



## OFFENDER EDUCATION RESEARCH SUMMARIES Vol. 3 No. 2 March 2010

### **Estimating risk of alcohol dependence using alcohol screening score**

Anna D. Rubinsky, Daniel R. Kivlahan, Robert J. Volk, Charles Maynard and Katharine A. Bradley  
Drug and Alcohol Dependence, 108, 1-2, 29-36.

Brief alcohol counseling interventions can reduce alcohol consumption and related morbidity among non-dependent risky drinkers, but more intensive alcohol treatment is recommended for persons with alcohol dependence. This study evaluated whether scores on common alcohol screening tests could identify patients likely to have current alcohol dependence so that more appropriate follow-up assessment and/or intervention could be offered. This cross-sectional study used secondary data from 392 male and 927 female adult family medicine outpatients (1993–1994). Likelihood ratios were used to empirically identify and evaluate ranges of scores of the AUDIT, the AUDIT-C, two single-item questions about frequency of binge drinking, and the CAGE questionnaire for detecting DSM-IV past-year alcohol dependence. Based on the prevalence of past-year alcohol dependence in this sample (men: 12.2%; women: 5.8%), zones of the AUDIT and AUDIT-C identified wide variability in the post-screening risk of alcohol dependence in men and women, even among those who screened positive for alcohol misuse. Among men, AUDIT zones 5–10, 11–14 and 15–40 were associated with post-screening probabilities of past-year alcohol dependence ranging from 18 to 87%, and AUDIT-C zones 5–6, 7–9 and 10–12 were associated with probabilities ranging from 22 to 75%. Among women, AUDIT zones 3–4, 5–8, 9–12 and 13–40 were associated with post-screening probabilities of past-year alcohol dependence ranging from 6 to 94%, and AUDIT-C zones 3, 4–6, 7–9 and 10–12 were associated with probabilities ranging from 9 to 88%. AUDIT or AUDIT-C scores could be used to estimate the probability of past-year alcohol dependence among patients who screen positive for alcohol misuse and inform clinical decision-making.

### **High mortality among people suspected of drunk-driving. An 18-year register-based follow-up**

Antti Impinen, Pia Mäkelä, Karoliina Karjalainen, Ossi Rahkonen, Tomi Lintonen, Pirjo Lillsunde<sup>a</sup> and Aini Ostamo, Drug and Alcohol Dependence, in Press, [doi:10.1016/j.drugalcdep.2010.02.007](https://doi.org/10.1016/j.drugalcdep.2010.02.007)

**Objectives** The aim of this study was to examine the overall and cause-specific mortality of DUI arrestees compared to a reference population with no history of DUI and to recognize the risk factors of premature death.

**Methods** The data used were a register of all DUI arrestees between April 1988 and December

2006. All drivers with drug-positive samples were excluded. DUI arrestees were compared to a reference population with no previous history of DUI. Overall and cause-specific hazard ratios were calculated and risk factors were estimated.

Results Alcohol causes, diseases of the circulatory system and accidents constituted the most common causes of death among DUI arrestees. Suspected DUI was linked with higher mortality in every observed cause of death. The risk of death by alcohol-related or external cause was especially high. Among women DUI arrests caused sharper increase to the risk of death than increase found among male arrestees. Within the group of DUI arrestees the risk of death was affected by age, sex, marital status, education, multiple arrests as well as time and observed blood alcohol level of the arrest. Half of the suspected DUI cases and one in five of the references had alcohol as a contributing factor to death.

Conclusions Arrest on suspicion of drunk-driving is an indicator for elevated risk of death. Alcohol is often related to deaths of DUI arrestees. Drunk-drivers should be efficiently guided with respect to evaluations and treatments for harmful drinking.

### **Drug Czar Warns on Drugged Driving**

March 11, 2010

White House Office of National Drug Control Policy Director Gil Kerlikowske told an international conference that driving under the influence of prescription and illicit drugs is a growing problem, the New York Daily News reported March 10.

