Characteristics of binge drinkers in Europe

E. Kuntschea,*, J. Rehm^b,c,d, G. Gmel^a

^a^ Research Department, Swiss Institute for the Prevention of Alcohol and Drug Problems, PO Box 870, Lausanne 1001, Switzerland
^b^ Addiction Research Institute, PO Box 1617, Zurich 8031, Switzerland
^c^ Public Health Sciences, Faculty of Medicine, University of Toronto, McMurrich Building, 12 Queen’s Park Crescent W., Toronto, ON, Canada M5S 1A8
^d^ Centre for Addiction and Mental Health, 33 Russell Street, Toronto, ON, Canada M5S 2S1

Abstract

Binge drinking has been shown to be associated with considerable social harm and disease burden. This review aims to give an overview from a European perspective of the socio-demographical, individual, and social factors that affect binge drinking and to identify effective interventions to reduce binge drinking. To this end, a computer-assisted search of relevant articles was conducted. Results showed that males tended to binge drinking more frequently than females. Binge drinking was most prevalent among adolescents and young adults, and prevalence levelled off later in life. Socio-economic conditions seemed to have an effect on binge drinking, independent of their effects on the volume of alcohol consumed. The early onset of binge drinking was associated with a history of drinking in the family, but pathways into adulthood are less clear. Binge drinking often co-occurred with other substance use. Motives for binge drinking included both social camaraderie and tension reduction. Which aspect prevails may vary according to the type of binge drinker, but to date has not been satisfactorily explained. Binge drinkers were not likely to know enough about or be aware of the potential risks of bingeing. Pressure from peers was one of the strongest influencing factors for binge drinking and seemed to outweigh parental influences, especially from late adolescence onwards. Binge drinking also varied according to both the predominant adult and adolescent drinking culture with more binge drinking in the northern and middle parts of Europe compared to the southern parts. Thus, a variety of socio-demographical, individual, and social characteristics associated with binge drinking have been identified. However, knowledge in this area is limited, as most research has been conducted among particular groups in specific situations, in particular North American college students. More research in Europe is urgently needed, as results from other cultural backgrounds are difficult to generalize.

r 2003 Elsevier Ltd. All rights reserved.

Keywords: Alcohol; Binge drinking; Europe

Introduction

Over the last decade, binge drinking among college students has become a major public health concern in the United States (US). Recently, two journals published special issues to get a better understanding of this phenomenon and to derive prevention approaches (Journal of Studies on Alcohol Supplement, 14, 2002; Psychology of Addictive Behaviors, 15(4), 2001).

In Europe, we have also been confronted with increasing prevalence of binge drinking, particularly among adolescents. Among the 18 countries in the European School Survey Project on Alcohol and Drugs (ESPAD) study reporting on this variable, half showed an increase in binge drinking from 1995 to 1999 among 15-year olds (Hibell et al., 2000), whereas the remaining countries remained stable. This situation calls for increased prevention efforts in several countries. However, to better target prevention strategies, it is
important to know which people are prone to binge drinking. This contribution seeks to give an overview of the characteristics of binge drinkers in Europe.

Methods

Definition of the term “binge drinking”

The term “binge drinking” has been used ambivalently in the literature (Gill, 2002; ICAP, 1997). Gmel, Rehm, and Kuntsche (2003b) identified two main definitions: (a) a drinking occasion leading to intoxication, often measured as having more than $x$ number of drinks on one occasion, and (b) a pattern of heavy drinking that occurs over an extended period of time set aside for this purpose, and linked to more clinical definitions of abuse or dependence (see also WHO, 1994). In this paper, we use the former definition of bingeing as risky single occasion drinking. It should be noted that not all authors cited in the present review labelled their measures as “binge measures”; however, the intention of all articles included was to measure heavy occasional intake, and to distinguish this drinking pattern from other patterns like “usual” heavy intake. In reviewing the studies, we tried to reproduce the binge drinking definition of the authors, such as drinking to intoxication. While we diligently tried to include only studies dealing with heavy drinking on one occasion, there were some exceptions. For instance, in adolescents where binge drinking is highly correlated with drinking in general (see Fig. 1 and Kuntsche, 2001) we included studies on general drinking for some risk factors when no study on binge drinking could be found to exemplify the relationship.

Search procedure

A first computer-assisted literature search was conducted using the keywords “binge drinking”, “heavy drinking”, “excessive drinking”, “ episodic drinking”, “drinking patterns”, and “intoxication” or “drunkenness”. “ETOH”, “PsychInfo”, “Medline”, “Swetsnet”, and “Current Contents” were used as databases, together with the internal library system of the Swiss Institute for Prevention of Alcohol and Drug Problems. The search strategy included articles published in languages other than English and not referenced in the major citation indexes (e.g. Blutalkohol). Due to the inability of the authors to understand other languages, only publications in English, German, or French were considered and the literature search was restricted to publications from 1995 onwards. During the first stage more than 800 articles were identified. Excluded from the review were articles on animals (exclusion keywords: animal, mice, rat, ape, monkey), purely methodological studies (exclusion keywords: methodology, methodological), and articles dealing predominantly with consequences of binge drinking (e.g. unintended pregnancy or stroke).

Because the study intended to focus on the European context of binge drinking, and as it became apparent that the overwhelming majority of articles dealt with studies in the US, during the second stage the literature research was restricted to European countries, using in addition to the aforementioned key words the term...
“Europe” and/or individual country names, e.g. Italy, France, Germany, Spain, Sweden, Finland, UK. The references of all articles on European countries were cross-checked for other yet unidentified studies. In addition, key informants in several countries were contacted to provide additional information on binge drinking. In total, the manuscript was based on 358 articles.

