Is Orientation Week a Gateway to Persistent Alcohol Use in University Students? A Preliminary Investigation

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ABSTRACT. Objective: Orientation Week is common at many universities throughout the world and is a way to introduce students to their new environment. Despite some benefits, Orientation Week is often typified by heavy alcohol use. Although typically viewed as a “one-time” event, the higher levels of drinking that students engage in during Orientation Week may persist into the academic year. We investigated this possibility in the present study. Method: Freshman-year students (n = 143; 41% male) residing in a dormitory were surveyed about their alcohol intake before university. During Orientation Week, students were sent a daily text message asking about the number of drinks they consumed the previous night. Then, during the academic year, students were sent one text message each month to record their weekend drinking. Results: Participants consumed a higher number of standard drinks during Orientation Week (M = 26.0, SD = 28.6) than they did either before entering university (M = 13.1, SD = 13.6) or during the academic year (M = 6.4, SD = 8.5). For male students, but not female students, higher Orientation Week drinking uniquely contributed to higher rates of drinking during the academic year when controlling for pre-university drinking (β = .122, p < .001). Students who drank at low levels before entering university were particularly susceptible to the negative effects of Orientation Week drinking. Conclusions: Orientation Week may act as a gateway for male students, as drinking during Orientation Week predicted their subsequent drinking throughout the academic year. Based on these findings, Orientation Week could be a prime period for interventions aimed at curbing academic-year drinking. (J. Stud. Alcohol Drugs, 76, 000–000, 2015)
YOUNG ADULTS HAVE THE HIGHEST alcohol consumption of any age group, and many drink with the specific aim of becoming intoxicated (Kypri et al., 2005b). Within this high-risk age group, university students stand out, consuming more alcohol than their non–university-attending peers (Dawson et al., 2004; Kypri et al., 2005a; O’Malley & Johnston, 2002). As a result, university students not only have a higher incidence of alcohol use disorders (Slutske, 2005) but also report a higher incidence of harm resulting from alcohol, such as blackouts (McGee & Kypri, 2004) and negative sexual experiences (Cashell-Smith et al., 2007). Although a number of contextual factors have been found to contribute to university students’ drinking behavior (e.g., living arrangements [Kypri et al., 2008], academic scheduling [Paschall et al., 2006], and alcohol policies [Nelson et al., 2005]), social influences are perhaps the primary driving force (Borsari & Carey, 2001).

Young adults place great emphasis on the opinions of their peers (Spijkerman et al., 2010), making them more likely to model other students’ drinking (Dallas et al., 2014) and be influenced by the perceived norms of their environment (Larsen et al., 2012). Young adults’ modeling of others’ drinking has been assessed in laboratory bar scenarios, where young adults tend to match the drinking of a confederate (Larsen et al., 2012). Imitating a confederate’s drinking is a robust phenomenon and has been observed among pairs of strangers (Larsen et al., 2009), social acquaintances (Dallas et al., 2014), and in both same-sex and mixed-sex pairs (Larsen et al., 2010). In a similar vein, students may also be influenced by the perceived norms of the university environment. There is a strong association between perceived drinking norms and both alcohol use and problems associated with alcohol use. At university, students tend to act in a way that represents the perceived norm rather than their own view (Clapp & McDonnell,
2000). Thus, the social environment at university is critical to understanding factors that drive student alcohol use.

One event that may contribute to the formation of university drinking norms is Orientation Week. Orientation Week (also known as Freshers’ Week, Frosh Week, or Welcome Week) is a social event (or series of events) common at many universities throughout the world. Although the length and the type of orientation activities present may vary between universities, the period is generally thought of as a way to socialize and acclimatize students to their new environment (Laing et al., 2005; McKenzie & Schweitzer, 2001; Scheier & Botvin, 1997). However, Orientation Week is also typified by increased alcohol use and relaxed social norms in which drinking every day is viewed as acceptable (Griffin et al., 2009). Although students may view Orientation Week as a “one-time-only event” in which they drink markedly more than they do during the academic year (File et al., 1994), it is possible that the drinking students undertake themselves and observe in others establishes a normalized view of drinking that influences drinking throughout the academic year (Borsari & Carey, 2001). Freshman-year university students may be particularly susceptible to the impact of Orientation Week because of the new environment and the pressures to meet and befriend new people. Therefore, Orientation Week may serve as a “gateway” to subsequent drinking as new students who drink during Orientation Week may continue these practices throughout the academic year.