Appearing at a United Nations conference, Kerlikowske said that the number of drugged drivers may be rising even as drunk driving declines. He estimated that one in six weekend drivers in the U.S. is "under the influence of an illicit or licit drug." Marijuana is the most common drug used by drivers, but prescription-drug impairment also is common, he said.

Kerlikowske called for the U.N. Commission on Narcotic Drugs to address drugged driving at its 2011 meeting.

### **Strong public support for action on drink and drug-driving, 'Not a drop; not a drag' campaign steps up a gear**

17 March 2010

Road safety charity Brake and Direct Line today reveal an overwhelming cry from the British public for Government action to curb the menace of drink and drug driving.

The call comes in the same month as the findings from an inquiry on drink and drug driving by Sir Peter North for the Department for Transport are due to be published.

More than 9 out of 10 drivers (92%) surveyed by the charity and motor insurer support the introduction of a new anti drug drive law to enable prosecution of anyone driving on impairing drugs, similar to the law on drink driving. At the moment, a prosecution can only be brought against a drug driver if the police also have evidence the driver was driving badly.

Drivers are also overwhelmingly in favour of a lower drink-drive limit, with more than 7 out of 10 (71%) agreeing that the current limit of 80mg alcohol per 100ml blood should be cut.

Research indicates that someone driving with this much alcohol in their blood is five times more likely to crash than if they were driving without any alcohol in their system. More than half of drivers (55%) support Brake and Direct Line's calls for a low limit of 20mg alcohol per 100ml blood or lower, while a further 16% favour a limit of 50mg – the maximum limit recommended by the European Commission.

Following a change in Ireland's laws from December 2009, Britain and Malta are the only remaining European countries with a drink-drive limit higher than the EU-recommended 50mg alcohol per 100ml blood. Increasing numbers of countries are setting a 20mg or zero-tolerance limit, including many of the countries with the best road safety records.

### **Move to 0.02 alcohol limit 'inevitable'**

*March 15, 2010 - 3:29PM, AAP*

Reducing Australia's blood alcohol limit for drivers to 0.02 is probably inevitable, a public health expert says as other prominent academics also voice their support for the move. Professor Mike Daube, from Western Australia's Curtin University, said the move would send an important and, in many cases, life-saving signal to motorists amid the "national crisis" that was Australia's road toll.

"This is an important proposal that deserves very careful consideration and is probably inevitable over time," said Prof Daube, who is Professor of Health Policy and Director of Curtin's Public Health Advocacy Institute. "The case for 0.02 is that it sends out the message loud and clear we can no longer tolerate the carnage caused by drink-driving. "We can wait forever for yet more evidence or we can decide as a nation that we need to act now." Prof Daube, who is President of the Public Health Association of Australia, also said it was "very encouraging that the prime minister has called for the issue to be considered nationally - the road toll is a national crisis".

The Queensland government put the issue on the radar late last week, with the release of a discussion paper that calls for public input on a range of measures to curb drink driving including dropping the allowable blood alcohol limit from 0.05 to 0.02. Professor Barry Watson said the move would bring Australia into line with countries like Norway, Sweden and Japan where lower allowable blood alcohol limits had been shown to reduce the rate of fatal crashes. "There are some other good reasons for considering it," said Prof Watson, who is Director of the Centre for Accident Research and Road Safety at Queensland University of Technology. "At 0.05 people are impaired, I think more so than they probably realise. "Research does suggest that your crash risk does increase and, by 0.05, is somewhere between one-and-a-half to two times that of a sober driver." Prof Watson also called for new public education campaigns to emphasis the impairment caused by even small amount of alcohol in a driver's system.

Professor Jake Najman, Director of the Queensland Alcohol and Drug Research and Education Centre at the University of Queensland, also supported the move and pointed to research

conducted in 1994 which examined differing crash rates across the US. Blood alcohol limits differ across US state borders - ranging from zero in some states and up to 0.08 - and the study showed those with the lowest limit had fewer fatal crashes. "Generally, the lower the level of blood alcohol the lower the rate of fatal deaths attributed to drink driving," Prof Najman said.