The present review intends to give a comprehensive overview for Europe, thus only key or exemplary studies from outside Europe are highlighted. However, we may have failed to detect studies because of the varying definitions for the concept of “binge drinking” (see above), which excluded reliance on a standardized search algorithm, even with the many search terms used.

**Table 1**

<table>
<thead>
<tr>
<th>Socio-demographics</th>
<th>Individual factors</th>
<th>Social factors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex and age</td>
<td>Substance related factors</td>
<td>Family aspects</td>
</tr>
<tr>
<td></td>
<td>Early onset</td>
<td>Structure of the family</td>
</tr>
<tr>
<td>Socio-economic status</td>
<td>Family history of drinking problems</td>
<td>Living with parents</td>
</tr>
<tr>
<td>Level of education</td>
<td>Beverage preference</td>
<td>Communication with parents</td>
</tr>
<tr>
<td>School drop out</td>
<td>Multiple substance use</td>
<td>Parental styles</td>
</tr>
<tr>
<td>Employment</td>
<td>Personality</td>
<td>Parental control</td>
</tr>
<tr>
<td>Financial situation</td>
<td>Impulsivity</td>
<td>Modelling</td>
</tr>
<tr>
<td></td>
<td>Disinhibition</td>
<td>Peers</td>
</tr>
<tr>
<td></td>
<td>Sensation-seeking</td>
<td>Friends’ problem behaviour</td>
</tr>
<tr>
<td></td>
<td>Conduct problems</td>
<td>Peer modelling</td>
</tr>
<tr>
<td></td>
<td>Extraversion</td>
<td>Cultural factors</td>
</tr>
<tr>
<td></td>
<td>Depression</td>
<td>Adult populations</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>Adolescent populations</td>
</tr>
<tr>
<td></td>
<td>Coping styles</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-medication</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Self-esteem</td>
<td></td>
</tr>
<tr>
<td>Motivational aspects</td>
<td>Expectancies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reasons</td>
<td></td>
</tr>
<tr>
<td>Background characteristics of behavioural change</td>
<td>Knowledge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Awareness</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Readiness to change</td>
<td></td>
</tr>
</tbody>
</table>

Given the categorization in Table 1, there were overlaps across areas. For example, beverage preferences depend on individual choice and on the type of social situation; individual norms interact with those in the family, peer groups, and institutions. However, by suggesting this categorization, there was the opportunity to compare it with similarly organized reviews of subcategories (e.g. to psychological aspects and personality characteristics, or interventions to change norm perception Baer, 2002; Perkins, 2002).

**Socio-demographical factors**

**Sex and age**

Most consistently and irrespective of the definition of binge drinking and region, binge drinkers differ from the non-binge drinking population in both sex and age. In almost all studies where gender differences were reported, men were more likely to have heavy drinking occasions (e.g. Ariza Cardenal & Nebot Adell, 2000; Bonin, McCreary, & Sadava, 2000; Gotham, Sher, & Wood, 1997; Poikolainen, Tuulio-Henriksson, Aalto-Setälä, Marttunen, & Lönnqvist, 2001; Tien, Schlaepfer,
& Fisch, 1998; Tyssen, Vaglum, Aasland, Grønvold, & Ekeberg, 1998). Furthermore, men reported more annual drunkenness days than women (Mäkelä & Mustonen, 2000). This was true for both general population surveys (e.g. Leifman, Hemström, & Ramstedt, 2001; Wilsnack et al., 2000) and youth surveys (Currie, Hurrelmann, Settetrobute, Smith, & Todd, 2000; Hibell et al., 2000).

Similarly consistent, most studies showed that the prevalence of bingeing is highest among adolescents and young adults. In the US, binge drinking usually peaked around 20-22-year olds (Johnston, O'Malley, & Bachmann, 1996; Quigley & Marlatt, 1996; Muthén & Muthén, 2000). The European Comparative Alcohol Survey (Hemström, Leifman, & Ramstedt, 2002) showed that Finland, France, Germany, Sweden, and the UK had the highest frequency of binge drinking in Europe for the youngest age group (18-29 years). An exception in this study was Italy, where prevalence of binge drinking was highest in older adults (Hemström, Leifman, & Ramstedt, 2002). However, Italian data from another source (Osservatorio Permanente sui Giovani e l’Alcool, 1998) similarly showed highest prevalence for drunkenness in the youngest age group (15-24-year olds). Switzerland showed a trend in the prevalence of binge drinking that clearly declined with age, with bingeing being highest in the group of 15-20-year olds (Gutjahr & Gmel, 2001). This consistent relationship (i.e. higher prevalence of binge drinking in younger age groups) was particularly important because it appeared to be independent of the development of the volume of drinking with age. In most countries (including the US) volume of drinking declined with age, beginning in young adulthood (Rehm et al., in press). In other countries (e.g. Switzerland) the volume of drinking increased until retirement age (Rehm & Arminger, 1996).

Conclusions on sex and age

Binge drinking is much more common among men than among women. In most countries, binge drinking peaks in late adolescence or early adulthood.