The aim of the current study was to investigate the relationship between students’ alcohol consumption during Orientation Week and their subsequent drinking during the academic year. Freshman-year students living in a university freshman dormitory reported their alcohol use during three periods: (a) before Orientation Week (i.e., pre-university drinking), (b) during Orientation Week, and (c) monthly throughout the academic year. It was hypothesized that
students’ level of drinking during Orientation Week would predict their level of drinking during the academic year when pre-university drinking was controlled for. This finding would suggest that Orientation Week establishes a drinking pattern that persists throughout the academic year and would highlight Orientation Week as a potential critical period for curbing students’ drinking during the academic year. Participant gender and pre-university drinking levels were also tested as potential moderators of this association.

**Method**

**Participants**

Ethical approval for this study was obtained from the University of Otago Human Ethics Committee. Participants were full-time freshman-year (first-year) students enrolled at the University of Otago, New Zealand, who were residing at the same first-year residential college. They were recruited on the Sunday before Orientation Week at a mandatory floor meeting and asked to complete a brief baseline pencil-and-paper survey that asked questions about pre-university alcohol use in addition to questions about their reasons for attending the University of Otago and about health in general. During this floor meeting, students were informed of the rules of the dormitory, including the dormitory alcohol rules—which included a definition of a standard drink (e.g., one 330 ml can or bottle of normal strength beer/cider, or one small shot [30 ml] of distilled spirits = 1 standard drink; one 330 ml ready-to-drink = 1.3 standard drinks; one 440 ml can of beer = 1.5 standard drinks; one bottle of wine = 8 standard drinks). Of the 510 students residing in the hall, 470 students attended their floor meeting; of these, 451 students completed the baseline survey. The end of the baseline survey invited participants to take part in a text-messaging study of their experiences during Orientation Week and the academic year. Students who agreed to take part completed a consent form and were asked to provide their
mobile phone number. Participation was entirely voluntary and was encouraged through incentives (three chances to win $50 throughout the year). A total of 298 students (133 men and 165 women) agreed to take part; of these, 143 completed the study with sufficient data to be included in the analysis. This final sample reflected 28% of the entire residential hall and consisted of 58 men and 85 women of mostly European descent (81.8% European, 9.8% Asian, 1.4% Māori/Pacific Islander, and 5.6% of another ethnicity or mixed ancestry; two participants did not identify their ethnicity). The gender or ethnicity of participants in the final sample was representative of the larger population of participants who completed the baseline survey, gender \( \chi^2(1, 449) = 0.238, p = .682 \); ethnicity \( \chi^2(3, 440) = 3.437, p = .329 \); 10 participants did not identify their ethnicity. Additional attrition analyses for baseline alcohol data are presented below.

**Measures**

*Demographics.* Demographic data collected included gender and ethnicity.

*Alcohol consumption.* In the initial survey, the number of drinks consumed by participants before attending university was assessed by a modified Timeline Followback. Specifically, they were asked, “Think of a typical week in the last 30 days for you. Think of what you did, where you lived, what your weekly activities were. Try to accurately remember how much alcohol you typically drank.” For each day of the week (Monday–Sunday), they estimated the number of drinks consumed, which were added across the weekend days (Thursday, Friday, and Saturday) and across all 7 days for measures of pre-university weekend and weekly drinking, respectively.

