Alcohol and other drug use at school leavers’ celebrations

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ABSTRACT

Background  A significant proportion of adolescents who attend celebratory events often engage in substantial alcohol and other drug use. We examined patterns, influences and impacts of drug consumption at an end of schooling life celebration.

Methods  Seventeen- to 18-year-old Australians who intended to attend (n = 541) and who attended the celebration (n = 405), respectively, completed pre- and post-event surveys.

Results  Males consumed 18.44 and females 13.24 Australian standard drinks on an average day during the school leavers’ event. Compared with their last social event, there was greater alcohol (P < 0.0005) and ecstasy use (P < 0.046 for Day 1 and P < 0.008 on Day 3). However, the number of drinks consumed per hour appeared to be similar across contexts. Most (87%) experienced at least one negative outcome attributed to alcohol and other drug use. Safety strategies were frequently used and appeared to be protective against some of the most common harms (hangover, vomiting, black out and unprotected sex).

Conclusions  The use of alcohol and other drugs at this celebratory event appears to be reflective of the greater than usual number of drinking hours that are available to participants. The use of safety strategies can be successful in mitigating some of the most common drug-related harms.

Keywords  alcohol consumption, celebration, health promotion, large event, leavers, protective behavioral strategies, risky single occasion drinking, schoolies, young people

Introduction

Adolescent alcohol use in countries such as the USA, UK and Australia, is typified by episodic consumption, which commonly occurs to the point of intoxication.1–4 This style of ‘risky drinking’ means that young people are frequently affected by blackouts (memory loss), hangovers and violence.5,6

Adolescent alcohol and other drug (AOD) use appears to peak at ‘special events’.7,8 For many young adults in Western countries, the milestone of school completion is marked by festive events. These multiple day celebrations are a much anticipated occasion for frivolity with fellow alumni; and, in Australia, up to half of all Year 12 graduates attend some form of these school leavers’ (also known as ‘Schoolies’ or ‘Leavers’) celebrations.9,10

Compared with the significant press coverage each year,11 there has been relatively little formal research into the phenomenon. The common theme of existing studies is that for a significant proportion of attendees, the event revolves around heavy alcohol use, some consumption of other drugs and engagement in other risky behaviours such as unprotected casual sex.12–20 Similar scenarios occur at other multiple-day peer-based celebratory events such as Spring Break in the USA21,22 and russefeiring, a 17-day Norwegian graduation party.23

These risky behaviours are partially attributed to the ‘holiday effect’, a phenomenon where individuals on holiday tend to engage in risky behaviours not otherwise attempted at home.13,18,24–27 These elements include the temporary suspension of social codes, such as responsibility and accountability; time away from usual authority figures; a peer-based environment and a reputation for AOD experimentation. Also, heavier drinkers appear to ‘self-select’ to attend party destinations with a reputation for AOD use.28–31
Currently, there are few international and no Australian peer-reviewed published studies which provide quantity-specific estimations that reliably gauge the extent of AOD use at school leavers’ celebrations (especially alcohol), and provide a fulsome view of its influence on behaviour.

The aims of this study were therefore to (i) compare the levels of AOD use at an end of school celebration and use at other peer-based social events and (ii) relate the experience of harms experienced at the celebrations to levels of use and engagement in harm-minimization strategies.

Methods

Design

Core data for this project were gathered using a two-part survey design with a self-report methodology. The majority of the respondents were aged 17 (legal purchase age for alcohol in Australia is 18). Respondents intended to, and/or had attended the 2009 school leavers’ celebrations on Rottnest Island. This Island is located 20 km off the west coast of Perth and is a popular location for the event in Western Australia. This location was chosen as the bulk of the visitors entered and exited via a single ferry terminal. This ‘bottle-necking’ facilitated survey administration.

The first survey sampled young people who intended to attend the event (n = 541; 56% female; 91% 17 years and 9% 18 years of age; 87% enrolled in an independent school). This pre-celebration survey was available both online and face to face. Half (52%) were conducted online from 2 months to the day prior to the celebration. The mean online completion time was 15.64 min [95% CI (14.79, 16.49), n = 215 (outliers removed)]. The remaining paper surveys were disseminated on the first day of the celebrations on five ferries travelling to Rottnest Island. Project information forms and blank surveys were provided en route, and completed surveys collected as the boat docked.