Drug and alcohol expert Dr Alex Wodak said he saw merit in a new 0.02 limit for "young and inexperienced drivers" only and imposing this on older drivers may have no real impact. The best way to drive a change in the everyday drinking habits of Australians, he said, was to raise alcohol prices and impose new restrictions on its sale. "The measure we should be debating is alcohol tax reform," said Dr Wodak who is Director of the Alcohol and Drug Service at St Vincents Hospital, in Sydney. "This is the single intervention best supported by evidence of effectiveness. "We should also be putting more emphasis on cutting back on the availability of our favourite drug - there are too many outlets and the outlets have too liberal conditions."

### **Brief Motivational Interviewing for DWI Recidivists Who Abuse Alcohol and Are Not Participating in DWI Intervention: A Randomized Controlled Trial**

Thomas G. Brown, Maurice Dongier, Marie Claude Ouimet, Jacques Tremblay, Florence Chanut, Lucie Legault, and Ng Mien Kwong Ng Ying Kin  
Alcoholism: Clinical and Experimental Research, Volume 34, Issue 2 (p 292-301)

Background: Driving while impaired (DWI) recidivists with unresolved alcohol use problems pose an ongoing risk for traffic safety. Following conviction, many do not participate in mandated alcohol evaluation and intervention programs, or continue to drink problematically after being relicensed. This study investigated if, in DWI recidivists with alcohol problems and not currently involved in DWI intervention, Brief Motivational Interviewing (BMI) produced greater reductions in risky drinking at 6- and 12-month follow-up compared to an information advice control condition. Additional analyses explored whether BMI was associated with greater readiness to change, subsequent substance abuse treatment service utilization, and satisfaction compared to the control condition.

Methods: Male and female recidivists with drinking problems and not currently engaged in DWI intervention were recruited, evaluated, and then randomly assigned to receive 1 of 2 manualized interventions: 30-minute BMI session or information-advice. Participants, interviewers, researchers, and statisticians were blind to assignment. Outcomes were changed in: percent of risky drinking days (i.e.,  $\geq 3$  standard drinks / d for males;  $\geq 2$  for females) in the previous 6 months derived from the Timeline Followback, biomarkers of alcohol abuse (GGT, AST, ALT, MCV) by blood assay, and alcohol abuse-related behaviors using the MMPI-Mac scale. Data from the Readiness to Change Questionnaire, a substance abuse service utilization questionnaire, and the Client Satisfaction Scale were also collected.

Results: Analyses revealed significant declines in risky drinking with both interventions. BMI (n = 92) resulted in a 25% reduction in risky drinking days at 12-month follow-up, which compared to the control intervention (n = 92) represented a significant decline from 6-month levels.

Exposure to BMI also produced significantly greater improvement at 6-month follow-up in a biomarker of alcohol abuse and a behavioral measure related to recidivism risk. Exploration of readiness to change, substance abuse service utilization, and satisfaction with intervention indicated a perception of BMI being more useful in coping with problems.

Conclusions: Brief MI approaches warrant further implementation and effectiveness research as an opportunistic DWI intervention strategy to reduce risks associated with alcohol use outside of clinical and DWI relicensing settings.

### **A Comparison of Two Single-Item Screeners for Hazardous Drinking and Alcohol Use Disorder**

Deborah A. Dawson, Attila J. Pulay, and Bridget F. Grant

Alcoholism: Clinical and Experimental Research, Volume 34, Issue 2 (p 364-374)

Background: There is increasing interest in and physician support for the use of single-item screeners for problem drinking.