Participants enrolled in the text-messaging component of the study were then sent a text message every day during Orientation Week asking them to report the number of drinks they had
consumed the night before. These messages were usually sent at around 2 p.m. each day and were paired with another question related to Orientation Week or well-being to prevent participants from viewing the study as being entirely focused on their alcohol use (e.g., “Hi from the dorm Survey! Are you excited about O’week? [Y/N]. How many alcoholic drinks did you have yesterday? [e.g., 5]. Send reply like this: Y5”).

Finally, one text message was sent each month during the Southern Hemisphere academic year (April–October), excluding the midsemester break (total = 6 assessments). Unlike the Orientation Week text messages, participants were asked to report their drinking from the previous 3 days on a Sunday (e.g., “Hi from the dorm Survey! Are you enjoying your sem 1 Uni experience? [Y/N] How many alcoholic drinks did you drink Thurs, Fri, and Sat? Send reply like this Y5,10,0”). Participants were asked for their previous 3 days drinking because around three quarters of students’ alcohol consumption occurs over the Thursday, Friday, and Saturday period (Hartzler & Fromme, 2003; O’Connor & Colder, 2005).

Data preparation and attrition analysis

Participants needed to reply to at least three Orientation Week text messages to be included in the final sample. Orientation Week drinking was determined by adding the number of drinks consumed during the 7 days of Orientation Week or, for students with missing data, by calculating a mean number of drinks per day and multiplying this by 7. Although not optimal, a weighted weekly estimate enabled retention of participants with some missing data—an approach we deemed appropriate given that most participants in our final sample completed more than half of the texts from Orientation Week (M = 4 of 7 texts, SD = 1.62, range: 3–7).

Weekend drinking during the academic year was determined by adding up the number of drinks
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participants reported consuming on Thursday, Friday, and Saturday and then averaging across the number of months (1–6) they provided data ($M = 4.1$, $SD = 1.7$, range: 1–6 months).

Participants who completed the initial pre-university survey, replied to at least three Orientation Week text messages, and replied to at least one text message throughout the academic year were included in the analysis ($n = 143$). The flow of attrition is shown in Figure 1. Baseline pre-university drinking data available for all attrition groups showed a similar level of pre-university weekend and weekly drinking across the three groups. Independent samples $t$ tests showed no difference in drinking patterns between the 143 participants included in the analysis and the remaining 308 people who completed baseline data—weekend drinks: $t(449) = -1.635$, $p = .103$; weekly drinks: $t(449) = -1.485$, $p = .138$. Independent sample $t$ tests similarly showed no differences in drinking patterns between the 143 individuals included in the analysis and those who agreed to take part in the study but did not supply enough data—weekend drinks: $t(296) = -1.525$, $p = .128$; weekly drinks: $t(296) = -1.696$, $p = .091$. Therefore, the participants included in the final sample appeared fairly representative of the dormitory population.

Results

Descriptive statistics and correlations

Table 1 shows the descriptive statistics for pre-university, Orientation Week, and academic year drinking for the final sample. The highest levels of drinking were reported during Orientation Week, with participants consuming an average of 26 drinks across the 7 days. Orientation Week drinking was higher in men (37 drinks) than women (19 drinks), $t(296) = 3.001$, $p < .001$. The highest number of drinks consumed by an individual during Orientation
Week was 147 drinks for a male participant and 95 drinks for a female participant. Only 9 men and 13 women did not drink at all during Orientation Week.

[COMP: Table 1 about here]

Table 2 shows significant correlations among all four measures of drinking. People who drank more before university reported greater drinking during Orientation Week and greater weekend drinking throughout the academic year. Orientation Week drinking was also associated with greater weekend drinking throughout the year.