Socio-economic status: level of education, school drop out, employment, financial situation

Socio-economic status is usually operationalized by education, type of remunerated employment or income or by a combination of these indicators. Several studies have correlated the level of binge drinking with the level of education. In a multivariable logistic regression analysis, years of schooling were negatively related with “extreme alcohol use” (either seven drinks a day for at least 2 weeks or drinking a “fifth of liquor” (equivalent to about 17–20 US standard drinks) or 20 beers in 1 day) controlled for gender and age (Tien et al., 1998). A study of socio-economic health differences conducted in The Netherlands revealed that excessive alcohol consumption (more than six glasses on 3 days or more days a week or more than four glasses on 5 or more days a week) was more common among lower educational groups (Droomers, Schrijvers, Stronks, van de Mheen, & Mackenbach, 1999). In adolescence and young adulthood, poor school achievement and dropping out of school have consistently been shown to be related to higher levels of binge drinking (e.g. Laukkanen, Shemeikka, Viynamäki, Pölkki, & Lehtonen, 2001; Muthén & Muthén, 2000; Wichstrom, 1998; Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994).

There has been little research in Europe on unemployment and binge drinking in adult populations. In a Dutch study, the risk of binge drinking was 3.5 times higher among unemployed men compared with employed men (Droomers, Schrijvers, Stronks, van de Mheen, & Mackenbach, 1999). There has been evidence that unemployment is more closely related to problematic drinking patterns than to volume of drinking (Mullahy & Sindelar, 1996). Furthermore, there has been discussion on the direction of effects, i.e. does unemployment lead to binge drinking or vice versa. For instance, Claussen (1999) found that, in Norway, unemployment caused problematic drinking patterns rather than the other way round.

Another predictor of binge drinking was the level of available financial resources. Effects, however, may have had a different direction in adult populations compared to adolescent populations. In a general population survey in The Netherlands, material deprivation (defined as not being able to afford at least one of six material sets like a telephone, or basic food) but not social deprivation (not able to participate in three or more social activities because of lack of money) was associated with excessive alcohol consumption (Droomers et al., 1999). In addition, in the US, Dee (2001) showed, in a study with 700,000 respondents, that during economic downturns, among those made redundant in the workplace, and even among those who remain employed, binge drinking increased considerably. This increase was not necessarily related to an increase in the average volume of consumption. Dee interpreted these findings to be related to recession-induced economic stress.

In adolescence, however, availability of financial resources appears to be positively related to binge drinking. In a Finnish study, drunkenness was more common among 14-year olds who received more pocket money (Lintonen, Rimpelä, Vikat, & Rimpelä, 2000). Again in Finland, 14- to 16-year olds working more than 10 h a week had an increased risk of drunkenness compared to non-workers (Kouvonen & Lintonen, 2002). The authors interpreted that to mean that
influences are increasing (also see Koopmans & Boomsma, 1996). This was not only true for bingeing but also for course of DSM-IV alcohol dependence in general in a US community sample (Hasin, Paykin, & Endicott, 2001). Interestingly, binge drinking was also an important factor for chronicity of alcohol dependence in this study. In a longitudinal study in the US, Chassin, Pitts, and Prost (2002) found two groups of early bingers with a similar proportion of parents diagnosed as alcoholic. However, the group that considerably increased binge drinking in late adolescence contained mainly boys with a high level of drug use, externalizing behaviour, and peers who also drank. The group that did not increase binge drinking contained anxious and depressive girls. The patrilineal genetic transmission (type II alcoholics) has long been discussed in the literature (e.g. Cloninger, Sigvardsson, & Bohman, 1996).

Conclusion on socio-economic status

Socio-economic conditions clearly affect binge drinking. The mechanisms seemed to vary with age. Ceteris paribus, the more financial resources available for adolescents in high price countries, or the cheaper the alcohol, the higher the binge rates. However, more studies from different countries are needed to draw a clearer conclusion. Economic stress, for example unemployment, and a low level of education led to more binges in adult populations.

Individual characteristics

Substance related factors: early onset, family history of drinking problems, beverage preferences, multiple substance use

The effect of an early onset of binge drinking on later problem drinking behaviour is almost exclusively studied in the US. Early onset of binge drinking was only a weak predictor for alcohol abuse and dependence at later ages (Muthén & Muthén, 2000). However, findings from the US may not generalize to European drinking cultures. Legal drinking age is higher in the US (21 years) than in other countries (16 to 18 years). In one of the rare European studies, Poikolainen et al. (2001) found among 15–19-year-old Finns that when drinking to reduce tension is added to the regression model, the ages when a person first uses alcohol no longer predicted binge drinking 5 years later.

Concerning the effects of family history of alcohol abuse on binge drinking, there were disparate research findings in the American literature. Some studies reported that there are no effects of parental drinking on binge drinking (e.g. Havey & Dodd, 1993; Odo, McQuiller, & Stretsky, 1999), others stated that binge drinkers were more likely than non-binge drinkers to be influenced by the drinking behaviour of the family (Ichiyama & Kruse, 1998; Kushner & Sher, 1993). These disparate results may be related to how much “genetic” influence is incorporated in the operationalization of family history of drinking problems (e.g. whether the environment of living in an alcoholic family as such or genetically inherited biological factors were analysed), and to the age of individuals at the time of research (Baer, 2002). For instance, family history of drinking problems is sometimes conceptualized as a more social phenomenon (i.e. children take their parents as role models and model their drinking behaviour accordingly), sometimes as a genetic predisposition (i.e. children’s drinking behaviour is genetically influenced by their parents), or both.

Adolescents were more likely to model their drinking behaviour on that of their peers if they came from a family with drinking problems (Chipperfield & Vogel-Sprott, 1988). Adolescents with a family history of alcohol abuse tended to underestimate their own drunkenness and were therefore more likely to engage in binge drinking (Turrisi & Wiersma, 1999). There seems to be a genetically determined low response among children of alcoholics to the acute effects of alcohol intake (Schuckit & Smith, 1996).