The post-celebration survey was completed by 405 (50% female; 94% 17 years of age and 6% 18 years and over; 92% attended an independent school). While this second survey was also available online, most (86%) were conducted face to face. On the last day of the event, a team of 27 researchers distributed surveys around the island’s accommodation, commercial areas and ferry terminal. Researchers remained within a visible distance to participants to encourage serious attempts and to collect surveys. Face-to-face response rates were estimated at 90% and the completion time at 15 min. Survey modality (online versus face-to-face) was controlled for multifactorial analyses, and Wilcoxon–Mann–Whitney tests did not reveal any significant differences in intended or reported actual alcohol use across the modalities.

The two surveys were designed to be analysed primarily as separate components—one assessing intentions and the other what happened at the celebrations. As the total number of celebrants on the island was 1466, ~37% of the population was surveyed with the pre-celebration survey and 28% for the post-celebration survey. Although recapture was not a central method of the study, a self-generated anonymous code was incorporated into both instruments to pair an individual’s data where possible. Not all participants completed the code and the pre- and post-event surveys of 120 participants were eventually linked (62% female). Due to the modest known paired sample size, most analyses focus on ‘within-survey’ data (combining both paired and unpaired respondents).

Confectionaries (‘lollies’) were provided as a minor incentive with face-to-face surveys. Participants of both survey modalities were able to enter a voucher prize draw. Prize-draw email addresses were detached from or collected in separate databases to the survey data. Consent was implied by survey completion. This study was approved by Curtin University (HR135/2008) and the Rottnest Island Authority (2008/13; 2009/110328).

Measurements

Both surveys contained psychometrically validated and novel items in Likert and free response form. The pre-celebration survey included quantity-specific expectations of personal and peer AOD use at the event; expectations of how permissive the celebration context would be; parental discussions about alcohol use and AOD use at their last social event. This ‘last event’ was the last social occasion attended with friends prior to the school leavers’ celebration. As adolescent alcohol use tends to be episodic and increase in ‘party’ contexts, the more frequently used survey reference period of the last 7 days may or may not include a peer-based social event. The school leavers’ celebration and the last event were comparable in that they were both social and peer based, and assessed a similar subset of young people who had self-selected as intending to/attended the end of school celebrations. That is, the ‘last event’ served as a proxy for ‘usual’ AOD behaviour.

The post-event survey investigated AOD use, perceptions of peer AOD use, experience of AOD-conducive conditions, negative consequences and harm reduction strategies employed at the celebrations.

Alcohol consumption was estimated using validated tools from the National Drug Strategy Household Survey—the beverage-specific and the standard drink (SD) approach. The beverage-specific method requires the respondent to specify their drink (e.g. mid-strength beer), the size of their
drink receptacle (e.g. a 330 ml bottle) and the number of each type consumed, in table labelled with the most common beverage types and sizes. The SD method requires the respondent to convert their intake into SDs and then to record a figure that summarized daily consumption. The SD question ‘how many standard drinks did you have on Day 1?’ was supplemented by a visual guide. In Australia, a ‘standard drink’ contains 10 g of alcohol. Piloting confirmed that comprehension of the ‘SD’ concept was high, as it was a part of many schools’ syllabus. The beverage-specific response method is one of the most valid self-report measures of alcohol quantity—however, its higher and more accurate estimates are offset by a considerably lower response rate.41

Both estimates were presented in Table 1, but only the beverage-specific estimates have been discussed. The beverage-specific method was used for the last event and celebration estimates, whereas the SD method was only used in the celebration estimates.

Analysis

A series of Wilcoxon signed rank tests were performed to compare AOD use between the contexts of the last event and an average day at the leavers’ celebrations (paired respondents).

Logistic regression analyses were performed to assess the impact of six factors on the likelihood of reported experience of 17 negative consequences. Independent variables were chosen to assess the ability of safety strategies to attenuate experience of a variety of harms. The six variables contained in each model were as follows: (i) an average quantity of alcohol used on a single day at the event; (ii) use of drugs other than alcohol; (iii) use of alcohol-related safety strategies, as assessed using the Protective Behavioural Strategies Survey (PBSS). The PBSS is a psychometrically validated list of behaviours that minimize alcohol use and related acute harm42–48 (iv) gender; (v) accommodation location and (vi) survey administration modality (online or face to face).

Results

Alcohol use at leavers’ celebrations and the last event

A significantly greater proportion of respondents used alcohol during the celebration period (93%) and on each celebration day (an average of 88% across the 3 days), compared with the last peer-based social event (78%).

Using the beverage-specific response method, drinking respondents were estimated to have consumed a mean of 11.94 SDs at their last social event, and 15.80 SDs on an average celebration day (see Table 1 and Fig. 1). Paired respondents consumed an average of 5.07 SDs more in the celebration context compared with their last event (95% CI 2.92, 7.23); Wilcoxon signed rank test statistics: \( z = 2.438, n = 58, P = 0.0005, r = 0.59 \) (large effect).