[COMP: Table 2 about here]

Multiple regression

We conducted a hierarchical multiple regression with academic year weekend drinking as the dependent variable. In the first step, we entered two control variables (gender coded 0 for men and 1 for women) and pre-university weekly drinking (mean-centered). In the second step, we entered Orientation Week drinking (mean-centered) to determine whether Orientation Week drinking predicted increases in academic year drinking over and above pre-university levels, controlling for gender. In the third step, we entered two interaction terms to test whether the unique relationship between Orientation Week drinking and academic year drinking varied by gender and pre-university drinking. The two-way interaction terms were (a) the cross-product of gender (0 = male, 1 = female) and Orientation Week drinking and (b) the cross-product of pre-university drinking and Orientation Week drinking. All interaction terms were computed on centered continuous predictors ($M = 0$; Aiken & West, 1991). For completeness, we also entered the two-way cross-product of gender and pre-university drinking and the three-way interaction between gender, pre-university drinking, and Orientation Week drinking. Nonsignificant higher-
order interaction terms were dropped from the final model. Regression results are shown in Table 3.

[COMP: Table 3 about here]

Model 1 contained gender and pre-university weekly drinking, which explained 31.1% of the variance in academic year weekend drinking. Both gender and pre-university weekly drinking uniquely contributed to academic year weekend drinking.

Model 2 included Orientation Week drinking, which further explained 9.5% of the variance in academic year weekend drinking. Thus, consistent with our hypothesis, higher Orientation Week drinking uniquely contributed to higher rates of drinking during the academic year. This association provides the first evidence of a potential “gateway” effect of Orientation Week on academic year alcohol use.

Model 3 included the two-way interaction terms between gender, pre-university drinking, and Orientation Week drinking, which further predicted another 5% of variance. The significant two-way interaction between gender and Orientation Week is shown in Figure 2. Simple slope analysis using the ModGraph-I program (Jose, 2013) showed that Orientation Week drinking predicted increases in academic year weekend drinking for men, $b = 0.192, t(139) = 5.942, p < .001$, but not for women, $b = 0.039, t(139) = 0.668, p = .51$, suggesting a gateway effect of Orientation Week only for men. The two-way interaction between pre-university weekly drinking and Orientation Week drinking is shown in Figure 3. Here, pre-university drinking was depicted with two lines designated as low (1 $SD$ below mean) and high (1 $SD$ above mean; Aiken & West, 1991), which was equivalent to 1.1 and 22.1 weekly drinks. The unique association of Orientation Week drinking on academic year drinking was significantly greater among participants who drank at low (vs. high) levels before university. Participants who drank at low
levels before university—but who drank at high levels during Orientation Week—were nearly equivalent in their academic year drinking to participants who drank at high levels before and during Orientation Week. Although the gateway effect was stronger in the low versus high pre-university drinking groups, simple slopes analyses showed statistically significant gateway effects in both groups—low pre-university drinking: $b = 0.233, t(140) = 5.769, p < .001$; high pre-university drinking: $b = 0.151, t(140) = 5.022, p < .001$. None of the other two-way or three-way interactions was significant (Gender × Pre-University Drinking, Gender × Pre-University × Orientation Week Drinking). Results were identical when using pre-university weekend drinking instead of pre-university weekly drinking.

[COMP: Figures 2 and 3 about here]

**Discussion**

For men, drinking behavior during Orientation Week predicted their subsequent drinking during the academic year. That is, when we controlled for pre-university drinking, men who drank more during Orientation Week showed significantly higher rates of drinking during the academic year—more than what would be expected based on their pre-university drinking rates. In contrast to men, the drinking behavior for women during Orientation Week did not predict their subsequent drinking during the academic year. Although the pattern for women was in the same direction as men, it was much more attenuated and nonsignificant (Figure 2). The mechanism underlying the gateway effect found for men, and the absence of the effect for women, could be attributed to several differences. One theory is that peer influences may be more intense for men than for women. Men may receive more social payoffs for drinking with the norm or getting drunk, whereas women may just be rewarded for drinking at all (Balsa et al., 2011). Therefore, during Orientation Week, men may be more likely to model their peers’
drinking (or receive direct pressure to drink) and establish their university drinking norms during this period.

