Sample Lab Report

# Aim

The term “beer goggles” refers to the widespread belief that the more alcohol person has drunk, the more generous their standards attractiveness become regarding their choice of partner (Field, 2011).

For the purpose of this study, “attractiveness” will defined as the physical features that people tend to regard as making a potential partner desirable. “Partner” refers to a person who enters into a mutually flirtatious relationship with someone.

The attractiveness of partners was measured by means of photographs rated by independent raters on a scale from 0 to 100. Alcohol consumption was measured in pints of beer, with three possible values: 0 pints; 2 pints; and 4 pints.

In this study, I tested the hypothesis that the mean attractiveness-of-partner ratings of people who drink 0, 2 and 4 pints of beer respectively, differ. Specifically, I predicted that if the beer goggles effect is real, the group who drank the most alcohol would have a lower mean attractiveness-of-partner rating than the group who drank no alcohol.

# Methods

I downloaded data collected by Field (2009).

Participants:

Field recruited 48 participants (24 male) to a study, and randomly assigned each of them to one of three groups of 16 participants. The randomisation was stratified by gender in order to ensure that the groups did not differ in their gender balance.

## Procedure

The participants were sent to a night club and each group was instructed to drink a different number of pints of beer: 0 pints, 2 pints, and 4 pints. Participants were instructed not to drink any other form of alcohol. At the end of the evening, each participant’s dance partner was photographed. These photographs were later rated by independent raters. For further details of participants and procedures, see Field (2009).

## Statistical analysis

The dependent variable was the attractiveness-of-partner score for each participant. I tested the null hypothesis that the mean for people who drink 0, 2 and 4 pints of beer, respectively, are the same. To test this null I used a one-way ANOVA with one between-subjects factor (Alcohol) with three levels (0 pints; 2 pints; 4 pints). If this ANOVA indicated that the null hypothesis should be rejected, I planned to conduct Bonferroni *post hoc* tests to determine which pairs of group means were significantly different. I calculated that for an alpha criterion of .02 (0.5 divided by 2 comparisons, my sample size gave me 5% power to detect a small effect size (*d*=0.2), 23% power to detect a medium effect size (*d*=0.5), and 58% power to detect a large effect (*d*=0.8).

The validity of an ANOVA depends on the assumption that the variances in the dependent variable do not differ between groups, and that the residuals are normally distributed. I used the Explore function in SPSS to examine the data from each group for potential outliers or non-normal distributions. Then, following an initial ANOVA, I then tested the assumption of homogeneity variance using Levene’s test. I saved the normalised residuals from my ANOVA. I defined an outlier as a normalised residual greater than 3 or less than -3. Any participant with a residual outside this range would be discarded. I then used the “Explore” menu in SPSS to analyse the residuals. I visually examined boxplots and histograms, and tested the distribution for normality using Shapiro-Wilk’s test. The Explore function also gives an estimates of skewness and kurtosis which is useful for diagnosing any departure with normality, and for suggesting an appropriate transform to correct the distribution.

If these checks indicated that the assumptions of the ANOVA were violated, and that no obvious transformation of the data was likely to correct the distribution, my strategy was to use boot-strapped post hoc confidence intervals for the pairwise differences between group means. I performed all analyses using SPSS version 21.0 (IBM Corp, 2012).

# Results

The mean attractiveness-of-partner scores are shown graphically in Figure I.

Figure : mean attractiveness-of-partner scores for each group. Error bars are 95% Confidence Intervals

This figure shows that the mean attractiveness-of-partner score was considerably lower for the 4-pints group (mean = 46.56, SD=14.343) than for either the 0-pints group (mean = 64.75, SD=8.466) or the 2-pints group (mean=64.69, SD=9.911).

The *F* value for the model was significant, *F*(1,45)=13.307, *p*<.001, indicating that we can reject the null that the mean values in the population are the same. Shapiro-Wilk’s test of the residuals indicated that distribution was not significantly different from normal (p=.956). However, Levene’s test showed that that the assumption of homogeneity of variances was violated, *F*(2,45)=3.378, *p*=.043. This means that that we need to examine the bootstrapped *post hoc* confidence intervals for the differences between each pair of groups to determine whether any pair of group means are significantly different. These results are given in Table 1.

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| --- | --- | --- | --- | --- |
|  | Difference | Bias | Std. Error | BCa 95% Confidence Interval |
| Lower | Upper |
| 2 Pints - None | 0.94 | -0.19 | 3.16 | -4.56 | 6.32 |
| 2 pints - 4 pints | 18.13 | -0.18 | 4.19 | 10.38 | 25.6 |
| None - 4 pints | 17.19 | 0.01 | 4.14 | 9.37 | 25.22 |

Table : Bias-corrected accelerated Standard Errors and 95% Confidence Intervals for Tukey HSD post hoc pairwise differences.

As can be seen from the table, the 95% confidence interval for the difference between the mean attractiveness-of-partner ratings for the 2 pints group and the 0 pints group crosses 0 and is thus not significantly different from zero. However, the 95% confidence intervals for the differences between the mean attractiveness-of-partner ratings for the 4 pints group and both the 0-pints group and the 2-pints group does not cross zero, indicating that the 4 pints group mean is significantly lower than the mean of both those other groups. In both cases, the observed effect size (Cohen’s d) was 1.15, which is a very large effect size.

# Conclusion:

These results indicate that we can reject our null hypothesis that the means of attractiveness-of-partner ratings are not different between these three alcohol conditions. The findings support the hypothesis that the amount of beer a person drinks affects their perception of the attractiveness of their potential partners. They also confirm the specific prediction that the group that drank the most beer would have a lower mean attractiveness-of-partner than the group who drank none. The findings therefore support the “beer goggles” belief that drinking a large amount of beer increases the generosity of a person’s perception of the attractiveness of their potential partners.

However, the findings only indicate a significant effect once beer consumption exceeds 2 pints. The study provides no evidence that drinking just 2 pints of beer has any significant effect on attractiveness perceptions. Nonetheless, the sample size of the study only gave us 58% power to detect even a large effect size. We cannot therefore confidently rule out the possibility that even 2 pints of beer may have a substantial effect on people’s perception of attractiveness. A larger study would be required to test this.

A further limitation of this study is that it possible that the beer goggles effect may be different in different genders. Further analyses could be done to test this hypotheses. There may also be other factors that affect susceptibility to the beer goggles effect. Further studies that include measures of other potential predictors could address this question. A final limitation of the study is that it is not clear how random the sample selection was, or how diverse a population it was drawn from. It is therefore difficult to know how widely the findings can be generalised.

# References

Field, A. (2009). *Discovering statistics using SPSS*. Sage publications.