Methods: In a representative sample of U.S. adults (n = 43,093) and within selected subgroups, past-year frequency of drinking 5+/4+ drinks and maximum drinks consumed on any day were evaluated as screeners for past-year alcohol dependence, any alcohol use disorder (AUD), and any AUD or hazardous drinking, using standard measures of screening performance.. AUDs were defined according to DSM-IV criteria. Hazardous drinking was defined as consuming >14 drinks / wk or 5+ drinks on any day for men and >7 drinks / wk or 4+ drinks on any day for women.

Results: Optimal cutpoints for both screeners varied across population subgroups, and these variations should be taken into account in order to maximize screening performance. At the optimal cutpoints for the total population, the sensitivity and specificity of maximum drinks were 89% and 82% for dependence at  $\geq 5$  drinks, 90% and 79% for any AUD at  $\geq 4$  drinks, and 90% and 96% for any AUD or hazardous drinking at  $\geq 4$  drinks. Comparable values of sensitivity and specificity for 5+/4+ frequency were 90% and 83% at  $\geq 3$  times a year, 87% and 82% at  $\geq 1$  once a year, and 88% and 100% at  $\geq 1$  once a year, respectively. Specificity was lower when only past-year drinkers were considered. The 5+/4+ frequency screener yielded fairly low sensitivity in predicting alcohol problems among the elderly and among Blacks. Results supported a past-year reference period for frequency of 5+/4+ drinks and substantiated gender- and age-specific thresholds for defining risk drinking.

Conclusions: Both of the single-item screeners performed nearly on a par with the AUDIT-C and have potential for use in primary and emergency care settings.

### **Toward a More Parsimonious Approach to Drug Recognition Expert Evaluations**

**Authors:** Amy J. Porath-Waller; Douglas J. Beirness; Erin E. Beasley

Traffic Injury Prevention, Volume 10, Issue 6 December 2009 , pages 513 - 518

Objective: The purpose of this study is to statistically identify the set of drug-related cues from

Drug Evaluation and Classification (DEC) evaluations that significantly predict the substance used by suspected drug-impaired drivers.

Methods: Data from 742 completed Canadian DEC evaluations of central nervous system (CNS) stimulant, narcotic analgesic, and cannabis cases were analyzed using a multinomial logistic regression procedure.

Results: Nine clinical indicators from the DEC evaluations significantly enhanced the prediction of drug category, including pulse rate, condition of the eyes and eyelids, lack of convergence, hippus, reaction to light, rebound dilation, systolic blood pressure, and the presence of injection sites.

Conclusions: The findings from this study will facilitate the process of identifying the correct category of drug ingested by focusing on critical signs and symptoms of drug influence. This work will have direct and immediate relevance to the training of drug recognition experts (DREs) by providing the foundation for an innovative, statistically based approach to drug classification decisions by DREs.

### **Alcohol Biomarkers as Tools to Guide and Support Decisions About Intoxicated Driver Risk**

Pamela Bean; Claudia Roska; James Harasymiw ; James Pearson ; Brian Kay; Hannah Louks <sup>a</sup>, Traffic Injury Prevention, Volume 10, Issue 6 December 2009 , pages 519 – 527

Objectives: This article describes the results of a pilot study that used alcohol biomarkers to guide decisions about driving under the influence (DUI) driver risk in the United States, replicating a European best practices model. The pilot tested whether biomarkers (1) can help the assessor identify high-risk drivers who continue to drink heavily after their arrest and (2) detect relapses in drivers enrolled in their drivers' safety plans.

Methods: These questions were addressed using two biomarkers, carbohydrate-deficient transferrin (CDT), and the Early Detection of Alcohol Consumption (EDAC) test, to evaluate the drinking behavior in repeat offenders during the assessment interview (baseline) and at 3, 6, 9, and 12 months' follow-up. The cutoff used to determine heavy drinking at baseline was 2.2 percent CDT and 40 percent P-positive for EDAC. A 30 percentage point increase in biomarker value from an abstinent baseline signaled a relapse and a 30 percentage point decrease in biomarker value from a previous positive measure signaled reduced drinking/abstinence.