This gateway effect appeared more pronounced for those who consumed no or a low amount of alcohol before university. Previous research suggests that students who enter college who do not engage in heavy episodic drinking may begin to drink heavily during their first year (Weitzman et al., 2003) and that around 50% of nondrinking college students will begin to consume alcohol in their first year (Lo & Globetti, 1993; Moos et al., 1976). For these students, Orientation Week may be one of the driving forces behind the increase in drinking.

Strengths and limitations

The major strength of our study was the use of a dormitory population. Although using this group (and offering little to no incentive) meant that our attrition rate was higher than if we had paid participants or used a more convenient sample (e.g., psychology students), we were still able to retain more than a quarter of the population throughout the academic year. Because of the voluntary nature of the study, we had slightly higher attrition rates and lower adherence rates than other daily diary studies (around 60% adherence for Orientation Week and 70% adherence for monthly reports), a limitation that could be corrected by providing added incentives and payment in future research.

It is important to highlight the fact that our sample did not differ from the rest of the dormitory in either weekend or weekly pre-university drinking. However, the participants retained in the study may have differed on other unmeasured variables, such as personality variables or other drinking variables. For example, participants with the best completion or response rates tend to be higher in conscientiousness and agreeableness (Conner & Lehman, 2012). Although students higher in conscientiousness may not be more susceptible to the
influences of Orientation Week drinking, students higher in agreeableness could be. Therefore, we cannot know whether the gateway effect we found is dependent on particular psychological traits of people retained in the study.

Despite this, the participants we retained included a broad range of drinking rates (e.g., from 0 to 147 drinks consumed during Orientation Week), which suggests our participants were representative of the larger student population and not a restricted sample of nondrinkers or low-risk drinkers. Furthermore, although we believe these results will generalize to university students as a whole, the gateway effect of Orientation Week may be more marked for students in dormitories, given that norms for drinking are generally higher in this population (Borsari & Carey, 2001; Kypri et al., 2008). Although we believe this gateway effect will generalize to other universities throughout the world, it is important to point out that New Zealand law allows 18-year-olds to legally buy and consume alcohol. Therefore, because students were able to purchase and drink alcohol legally at the dormitory, alcohol use may be higher in this study than in other American studies of college drinking.

Another strength of our study was that we controlled for pre-university drinking, which isolated the association between Orientation Week drinking and drinking during the academic year. This statistical control makes the current study unique from previous research, which has not focused on isolating specific periods such as Orientation Week. Our measure of pre-university drinking, however, was retrospective. This was the only retrospective element of our study. The rest of our study tracked Orientation Week and academic year drinking prospectively in “close to real time” using text-messaging mobile procedures, which have been previously validated (Moore et al., 2013). Although our retrospective baseline measure was not optimal, previous research has suggested that short-term retrospective self-reports of alcohol consumption
are reliable and valid (Del Boca & Darkes, 2003) and are highly correlated (although not perfectly) with daily reports (Leigh et al., 1998; Patrick & Lee, 2010). Furthermore, the alternative to this would be extremely challenging, requiring contacting participants before university enrollment. Our compromise was to measure pre-university drinking before the start of Orientation Week so that recall estimates could not be biased by Orientation Week experiences.

However, another weakness of this method was that the measures at each time point were not consistent. For example, we compared the number of average weekend drinks taken across the academic year with the average weekly drinking for the past month before university. Although Hartzler and Fromme (2003) suggest that 75% of student drinking occurs during the weekend period and justifies the comparison between Orientation Week and academic year weekend drinking, future studies would benefit from measuring drinking across the week during the academic term. Future studies would also benefit from measuring pre-university drinking in a prospective rather than retrospective fashion.

Finally, the current results are correlational and may not offer definitive evidence of a gateway effect. Future research should adopt an experimental approach. One feasible approach would be to implement an intervention to reduce drinking during Orientation Week to test the impact on drinking throughout the academic year.