In regard to onset, escalation, and later development of binge drinking, there appears to be a particular interplay of genetic and environmental effects. In a study of adolescent twins in Finland, shared environmental effects explained most of the variation in starting to drink to intoxication but were less important in explaining the frequency of intoxication among subjects who had already initiated drinking to intoxication (Viken, Kaprio, Koskenvuo, & Rose, 1999). Thus, genetic effects were more important in predicting the course of binge drinking than the binge drinking status. In general, there seemed to be a shift in the relative importance of additive genetic and shared environmental effects in different developmental states. In mid- to late adolescence, family and other shared environmental effects were decreasing in importance whereas genetic influences are increasing (see also Koopmans & Boomsma, 1996).
Another genetic factor discussed in relation to binge drinking is variant alcohol dehydrogenase allele ADH2*2. In general, individuals with a variant alcohol dehydrogenase allele ADH2*2 were less likely to binge as those who did not possess this allele (Luczak, Shea, Carr, Li, & Wall, 2002; Wall, Shea, Chan, & Carr, 2001; Takeshita & Morimoto, 1999). However, in Europeans, prevalence of this genetic makeup is comparatively low (Borras et al., 2000), and therefore not likely to explain the differences in binge drinking across cultures in Europe.

Concerning the kind of beverage consumed in a heavy drinking event, a study among American college students showed that heavy drinking events were more likely when beer, liquor, and mixed drinks were consumed (Clapp & Shillington, 2001). On the other hand, wine consumption did not trigger binge drinking. Drunkenness among 13- and 15-year olds in Switzerland was more closely associated with beer and spirits consumption than wine consumption (Kuntsche, 2001). The ESPAD study provided an answer to the question of whether beverage preferences were linked to binge drinking in 15-year olds cross-culturally across Europe. In the study the quantities of beer, wine, spirits, ciders, and alcopops (pre-mixed spirits, ready-to-drinks) consumed at the last drinking occasion were measured. Fig. 1 shows the association of prevalence of 5+ drinking occasions and average volume of consumption (in centiliter of pure ethanol) on the last drinking occasion. To allow comparability, only the quantities of beer, wine, and spirits were added, because not all countries measured alcopops or cider consumption. It should be noted, however, that in all countries with measured alcopops or cider consumption, the corresponding quantities were clearly lower than those of beer and spirits.

Regression analyses on the data revealed that across the European countries, beer and spirits consumption were the most important predictors for volume of drinking at the last occasion, and therefore indirectly for binge drinking. Another analysis indicated that, at least among young people, beer and spirits seem to be the beverage of choice in general and also for binge drinking.

Binge drinking is likely to be part of multiple substance use. Among American college students, a heavy drinking event was likely when marijuana was smoked or other illegal drugs were available (Clapp & Shillington, 2001). Among 9–12 graders, past-month prevalence for cigarettes was 61% for bingers compared to 34% for non-bingers, prevalence for marijuana was 59% for bingers compared to 28% for non-bingers, and prevalence for other drugs was 34% for bingers compared to 10% for non-bingers (D’Amico et al., 2001). In a confirmatory factor analysis of multiple substance use among 15-year olds in Switzerland, drunkenness was closely related to cigarette smoking and cannabis use (Kuntsche, Delgrande Jordan, & Schmid, 2002). Similarly, in university students in Sardinia, Italy (DiGrande, Perrier, Lauro, & Contu, 2000) and among ninth graders in Finland (Laukkanen et al., 2001), a strong association between cigarette smoking and binge drinking was found. In addition, the association between drunkenness, cigarette smoking and cannabis use in adolescence was shown to be stable over time (Kuntsche, in press).

Conclusion on substance related factors

For European countries, the evidence that early onset of binge drinking is related to alcohol problems in later life is weak. In looking to the influence of a family history of drinking problems, it is important to distinguish between genetic and environmental influences. Adolescents with a family history of problematic drinking were more vulnerable to binge drink. Genetic factors, the environment or both may have triggered the initiation. The escalation of problematic drinking later on seemed to be more strongly influenced by genetic rather than environmental factors. Especially among adolescents, beer and spirit consumption appeared to be more strongly related to binge drinking than wine consumption. A high co-occurrence of binge drinking and other substance use was consistently reported.

Personality: impulsivity, disinhibition, sensation-seeking, conduct problems, extraversion, depression, stress, coping styles, self-medication, self-esteem

There is good evidence that impulsivity (Cammatta & Nagoshi, 1995; Ichiyama & Kruse, 1998), disinhibition (Clapper, Martin, & Clifford, 1994; Ichiyama & Kruse, 1998) and sensation-seeking (Arnett, 1996; Ichiyama & Kruse, 1998) are risk factors for heavy drinking. In addition, low behavioural self-control skills in the seventh grade have been shown to be predictive for heavy drinking in the twelfth grade (Griffin, Botvin, Epstein, Doyle, & Diaz, 2000). Extraverted individuals drank more per occasion (Martsh & Miller, 1997) and showed a persistent pattern of frequent intoxication in early adulthood (Gotham et al., 1997). Openness to new experiences seemed to have the same effect (Gotham et al., 1997).