Results: The results show that the EDAC used alone identified 18 percent of drivers as heavy drinkers at baseline compared to 5 percent for CDT and 8 percent for GGT. The best detection rate was achieved with the EDAC-CDT combination, which captured heavy drinking in 20 percent of the repeat offenders at baseline, most of whom (68%) denied drinking at the assessment interview. During follow-up, 52 percent of drivers abstained/reduced their drinking, almost 20 percent experienced a relapse, and 30 percent remained noncompliant with testing. Drivers who relapsed were less likely to be employed full-time (67 versus 84%) or married (17 versus 30%) compared to those who abstained. Of the drivers who relapsed, 80 percent

returned to abstinence or reduced their drinking after biomarker information was used as brief intervention by the counselors.

**Conclusion:** Biomarker testing improved the assessment and monitoring of repeat offenders in this pilot because it provided an objective tool to identify high-risk drivers allowing for better treatment recommendations and helped identified drivers who relapsed during follow-up to facilitate a brief intervention by the counselor that resulted in reduced alcohol consumption. These results contribute to establish evidence based practices in highway safety and are setting up new guidelines in the United States to reduce drunk driving.

### **Study Hints at More Drunk Driving Among Young Women**

The rate of alcohol-related fatal car crashes has risen among some populations of female drivers, a worrying trend that runs counter to the decline in such crashes among young men. [ScienceDaily](#) reported Feb. 18 that an analysis of U.S. National Highway Traffic Safety Administration data found that the rate of fatal car crashes where drivers had alcohol in their system fell among all age groups of men studied up to age 20 (16 to 20) and remained the same among 21- to 24-year-olds. However, while the rate fell among 16-year-old girls and remained the same among 17- and 18-year-old females, it rose among 19-year-olds and 21- to 24-year-olds. Researchers also found that the proportion of female drivers involved in fatal alcohol-involved crashes was higher than for males. (See below)

### **Alcohol involvement among young female drivers in US fatal crashes: unfavourable trends**

Virginia W Tsai, Craig L Anderson, Federico E Vaca, [Inj Prev](#) 2010;16:17-20

**Objective** Young men have greater representation in fatal alcohol-related crashes. Recent studies of young women and risky behaviours have raised concerns about the implications this may have for alcohol-related fatal crashes. The objective of this study was to investigate the representation of young female drivers in US alcohol-involved fatal crashes (1995–2007) and to identify trends heralding future negative changes in crash profiles for young female drivers.

**Design** Fatal crash data were obtained from the US National Highway Traffic Safety Administration Fatal Analysis Reporting System (FARS). Five age groups were analysed. The FARS multiple imputation dataset was used to estimate the proportion of drivers with blood alcohol, and variance estimates were corrected for the procedure. Linear regression was used to measure trends (1995–2007).

**Results** 179 891 fatal crashes in all age groups occurred over the study period. The rate of involvement in fatal crashes for young drivers with positive blood alcohol concentrations (BAC) decreased for men and women aged 16 years but increased for women age 19–24 years. Young female drivers had a greater increase than young men in the proportion of alcohol-involved fatal crashes (3.1%, 95% CI 1.9 to 4.3% vs 1.2%, 95% CI 0.2 to 2.1%,  $p=0.02$ ). Most of the increase occurred in drivers with BAC  $\geq 0.15$  g/dl. Drivers with higher BAC had markedly lower safety restraint use. Over time restraint use increased in all BAC groups studied.

**Conclusion** Alcohol-involved fatal crash rates in young female drivers aged 19–24 years have increased. However, male drivers continue to surpass women in the number of alcohol-involved fatal crashes. Restraint use decreases markedly with increasing BAC.

### ***Inj Prev* 2010;16:17-20 Age 19 Drinking Bill Killed in South Dakota Legislature**

The South Dakota House Commerce Committee rejected a bill that would have lowered the state's legal drinking age from 21 to 19, the Associated Press reported Feb. 22.

