alcohol surveys have been used in epidemiological and policy studies which assume that all drinkers underestimate their consumption equally. This study aims to describe a method of estimating how under-reporting of alcohol consumption might vary by age, gender and consumption level.

Method

The Canadian Alcohol and Drug Use Monitoring Survey (CADUMS) 2008–10 ($n = 43\,371$) asks about beverage-specific 'yesterday' consumption (BSY) and quantity–frequency (QF). Observed drinking frequencies for different age and gender groups were calculated from BSY and used to correct values of F in QF. Beverage-specific correction factors for quantity (Q) were calculated by comparing consumption estimated from BSY with sales data.

Results

Drinking frequency was underestimated by males ($Z = 24.62$, $P < 0.001$) and females ($Z = 17.46$, $P < 0.001$) in the QF as assessed by comparing with frequency and quantity of yesterday drinking. Spirits consumption was underestimated by 65.94% compared with sales data, wine by 38.35% and beer by 49.02%. After adjusting Q and F values accordingly, regression analysis found alcohol consumption to be underestimated significantly more by younger drinkers (e.g. $82.9 \pm 1.19\%$ for underage drinkers versus $70.38 \pm 1.54\%$ for those 65+, $P < 0.001$) and by low-risk more than high-risk drinkers ($76.25 \pm 0.34\%$ versus $49.22 \pm 3.01\%$, $P < 0.001$). Under-reporting did not differ by gender.

Conclusions

Alcohol consumption surveys can use the beverage-specific 'yesterday method' to correct for under-reporting of consumption among subgroups. Alcohol consumption among Canadians appears to be under-reported to an equal degree by men and women. Younger drinkers under-report alcohol consumption to a greater degree than do older drinkers, while low-risk drinkers underestimate more than do medium and high-risk drinkers.

Estimating under- and over-reporting of drinking in national surveys of alcohol consumption: Identification of consistent biases across four English-speaking countries.

Stockwell, Tim., et al. Addiction, Vol 111(7), Jul, 2016. pp. 1203-1213.

Abstract:

Background and Aims: Questions about drinking 'yesterday' have been used to correct under-reporting of typical alcohol consumption in surveys. We use this method to explore patterns of over- and under-reporting of drinking quantity and frequency by population subgroups in four countries. Design: Multivariate linear regression analyses comparing estimates of typical quantity and frequency of alcohol consumption with and without adjustments using the yesterday method. Setting and Participants: Survey respondents in Australia ($n = 26\,648$), Canada ($n = 43\,371$), USA ($n = 7969$) and England ($n = 8610$). Measurements: Estimatesof typical drinking quantities and frequencies over the past year plus quantity of alcohol consumed the previous day. Findings Typical frequency was underestimated by less frequent drinkers in each country. For example, after adjustment for design effects and age, Australian males self-reporting drinking 'less than once a month' were estimated to have in fact drunk an average of 14.70 (± 0.59) days in the past year compared with the standard assumption of 6 days ($t = 50.5$, $P < 0.001$). Drinking quantity 'yesterday' was not significantly different overall from self-reported typical quantities during the past year in Canada, the United States and England, but slightly lower in Australia (e.g. 2.66 versus 3.04 drinks, $t = 20.4$, $P < 0.01$ for women). Conclusions: **People who describe themselves as less frequent drinkers appear to under-report their drinking frequency substantially**, but country and subgroup-specific corrections can be estimated. Detailed questions using the yesterday method can help correct under-reporting of quantity of drinking.