

Alcohol's Effect on Coordination

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Research Questions

- Is there a difference in the effect of alcohol consumption on time between males and females?
- Are the differences among males vs females significant?
- Is there any interaction between Gender and Condition?



Design

Randomized Basic Factorial with 2 Factors:

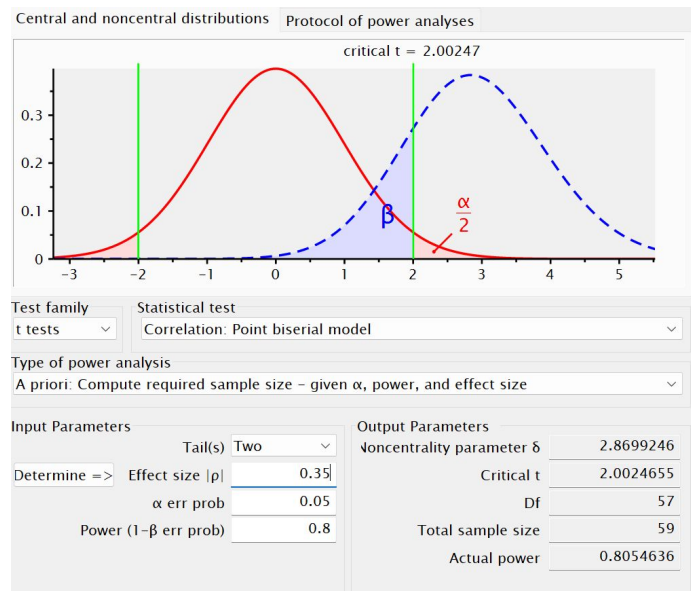
- **Condition**
2 Levels (Before / After) Alcohol Consumption
- **Gender**
2 Levels (Male / Female)

Response: Balance Test Eyes Open time (seconds)