The measure went down to defeat on a 10-3 vote. Bill sponsor Rep. Tim Rounds had proposed allowing 19-year-olds to drink in certain clubs where only beer was sold, saying the measure would provide a controlled environment for young drinkers and cut down on drunk driving.

The bill was opposed by drug-control experts as well as those who noted that lowering the drinking age would cost South Dakota 10 percent of its federal highway funds under the Federal Minimum Drinking Act of 1984, which ties the funding to states adopting age-21 drinking laws.

### **Minimum Legal Drinking Age Policy**

This 2009 resource provides an overview of the Minimum Legal Drinking Age laws (MLDA) that went into effect in the United States after the Repeal of Prohibition in 1993. The resource outlines the policy implications, key results, and key resources regarding MLDA-21, which refers to all 50 states limiting the purchase and possession of alcohol to those aged 21 and above.

<http://www.rwjf.org/pr/product.jsp?id=41988>

### **Psychosis More Common Among Teen Marijuana Users: Study**

Smoking marijuana as a teenager could raise the risk of developing schizophrenia and psychotic symptoms as a young adult, according to a new study that compared the prevalence of mental illness among marijuana users and non-users.

Bloomberg News reported March 2 that researcher John McGrath of the University of Queensland, Australia, and colleagues studied 3,801 young-adult sibling pairs and concluded that those who used marijuana the longest (six or more years) were twice as likely to develop schizophrenia or delusional disorders. They also were four times more likely than non-users to score highly on a test gauging psychotic-like experiences.

Higher scores on the test also were seen among those who used marijuana for less than three years.

The study was published online in the Archives of General Psychiatry.

### **Study Links Alcoholic Energy Drinks to Intoxication, Drunk Driving**

#### **Event-level analyses of energy drink consumption and alcohol intoxication in bar patrons**

Addictive Behaviors, Volume 35, Issue 4, April 2010, Pages 325-330

Dennis L. Thombs, Ryan J. O'Mara, Miranda Tsukamoto, Matthew E. Rossheim, Robert M. Weiler, Michele L. Merves, Bruce A. Goldberger

Bar patrons who consumed energy drinks mixed with alcohol were three times more likely to leave drunk and four times more willing to drive drunk compared to patrons who drank alcohol alone, according to researchers who surveyed college-aged drinkers as they left bars.

The University of Florida researchers surveyed more than 800 bar patrons at random between the hours of 10 p.m. and 3 a.m., and also collected breath samples to test blood-alcohol content (BAC). The average BAC for alcoholic energy drink consumers was 0.109 percent, well

above the legal standard for intoxication.

Patrons who consumed alcohol mixed with highly caffeinated energy drinks like Red Bull also were more likely to have consumed alcohol for longer periods of time, and left bars later than other drinkers.

The study was led by Dennis Thombs of the school's College of Public Health and Health Professions. "His approach is unique because it was conducted in a natural drinking environment -- college bars," said Wake University's Mary Claire O'Brien, author of previous research on alcoholic energy drinks. "His results clearly support the serious concern raised by previous research, that subjective drunkenness may be reduced by the concurrent ingestion of caffeinated energy drinks, increasing both the likelihood of further alcohol consumption, and of driving when intoxicated."

### **Rate of Alcohol-Related Road Deaths Declines, DOT Reports**

Almost 1,300 fewer Americans died in alcohol-related crashes last year than in 2007, and fatality rates dropped by 20 percent or more in Vermont, Wisconsin, Maine, Nebraska, Minnesota, Connecticut, South Dakota, Arizona and the District of Columbia, according to the U.S. Department of Transportation (DOT).

The Associated Press reported Dec. 7 that the rate of drunk-driving fatal crashes declined from 0.43 per 100 million miles traveled to 0.40 per 100 million miles between 2007 and 2008.