**Conclusions**

This study contributes to the body of literature on contextual factors that may contribute to an increase in drinking among university students. Importantly, it demonstrated a potential gateway relationship between Orientation Week drinking and changes in subsequent drinking.
during the academic year. These results suggest that Orientation Week may be a prime target for alcohol-based interventions in a university setting.

Acknowledgments

The authors acknowledge Kathryn Bees for her assistance with the initial data collection and scheduling of text messages.

References


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<th>Variable</th>
<th>Overall</th>
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<th>Men</th>
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<tr>
<td></td>
<td>$M (SD)$,</td>
<td>$M (SD)$,</td>
<td>$M (SD)$,</td>
</tr>
<tr>
<td></td>
<td>range</td>
<td>range</td>
<td>range</td>
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<tr>
<td></td>
<td>0–60</td>
<td>0–45</td>
<td>0–60</td>
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<td>8.6 (7.5),</td>
<td>19.6 (17.6),</td>
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<tr>
<td></td>
<td>0–81</td>
<td>0–34</td>
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<tr>
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<td>26.0 (28.6),</td>
<td>18.7 (19.2),</td>
<td>36.8 (36.0),</td>
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<tr>
<td></td>
<td>0–147</td>
<td>0–95</td>
<td>0–147</td>
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<td>Academic year (weekend drinking)</td>
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<td>3.9 (4.2),</td>
<td>10.1 (11.5),</td>
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<td>0–54</td>
<td>0–28</td>
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TABLE 2. Correlations among the drinking variables

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<td>.591**</td>
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**p < .001
TABLE 3. Results of the hierarchical regression analysis predicting weekend drinking during the academic year from gender, pre-university weekly drinking, Orientation Week (O'Week) drinking, and their significant interactions

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<tr>
<th>Variable</th>
<th>$b$</th>
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<th>$t$</th>
<th>$p$</th>
<th>$R^2$</th>
<th>$R^2$ change</th>
<th>$df$</th>
<th>$p$</th>
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<td></td>
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<td></td>
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<td>.311</td>
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<tr>
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<td>.406</td>
<td>.095</td>
<td>1, 139</td>
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<tr>
<td>O'Week</td>
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<tr>
<td>O'Week</td>
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<td>5.948</td>
<td>&lt;.001</td>
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<td></td>
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<tr>
<td>Gender × O’</td>
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<td>.004</td>
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Notes: $b$ = unstandardized regression coefficient; $SE = $ standard error; Pre-univ. = pre-university weekly drinking; O’ = Orientation Week drinking.
FIGURE 1. Mean pre-university weekend and weekly drinking for attrition groups

FIGURE 2. Plot of the Gender × Orientation Week drinking interaction on academic year weekend drinking when pre-university weekly drinking was controlled for. Orientation Week drinking was modeled around $-1 \, SD, M, +1 \, SD$, which corresponded to 0.0 (low), 26.0 (med), or 54.6 (high) standard drinks during Orientation Week.

FIGURE 3. Plot of the Pre-University Drinking × Orientation Week drinking interaction on academic year weekend drinking when gender was controlled for. Orientation Week drinking was modeled around $-1 \, SD, M, +1 \, SD$, which corresponded to 0.0 (low), 26.0 (med), or 54.6 (high) standard drinks during Orientation Week. Pre-university drinking was modeled around $-1 \, SD / +1 \, SD$, which corresponded to 0.0 (low) or 26.8 (high) weekly standard drinks before entering university.
Figure 1

<table>
<thead>
<tr>
<th>Participants who completed baseline ($N = 451$)</th>
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<td>Weekend drinks</td>
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<thead>
<tr>
<th>Participants who qualified for data analysis ($n = 143$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weekend drinks</td>
</tr>
<tr>
<td>($M = 10.5$, $SD = 10.6$)</td>
</tr>
</tbody>
</table>
Figure 2

[Graph showing the relationship between Orientation Week drinking and Academic Year Standard Drinks for Women and Men.]
Figure 3

![Graph showing the relationship between orientation week drinking and academic year standard drinks for low and high pre-university drinking levels.](image)