Respondents were asked to specify the number of hours over which drinking occurred. A mean of 5.37 drinking hours was reported for the last event (mean = 14.32; 95% CI = 12.73, 15.92; \( n = 361 \)) and 7.42 (mean = 18.44; 95% CI = 16.72, 20.16; \( n = 356 \)) hours for an average celebration day.

Table 1 Alcohol use at the last social event and on an average day at the school leavers’ celebrations

<table>
<thead>
<tr>
<th>Alcohol estimate method</th>
<th>Males</th>
<th>Females</th>
<th>All drinking respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>95% CI</td>
<td>Missing n</td>
</tr>
<tr>
<td>Last event</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beverage specific</td>
<td>14.32</td>
<td>12.73,</td>
<td>58</td>
</tr>
<tr>
<td></td>
<td>15.89</td>
<td>15.92</td>
<td></td>
</tr>
<tr>
<td>Average school leavers’ event day</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beverage specific</td>
<td>18.44</td>
<td>16.72,</td>
<td>67</td>
</tr>
<tr>
<td></td>
<td>20.16</td>
<td>20.16</td>
<td></td>
</tr>
<tr>
<td>SD</td>
<td>17.05</td>
<td>15.57,</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>18.53</td>
<td>18.53</td>
<td></td>
</tr>
</tbody>
</table>

Note: means and CIs calculated with respondents who used alcohol (112 at the last event and 30 at the school leavers’ event did not drink). Estimates include both paired and unpaired respondents. Some did not specify their gender (four at last event and two at school leavers’ event). Mean alcohol use at school leavers’ event was highly correlated across the beverage-specific and SD response methodologies (Spearman’s rho = 0.87, \( P < 0.005, n = 235 \)). A similar proportion of males and females consumed alcohol at both the last event and the end of school celebrations. However, in both contexts, males consumed significantly more: 4.23 SDs at the last event and by 5.20 SDs on an average celebration day (\( P = 0.0005 \)). In Australia, the National Health and Medical Research Council States a threshold of no more than four SDs for low-risk single occasion alcohol consumption. The clear majority of the drinkers consumed beyond this guideline on an average celebration day (87% using the SD method and 91% using the beverage-specific method).
for an average celebration day. Unsurprisingly, there was a positive correlation between the average number of drinking hours and quantity of alcohol consumed at the celebration (Spearman’s rho $= 0.62$, $n = 239$, $P < 0.0005$), and at the last event (Spearman’s rho $= 0.30$, $n = 300$, $P < 0.0005$).

A drinking pace score was calculated to indicate the number of SDs consumed in 1 h. The mean drinking pace at the last event was 2.91 (95% CI 2.62, 3.19; $n = 300$) and 2.70 (95% CI 2.50, 2.90; $n = 238$) on a mean celebration day. On average, there was a smaller than 10% difference in the drinking pace between the contexts of the last event and the celebration (combining the scores of paired and unpaired respondents). Wilcoxon signed rank tests did not reveal any significant differences in paired respondents’ drinking pace across contexts.

**Drugs other than alcohol at school leavers versus the last event**

The use of amphetamine, caffeine, cannabis and ecstasy were assessed dichotomously. In these analyses, the use of ‘an illicit drug’ was defined as the use of amphetamine and/or cannabis and/or ecstasy. Thirteen per cent used an illicit drug at their last event, 14% used an illicit drug on an average celebration day (mean use over Days 1 – 3) and 20% used on any one celebration day (see Table 2).

A series of Wilcoxon signed rank tests were used to contrast paired respondents’ use of each drug across the contexts of their last event and each individual celebration day. Paired respondents were more likely to use ecstasy on Day 1 [$\tau = -2.00$, paired $n = 103$, $P = 0.046$, $r = 0.14$ (small effect size)] and Day 3 of the celebrations [$\tau = -2.65$, paired $n = 103$, $P = 0.008$, $r = 0.18$ (small–medium effect size)] compared with the last event they attended. No other comparisons were significantly different.

**Negative consequences and the use of protective strategies**

The majority of respondents (87%) experienced at least one negative experience at the school leavers’ celebrations that they attributed to AOD use ($n = 313$, 92 missing; see Table 4).