However, the rate of alcohol-related fatalities rose in New Hampshire, Kansas, Wyoming, Rhode Island, Idaho, Oklahoma and Colorado, DOT reported ([PDF](#)).

### **Drinking Coffee When Drunk Creates False Sense of Sobriety**

Drinking coffee not only doesn't sober you up when you are drunk but can make you reckless by imparting a false sense of sobriety, according to animal researchers at Temple University.

The BBC reported Dec. 9 that a study led by researcher Thomas Gould found that mice given a combination of alcohol and caffeine became more alert and relaxed, yet also failed to avoid shocks in a maze that alcohol-free mice were able to safely navigate.

"The myth about coffee's sobering powers is particularly important to debunk because the co-use of caffeine and alcohol could actually lead to poor decisions with disastrous outcomes," said Gould. "People who feel tired and intoxicated after consuming alcohol may be more likely to acknowledge that they are drunk. Conversely, people who have consumed both alcohol and caffeine may feel awake and competent enough to handle potentially-harmful situations, such as driving while intoxicated or placing themselves in dangerous social situations." (See below)

### **Effects of ethanol and caffeine on behavior in C57BL/6 mice in the plus-maze discriminative avoidance task.**

Gulick, Danielle; Gould, Thomas J., Behavioral Neuroscience. Vol 123(6), Dec 2009, 1271-1278.

Caffeine is frequently consumed concurrent to or immediately following ethanol consumption. Identifying how caffeine and ethanol interact to modulate behavior is essential to understanding the co-use of these drugs. The plus-maze discriminative avoidance task (PMDAT)

allows within-subject measurement of learning, anxiety, and locomotion. Methods: For training, each mouse was placed in the center of the plus-maze for 5 min, and each time that the mouse entered the aversive enclosed arm, a light and white noise were turned on. At testing, each mouse was returned to the center of the maze for 3 min. No cues were turned on during testing. Results: Ethanol (1.0–1.4 g/kg) dose-dependently decreased anxiety and learning, and increased locomotion. Caffeine (5.0–40.0 mg/kg) dose-dependently increased anxiety and decreased locomotion and learning. Caffeine failed to reverse ethanol-induced learning deficits. However, 1.4 g/kg ethanol blocked the anxiogenic effect of caffeine. Discussion: Although caffeine and ethanol interact to modulate behavior in the PMDAT, caffeine does not reverse ethanol-induced learning deficits. Ethanol-induced anxiolysis may contribute to alcohol consumption, while ethanol's blockade of caffeine-induced anxiogenesis may contribute to co-use.

### **The unique contribution of attitudes toward non-alcoholic drinks to the prediction of adolescents' and young adults' alcohol consumption**

Marion A.E. Roek, Renske Spijkerman, Evelien A.P. Poelen, Lex Lemmers and Rutger C.M.E. Engels. *Addictive Behaviors*, Volume 35, Issue 6, June 2010, Pages 651-654  
Available online 11 February 2010.

Attitudes toward alternative behaviors, such as drinking soda instead of alcohol, might contribute to the prediction of young people's drinking behavior. The current study explored the associations between late adolescents' and young adults' attitudes toward alcoholic and non-alcoholic drinks and their alcohol consumption, and whether these associations were moderated by participants' sex, age and education level. Cross-sectional data were collected among 1012 15 to 25-year-olds. Participants completed an online questionnaire on attitudes toward alcoholic and non-alcoholic drinks, binge drinking and monthly alcohol consumption. Data were analyzed by employing structural equation modeling in Mplus. After controlling for the shared variance in both attitudes, attitudes toward alcoholic drinks were positively related and attitudes toward non-alcoholic drinks were negatively related to participants' monthly alcohol use and binge drinking. Relations between attitudes towards alcoholic drinks and monthly alcohol consumption were stronger for boys than for girls and stronger for participants with intermediate education background. Relations between both attitudes and binge drinking were strongest for high educated participants. According to our data, non-alcohol attitudes provide a unique contribution to the prediction of alcohol use.