In numerous studies, emotional pain, loneliness, depression, anxiety, stress, and tension have been related to binge drinking (Bonin et al., 2000; Cammatta & Nagoshi, 1995; Ichiyama & Kruse, 1998; Laukkanen et al., 2001; Mäkelä & Mustonen, 2000; Poikolainen et al., 2001; Pullen, 1994; Treiman & Beck, 1996; Tyssen et al., 1998). However, the interrelations found between emotional pain, loneliness, depression, anxiety, stress, tension, and binge drinking are quite complex. Emo-
tional pain, anxiety, stress, and tension predicted heavy drinking less than the personal style of coping with these problems (Bonin et al., 2000; Ichiyama & Kruse, 1998; Mäkelä & Mustonen, 2000; Poikolainen et al., 2001; Pullen, 1994; Treiman & Beck, 1996; Tyssen et al., 1998). In a Norwegian study, the use of alcohol to cope with tension was a significant predictor of binge drinking, but not mental distress or school stress per se (Tyssen et al., 1998). The existence of psychosocial stressors, like life events, health, or social problems was similarly not associated with excessive alcohol consumption in a population survey conducted in The Netherlands (Droomers et al., 1999).

Binge drinking is likely when alcohol is used to medicate negative emotions and depression and to feel better about oneself in the US (Treiman & Beck, 1996). In a Finnish study, the use of alcohol to cope with multiple problems was exclusively a female phenomenon (Mäkelä & Mustonen, 2000). Low self-esteem or self-image was identified as a predictor of binge drinking among students in Finland and Norway (Laukkanen et al., 2001; Tyssen et al., 1998), although no such relationship could be identified using multiple regressions on longitudinal data (Poikolainen et al., 2001). In the investigation of the relationship between personality traits and binge drinking, interactions between environment and the characteristics of subjects seem key. For example, adolescents with a low self-esteem tended to drink more when they were associated with deviant peers, whereas they drank less in another social environment (Kuntsche, Reizle, & Silbereisen, 2001).

Conclusions on personality

Personality related factors are clearly linked to binge drinking, particularly in adolescence. Most consistent was the finding that extraverted individuals were most likely to become binge drinkers. The associations with emotional pain, loneliness, depression, anxiety, stress, or tension were less clear. Some multivariate longitudinal studies, however, suggested that some of these associations had been mediated or moderated through other variables. For instance, daily problems (stress, anxiety, etc.) were no longer important for binge drinking when individuals learned to cope with these problems.

Motivational aspects: expectancies, reasons

It is possible that psychological variables, like expectancies (Brown, 1985) and reasons (Cronin, 1997), are better predictors of binge drinking than demographic variables. Expectancies have generally been shown to predict different drinking measures, such as maximum daily quantity (Carey, 1995a; Sher, Wood, & Raskin, 1996) or alcohol dependency syndrome (Wood, Sher, & Strathman, 1996). Friends’ drinking and drinking expectations were the strongest predictors for men’s and women’s heavy drinking behaviour (Griffin et al., 2000). Students were more likely to binge drink as their positive expectations about binge-drinking activities increased (Turrisi & Wiersma, 1999). The impact of positive and negative expectancies on alcohol consumption seemed to be relatively stable across cultures, as shown in numerous American studies as well as in Spain (Ariza Cardenal & Nebot Adell, 2000), The Netherlands (Wiers, Hoogeveen, Sergeant, & Gunning, 1997), or in Finland (Poikolainen et al., 2001).

Alcohol may be used as an instrument to achieve a certain goal, and expectancies differ according to these goals. For example, heavy drinkers expected more positive effects on sociability and sexuality, and fewer negative effects on cognition and behavioural impairments (Werner, Walker, & Greene, 1995). The expectancy of sexual enhancement was a strong predictor of alcohol use (5+ drinking included) among 16–19-year-old girls but the strongest predictor among 18–23-year-old girls in The Netherlands (Wiers et al., 1997). In all, 82% of the 16- to 30-year olds in a British study reported drinking before engaging in sexual activity (Bagnall & Plant, 1991).

Expectancies also differ across age groups and gender. In early adolescence, in a Dutch study, the expectancy of sexual enhancement predicted alcohol use (5+ drinking included) only for boys but not for girls (Wiers et al., 1997). In late adolescence, in the same study, the expectancy of sexual enhancement was the best predictor for girls whereas for boys the expectancy of high doses of alcohol was the only predictor. Mäkelä and Mustonen (2000) found evidence that, among women, the alcohol-related expectancy to sort out interpersonal problems at home or in the workplace, to feel more optimistic about life, and to express their feelings, was associated with more annual drunkenness days, whereas among men the same applied for being funnier, wittier and getting closer to the opposite sex. Male binge drinkers were more likely to drink for social facilitation than female binge drinkers (Treiman & Beck, 1996). In both sexes, however, social facilitation was the best discriminator for bingeing versus non-bingeing. Among women, several factors discriminated between moderate and heavy alcohol users (e.g. forget disappointments, feel good, get along better on dates), whereas for men drinking to get drunk was the most prominent (Billingham, Parrillo, & Gross, 1993).

Expectancies about the effects of alcohol, evaluations of the outcomes and corresponding drinking behaviour differed among binge drinkers and moderate drinkers: to have fun through drinking games, sexual disinhibition, risk-taking thrills, and self-medication of pain appealed to the positive expectancies among binge drinkers in particular (Marlatt, 1999). Moderate drinkers used alcohol to enhance or maintain positive emotional...
states, but tended to know their limits and did not expect that more drinking would result in more fun. Binge drinkers, however, seemed to use alcohol for two opposite reasons: social camaraderie and tension reduction. Cronin (1997), for example, showed that the social camaraderie reasons and tension reduction expectancies accounted for most variance on binge drinking compared with other expectancies or reasons, such as peer pressure or mood enhancement. In another study (Carpenter & Hasin, 1998), however, social facilitation pressure or mood enhancement. In another study compared with other expectancies or reasons, such as peer camaraderie reasons and tension reduction expectations. Cronin (1997), for example, showed that the social opposireasons:socialcamaraderieandtensionreduc- tion.Cronin(1997),forexample,showedthatthesocial drinkersex, however, seemed to use alcohol for two that more drinking would result in more fun. Binge states, but tended to know their limits and did not expect consequences are acceptable to many drinkers” (Mur- graff et al., 1999, p. 6). Consistent with poor knowledge of the effects of binge drinking, D’Amico et al. (2001) found that binge drinkers did not differ from moderate- alcohol drinking college students in seeking advice to change their alcohol use.