Table 4 provides a summary of the logistic regression analyses associated with the experience of negative outcomes. Some independent levels had more than two levels. Alphabetical letters were used in Table 3 to denote each comparison between levels of the same variable (e.g. to compare the highest and lowest quartiles of alcohol use). These letters were used and so odds ratios are identified with a specific level of a variable, rather than with the variable as a whole. For example, the cell content of ‘9.34*ab’ in Table 4 relates back to the letter ‘b’ in Table 3. It means that respondents who drank 11.67–18.33 SDs (‘b’*) were 9.34 times as likely to report a blackout compared with those who drank 0–6.00 SDs (comparison/reference group). Incidentally, this blackout finding is consistent with previous findings that adolescent drinkers are more susceptible to...
Of the 17 outcomes that were assessed, 14 models were significant. Four negative consequences were uniquely associated with the use of safety strategies: hangover, vomiting, blackout and unprotected sex.

Controlling for all other factors in the model and compared with those who engaged in safety strategies with the greatest frequency (the reference group), the following odds ratios (OR) were reported. Respondents who engaged in protective strategies with the lowest frequency were: 3.50 times more likely to report a hangover; 3.38 times more likely to report a blackout and 10.92 times more likely to report unprotected sex. Those who engaged in protective strategies with the second greatest frequency were 2.61 times more likely to report vomiting.

Discussion

Main finding of this study
The majority of the school leavers were consuming very high levels of alcohol. Using one of the most accurate methods of self-report, a daily mean of 18.44 Australian SDs was reported for males and 13.24 for females.

What is already known on this topic
The proportion of alcohol users (93%) is similar to other Australian Schoolies studies, which range from 90 to 97%. In Victoria and Queensland, 69 and 76% reported consuming 5+ drinks on a ‘typical’ Schoolies day. The estimates in this study are substantially higher, but are likely a result of methodology differences. For example,
compared with these other studies, this instrument (i) utilized the SD and beverage-specific method as opposed to multiple choice options (5 brackets, the highest being 10+), (ii) used the concept of the ‘SD/used a SD visual guide and (iii) referred to a specific as opposed to a ‘typical’ day.

These results are broadly consistent with estimates using similar quantity-specific measures. For example, the average alcohol use per celebration day did not appear to be substantially different from Spring Break estimations of 18 drinks for males and 10 drinks for females. While an Australian SD contains 10 g of alcohol and US drinks contain ~12 g of alcohol, the studies taken together suggest broad similarity and potentially some convergence in drinking rates between the genders.52

### What this study adds

As the drinking rates (SDs per hour) appeared similar to the last social event attended, it is possible that the longer hours available at the celebratory event accounted, to some extent, for the substantial quantities of alcohol consumed. As there is some research evidence to support the notion that longer drinking hours are associated with higher levels of consumption,53 it is reasonable to propose that a greater opportunity to drink may have directly facilitated the greater use of alcohol per day. As celebrating students were commonly observed to commence drinking in the late afternoon, an earlier start time may be the key influence. These longer drinking times are possibly in turn fostered by lack of usual academic responsibilities, parental supervision and being within an environment with a reputation for heavy drinking.

The reported prevalence of ecstasy use at school leavers’ celebrations was roughly twice that of the last social event. Although the reasons for higher ecstasy use were not specifically examined in this study, it is possible for example, that ecstasy’s effects of increased ‘cheer and chatter’ and as an anti-soporific, aid what is regularly cited as the main positive aspect of leavers’ celebrations: to socialize with peers.14,54,55 The absence of other drug differences between contexts are mostly unsurprising due to the lower frequency of illegal drug use in this age group combined with the paired sample size.56,57

Encouragingly, not only were the alcohol-related safety strategies frequently used, they appeared to have a protective effect. Controlling for a range of potential confounders, the use of protective harm reduction strategies was associated with lowered odds of experiencing some of the most common harms and risks including hangover, vomiting, blackouts and unprotected sex.

This study uniquely provided quality documented variation in use patterns, and risk and protective factors associated with riskier levels of use. This study was distinctive in using the last social event attended with friends as a behavioural baseline to identify a range of factors differentiating between contexts.