Vik et al. (2000) showed that college binge drinkers (5+ drinks for men (4+ for women) at least once within the past 3 months) were more likely to be classified as precontemplators (66.9%) than contemplators (19.8%) or individuals in action (13.3%) according to the stages of change model (Prochaska & DiClemente, 1983). Thus, they neither intended to change their drinking habits nor did they recognize a need to reduce drinking. This is particularly important as 75% of the contemplators and half of the precontemplators acknowledged evidence of tolerance.

Conclusions on motivational aspects

Expectancies and reasons appear to be related to binge drinking in two diverging directions. Some binge drinkers expected fun, thrills, and disinhibition from their drinking, others used alcohol to cope and to self- medicate. According to Marlatt (1999), the increase in arousal and pleasure should be expected for the non- dependent binge drinker, whereas dependent drinkers used alcohol more for its anxiolytic or tension reduction effects. The sometimes mixed findings in the literature may be related to the absence of a clear difference between these two types of drinkers. Research on binge drinking rarely separates binge drinkers with usual low-volume drinking from high-volume binge drinkers.

Background characteristics of behavioural change: knowledge, awareness, and readiness to change

In a prevention research study, a low level of drinking-related knowledge in the seventh grade predicted heavy drinking in the twelfth grade, but this result was only significant among boys (Griffin et al., 2000). For young people in particular, a greater awareness of the potential dangers of binge drinking is urgently needed (Murgaff, Parrott, & Bennett, 1999). In general, college student binge drinkers underestimated alcohol problems in comparison to abstainers and non-bingers (Wechsler & Kuo, 2000). Two-thirds of heavy drinking college students did not recognize a need to reduce their alcohol consumption, despite evidence of tolerance and negative drinking consequences (Vik, Culbertson, & Sellers, 2000). In a repeated cross-sectional study conducted over 12 years in Switzerland, increasing drunkenness trends were paralleled by a decreasing awareness of one’s personal health among 11-, 13-, and 15-year olds (Kuntsche, 2002). Finally, a British review concluded that “risky single-occasion drinking is generally not perceived as carrying risk and any adverse consequences are acceptable to many drinkers” (Murgaff et al., 1999, p. 6). Consistent with poor knowledge of the effects of binge drinking, D’Amico et al. (2001) found that binge drinkers did not differ from moderate- alcohol drinking college students in seeking advice to change their alcohol use.

Vik et al. (2000) showed that college binge drinkers (5+ drinks for men (4+ for women) at least once within the past 3 months) were more likely to be classified as precontemplators (66.9%) than contemplators (19.8%) or individuals in action (13.3%) according to the stages of change model (Prochaska & DiClemente, 1983). Thus, they neither intended to change their drinking habits nor did they recognize a need to reduce drinking. This is particularly important as 75% of the contemplators and half of the precontemplators acknowledged evidence of tolerance.

Conclusions on motivational aspects

Expectancies and reasons appear to be related to binge drinking in two diverging directions. Some binge drinkers expected fun, thrills, and disinhibition from their drinking, others used alcohol to cope and to self- medicate. According to Marlatt (1999), the increase in arousal and pleasure should be expected for the non- dependent binge drinker, whereas dependent drinkers used alcohol more for its anxiolytic or tension reduction effects. The sometimes mixed findings in the literature may be related to the absence of a clear difference between these two types of drinkers. Research on binge drinking rarely separates binge drinkers with usual low-volume drinking from high-volume binge drinkers.

Conclusion on background characteristics of behavioural change

Binge drinkers tend not to know enough or be aware of the potential risks of binge drinking, and rarely intend to change their behaviour.

Social factors

Family aspects: Structure of the family, living with parents, communication with parents, parental styles, parental control, modelling

A basic characteristic to describe the relation between the social context and binge drinking is the structure of the family in which the adolescent lives. In Switzerland and Finland, less adolescent drunkenness could be found in intact two-parent families (Kuntsche & Silbereisen, under review; Lintonen et al., 2000). The family structure may be less important for predicting binge drinking (measured by drunkenness and 5+ drinking) than parental monitoring (Thomas, Reifman, Barnes, & Farrell, 2000).

Among college students in the US, binge drinking was not likely when students lived with parents, spouse, or children (e.g. Odo et al., 1999), and was more likely when peers were present (Clapp & Shillington, 2001). Among university students in Italy, DiGrande, Perrier, Lauro, and Contu (2000) found that onset of drinking outside the family and drinking outside the family were strong predictors of binge drinking.

In general, drinking behaviour can be modelled from the parental behaviour (Zhang, Welte, & Wieczorek, 1999; see also Denton & Kampfe, 1994; Vakalahi, 2001 for reviews). Perception of parental alcohol abuse
(Kuntsche & Meyer, 2002), communication between the family members (Turrisi, Wiersma, & Hughes, 2000), closeness to parents (Kuntsche & Silbereisen, under review; Zhang et al., 1999), parental monitoring (Beck, Shattuck, Haynie, Crump, & Simons-Morton, 1999; Thomas et al., 2000), and parental styles (Baumrind, 1991) were identified as risk factors for subsequent adolescent alcohol use or abuse. In a German study (Barnow, Schuckit, Lucht, John, & Freyberger, 2002), parental rejection was positively related and emotional warmth negatively related to alcohol problems. It is also important to note that adolescents can also learn from their parents in a protective and supervised environment about the consumption limits (Thomas et al., 2000).

In adolescence and early adulthood, the influence of parents decreases, whereas that of peers increases (Steinberg, 2002). Consequently, studies among US college students found a modest effect of internalized parental attitudes on binge drinking in young adulthood (Wechsler, Dowdall, Davenport, & Castillo, 1995; Lo, parental attitudes on binge drinking in young adulthood (Wechsler, Dowdall, Davenport, & Castillo, 1995; Lo, 1995). On the other hand, the permissiveness of parents towards alcohol use may have influenced the selection of friends and consequently adolescent binge drinking (Lo, 1995).

**Conclusion on family aspects**

Poor relations with parents or insufficient parental monitoring were associated with a higher prevalence of binge drinking in adolescents, as was consistently shown for the US and also in Europe. Normally, the influence of parents decreased with age. The commonly observed pattern in the US was that drinking in general, and binge drinking in particular, started during a phase in which people left their parents to go to work, or colleges and universities, and when parental influence diminished (Johnston et al., 2000). Studies are urgently needed in countries in which drinking commonly starts earlier in life and more often within the family context. This is particularly true of studies investigating how adolescents learn about drinking in their family environment and how parenting affects drinking beyond adolescence, namely when young adults leave their parents and start to live their own life.

**Peers: friends’ problem behaviour, peer modelling**

One of the most consistent findings in adolescent substance use research in the last 30 years has been the strong association between substance use by peers and individual substance use (for an early review see Kandel, 1985). Two recently published reviews on peer influences on college binge drinking underlined this relationship (Borsari & Carey, 2001; Perkins, 2002). Peers can influence individuals directly (e.g. by offering drinks, round buying or forcing others to drink in drinking games) and indirectly through modelling and perceived norms. Social modelling (friends’ drinking behaviour, friends’ attitudes, and perceived peer pressure) has also been a strong predictor of expectancies (Wood, Read, Palfai, & Stevenson, 2001).

Additionally, individuals selected peer groups that fit their needs and norms (Kandel, 1985). The evidence from literature on college students demonstrated that having drinking peers or perceiving that close friends drink affected individual drinking in general (e.g. Griffin et al., 2000; Thombs, Wolcott, & Farkash, 1997). From a longitudinal perspective, friends’ drinking behaviour was a significant predictor of alcohol use during follow up surveys (e.g. Werner et al., 1995). Binge drinking increased with the number of drinking friends (Odo et al., 1999). Binge drinkers used alcohol to gain peer acceptance and enhance social facilitation (Ichiyama & Kruse, 1998; Treiman & Beck, 1996; Turrisi et al., 2000).

Often, binge drinking was seen as “usual” peer behaviour (Evans, Gilpin, Farkas, Shenassa, & Pierce, 1995). The perceived peer norm was a strong predictor of individual binge drinking. In other words, the more a student perceived others as drinking heavily, or approved of heavy use, the higher the individuals drinking was (Borsari & Carey, 2001; Clapp & McDonnell, 2000; Perkins, 2002). Again, most of the research has been conducted on college students in the US. The results of such studies cannot be generalized to other countries. For instance, Delk and Meilman (1996) in a comparison of US and Scottish college students showed differences in the students’ drinking culture. In the US, students drank in “rounds” rather than individually, and typically matched their drinking with the speed of the fastest drinker, behaviours which were not typical for Scottish students.

Some European studies, however, supported the influence of peers on binge drinking. For example, male binge drinkers in the ninth grade in Finland reported that they have a higher number of peer relationships (Laukkonen et al., 2001). Having drinking peers predicted the progression from low-moderate to problematic alcohol consumption (including being drunk and 4+ drinking) among school children in Spain (Ariza Cardenal & Nebot Adell, 2000). In a multivariate model, other than amount of alcohol consumed, peer group substance use was the best predictor of alcohol problems for adolescents living in Germany (Barnow et al., 2002). In a longitudinal study of Norwegian adolescents, friends’ alcohol use and friends’ problem behaviour predicted alcohol intoxication (Wichstrøm, 2001).

**Conclusions on peer influences**

In adolescence and early adulthood at least, peer influence is a strong predictor for binge drinking. This is particularly important, as adolescents were likely to
perceive binge drinking as being the peer norm and consequently started binge drinking. Little is known about peer effects on adults, and in Europe in general.

Cultural factors in adult and adolescent populations

The preceding paragraphs have focused mainly on factors that affect individual’s binge drinking within a particular society or drinking culture. Since the influential work of MacAndrew and Edgerton (1969) it has been well known that individual drinking behaviour is affected by the “cultural position of drinking” (Room & Mäkelä, 2000). The cultural importance and meaning of occasions with excessive consumption or drunkenness has been influencing the extent to which this results in “drunken-changes-for-the-worse” or the view of otherwise unacceptable behaviour as behaviour in “time out” situations (see also Room, 2001). To give a recent example from the North American continent, Kuo et al. (2002) showed, for a Canadian and US college sample, that, although Canadians were more often drinkers US students were more often binge drinkers. Thus, although the individual factors (e.g. drinking before the age of 16, living at home, being older) showed similar associations in both countries, the higher prevalence of binge drinking in the US points to a generally higher cultural acceptance of binge drinking. As argued by Room (1992), cultural drinking patterns and norms might even be more persistent and harder to change than individual factors.