### Limitations of this study

Although self-report measures are considered a generally valid measure for adolescent drug use,58–60 there are some potential limitations. First, deliberate misreporting is an issue
Table 4 | Likelihood (OR) of negative consequences associated with AOD use and other risk factors at the school leavers’ celebration

<table>
<thead>
<tr>
<th>Consequence (DV)</th>
<th>Prevalance (%)</th>
<th>n</th>
<th>Alcohol use (0–6 SDs)</th>
<th>Other drugs (none)</th>
<th>Safety strategy use/PBSS (safest)</th>
<th>Gender (female)</th>
<th>Location (main settlement)</th>
<th>Survey modality (online)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hangover</td>
<td>67.42</td>
<td>310</td>
<td>2.67** [1.14, 6.22], 3.18** [1.23, 8.22], 5.55**[1.76, 17.48]</td>
<td>—</td>
<td>3.50** [1.21, 10.11]</td>
<td>—</td>
<td>—</td>
<td>0.33* [0.12, 0.91]</td>
</tr>
<tr>
<td>Emotional outburst</td>
<td>45.28</td>
<td>307</td>
<td>—</td>
<td>3.98** [1.62, 9.80]</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Vomiting</td>
<td>37.91</td>
<td>306</td>
<td>—</td>
<td>2.61** [1.13, 6.03]</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Heated argument</td>
<td>35.69</td>
<td>297</td>
<td>4.01** [1.36, 11.82]</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Accident/injury</td>
<td>40.67</td>
<td>300</td>
<td>—</td>
<td>2.46** [1.29, 4.72]</td>
<td>—</td>
<td>0.39** [0.21, 0.73]</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Physically aggressive</td>
<td>18.98</td>
<td>295</td>
<td>—</td>
<td>4.04** [1.27, 12.82]</td>
<td>—</td>
<td>0.31** [0.13, 0.78]</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Blackout</td>
<td>57.95</td>
<td>302</td>
<td>2.66** [1.05, 6.73], 9.34** [3.29, 26.51], 6.22** [1.98, 19.55]</td>
<td>—</td>
<td>3.38** [1.22, 9.40]</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Inability to pay for things</td>
<td>12.29</td>
<td>301</td>
<td>—</td>
<td>4.49** [1.17, 17.27]</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Unprotected sex</td>
<td>13.62</td>
<td>301</td>
<td>—</td>
<td>—</td>
<td>10.92** [1.14, 104.23]</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Sexual situation was not happy about at the time</td>
<td>15.38</td>
<td>299</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Regretted sexual encounter</td>
<td>21.33</td>
<td>300</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Stole private/public property</td>
<td>12.42</td>
<td>298</td>
<td>—</td>
<td>—</td>
<td>10.08** [2.45, 41.47]</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Act of vandalism</td>
<td>9.70</td>
<td>299</td>
<td>—</td>
<td>—</td>
<td>7.75** [1.51, 39.78]</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Removed from island/accommodation</td>
<td>3.33</td>
<td>300</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Arrested for intoxicated behaviour</td>
<td>5.02</td>
<td>299</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Any sexual risk/problem</td>
<td>32.23</td>
<td>301</td>
<td>—</td>
<td>—</td>
<td>2.95** [1.17, 7.47]</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Any legal problem</td>
<td>18.27</td>
<td>301</td>
<td>—</td>
<td>9.71** [3.16, 29.85]</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Note: all logistic regression analyses control for alcohol quantity, other drug use, safety strategy use, gender, location and survey modality. Reference groups are presented in brackets after each independent variable. 95% CI presented in square brackets after the odds ratio. The logistic regression models were not statistically significant for the following: (i) sexual situation was not happy about at the time, (ii) removed from island/accommodation and (iii) arrested for intoxicated behaviour. ‘Any sexual risk/problem’ was a summary variable (endorsement of at least one of the following: unprotected sex, sexual situation they were not happy about at the time or sexual encounter they later regretted). ‘Any legal problem’ was a summary variable (endorsement of at least one of the following: stealing, vandalism, removal/banning or arrest).

‘—’ symbol denotes the independent variable did not make a significant unique contribution to the model.

*A significant unique association where P < 0.05 (**for when P < 0.01).
for all self-administered surveys, underreporting and over reporting having potential to skew results. Secondly, recall effects may cause reports of past behaviour may be incomplete/inaccurate, even though the majority (96%) of the post-celebration surveys were completed within 3 days of end of celebrations. Lastly, though this study used an opportunistic/convenience sample and cannot be conclusively stated as representative of the celebrations, the combination of a high response rate and that approximately a third of the total celebration population was surveyed, remains a strength.

As school leavers’ celebrations show no obvious sign of decline in popularity, recognition of actual and potential harms, prevention and mitigation strategies are increasingly important. They also have relevance for other celebratory events. These findings have relevance identifying the high-risk of celebration, demanding effective responses while simultaneously indicating that use of harm reduction strategies can reduce risk. Outcomes have been directly disseminated with the celebration-coordinating government bodies to assist in ensuring harm minimization and education are prioritized in event management. Findings have also been translated into practical strategies and communicated through national media, and materials designed for parents and young people.

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