In Europe, there has been a long lasting view of a north–south gradient of drinking and binge drinking (e.g. Ahlström-Laakso, 1976), with a higher integration of drinking in everyday life (e.g. drinking with meals) in southern Europe, and stronger traditions of ostensive drunkenness in northern Europe. In recent years comparative surveys in adolescents in different countries became available that further strengthened the importance of cultural differences in binge drinking (Currie et al., 2000; Hibell et al., 2000).

Bloomfield, Stockwell, Gmel, & Rehm (accepted) found relatively high abstinence rates in Mediterranean countries and the highest frequency of consumption in the wine-producing countries of Europe; however, findings for binge drinking were less consistent, probably due to differences in measurement and definitions of binge drinking. Hemström, Leifman, and Ramstedt, (2002) found a north–south gradient based on the European Comparative Alcohol Study (ECAS) which permitted better comparability due to the use of the same methodologies and survey questions across six countries. Higher volume per drinking occasion and higher proportions of binge drinking occasions to all drinking occasions were found in the UK, Sweden and Finland compared with Italy, France and Germany, whereas the lowest frequencies of drinking were found in the Finland and Sweden and the highest in Italy.

In the Comparative Risk Analyses of the Global Burden of Disease study, disparate patterns of drinking were identified for different European countries (Rehm et al., in press; Rehm et al., 2003); whereas the Nordic countries had more binge drinking, the Central and Mediterranean countries showed the least amount. However, most bingeing could be found in the countries East of Germany and the Czech Republic, where most alcohol seems to be consumed in binge occasions outside meals. Russia and the surrounding countries were in particular associated with a pattern of binge drinking outside meals (Rehm et al., in press; Rehm et al., 2003; see also Rehm et al., 2001). The survey results were indirectly supported by epidemiological studies of outcomes, where outcomes related to heavy drinking episodes such as accidents and cardiovascular problems were most strongly related to alcohol in Nordic and Eastern European countries (Rehm et al., in press; Gmel, Rehm, & Kuntsche, 2003b; Gmel, Rehm, & Frick, 2003a, see also Addiction 96 (1) Supplement February, 2001).


Among the 15-year olds in the HBSC study in 1998, the highest prevalence of students reporting drunkenness at least twice in their lives was found in Denmark, Wales, Greenland, England, and Finland, whereas wine-producing southern countries like France, Portugal, Greece, and Switzerland were the European countries with the lowest prevalence. The ESPAD 1999 study similarly confirmed the north–south gradient in Europe already for school children. The highest proportion of boys and girls who had been drunk 10 times or more in the past 12 month came from (in that order) Denmark, Finland, UK, Ireland, Iceland, Faroe Islands, Sweden, Greenland and Norway. At the other end of this scale were located Croatia, Hungary, Former Republic of Macedonia, Greece, Malta, Portugal, France, Romania, Italy, and Cyprus, with Cyprus having the lowest prevalence. Thus again, southern, wine-producing countries had lower prevalence of drunkenness compared to the northern countries.

In a study of 11 ESPAD countries, using multilevel techniques, Bjarnason et al. (2003) showed that individual effects (family structure) had an impact on binge drinking, but also that the adult drinking culture (measured by per capita consumption of beer) and the adolescent drinking culture (measured by the average amount of alcohol consumed on the occasion for each...
country) affected binge drinking. Thus, the study confirmed that the cultural position of alcohol in a country is important for binge drinking, but even added to this knowledge by demonstrating that the adult culture and the youth drinking culture may have independent effects on youth’s binge drinking.

Conclusion on cultural factors

Binge drinking also varies according to both the predominant adult and adolescent drinking culture with more binge drinking in the northern, western, and eastern parts of Europe compared to the southern parts, indicating that binge drinking was less likely in countries in which alcohol is integrated into everyday life compared to countries where heavy drinking on weekends was more culturally accepted.

General conclusion

A variety of personal and social/environmental characteristics associated with binge drinking have been identified. However, results are based on few studies, and evidence is mixed. In addition, most studies stemmed from the very specific population of 18–24-year-old US college students, and there are serious doubts if these results can be transferred to other cultural contexts. Compared to most European countries, this was a very specific setting. It marks the transition from leaving the parental home to live away, usually in dormitories, from obligatory schooling to higher education, and the beginning of adulthood in an overall relatively “dry” culture (Johnston et al., 2000), where alcohol is only legal after age 21. Most of these characterizations do not apply to European countries, which have different school systems, much higher integration of alcohol in daily life, and much lower rates of dormitory living. Since there were no systematic comparative studies on binge drinking in different cultures with different environmental characteristics, it was not at all clear which of the ingredients in the US college binge culture might also be causes for bingeing in other cultures. In short, our knowledge of the aetiology of binge drinking and psychosocial background variables is still limited. Europe would be an ideal place to study these effects given the cultural differences in binge drinking in a mainly north–south gradient.

Acknowledgements

This research was supported by the grant “Binge-Trinken in Europa” (No. 02.000538) from the Swiss Federal Office of Public Health. We would like to thank Emma Haydon for copy editing our English and giving valuables comments.

References


Gill, J. S. (2002). Reported levels of alcohol consumption and binge drinking within the UK undergraduate student population over the last 25 years. *Alcohol and Alcoholism, 37*(2), 109–120.


Swedish Council for Information on Alcohol and Other Drugs (CAN).


Odo, J., McQuiller, L., & Strestsky, P. (1999). An empirical assessment of the impact of RIT’s student alcohol policy on...


among college students. *Archives of Pediatrics and Adolescent Medicine, 149*, 733–739.