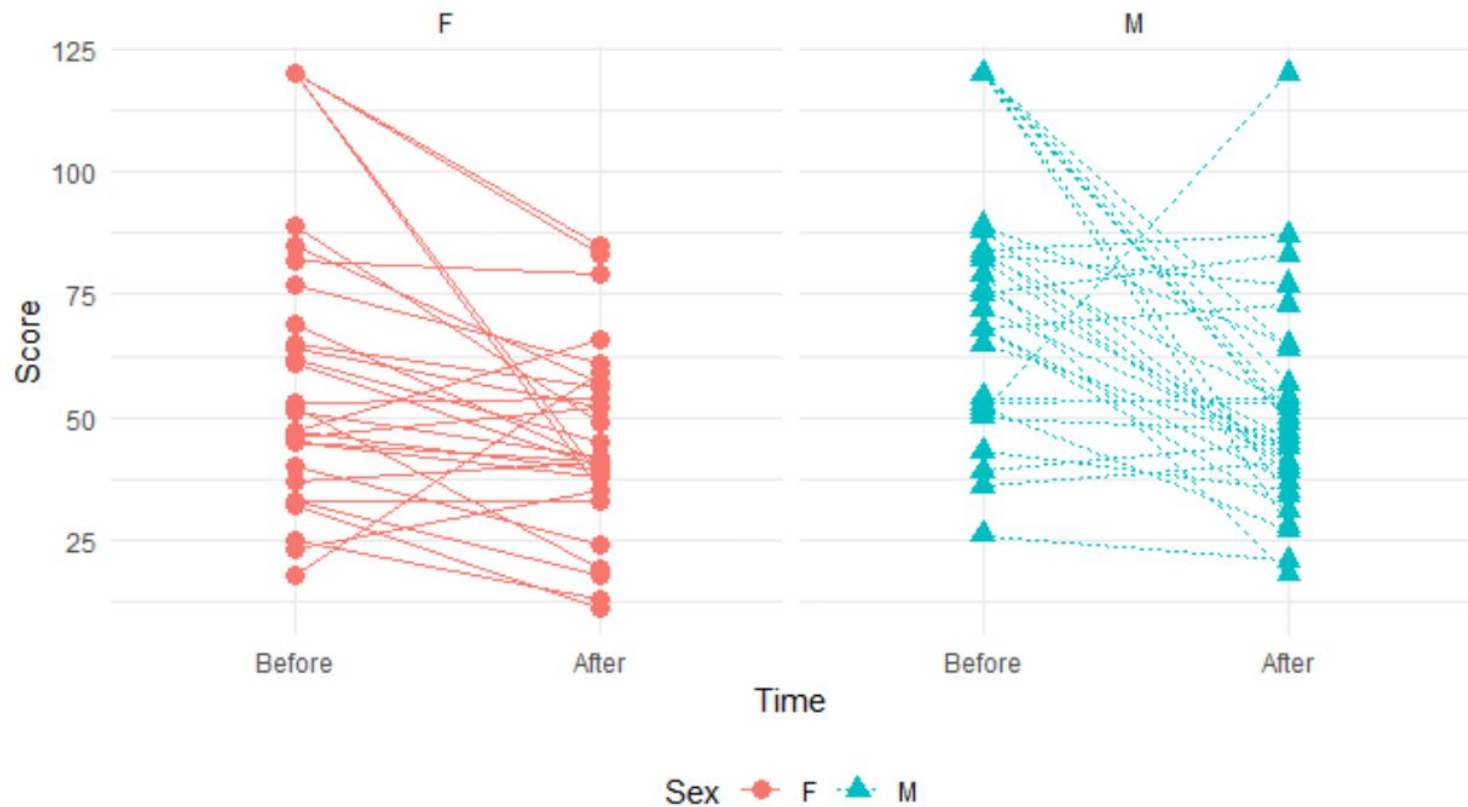


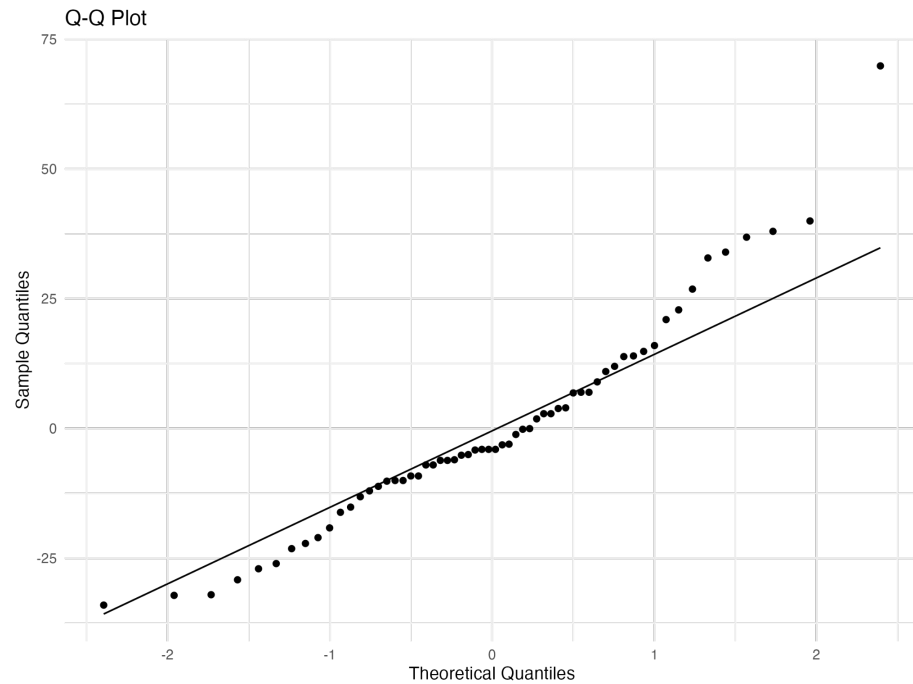
Sampling Methods

- Males and Females aged 18-45 were randomly selected from all over the Island with name and gender collected.
- Sample Size Determination:
 - Power : **0.80**
 - Effect Size: **0.35**
- Rounded up to use total of 60 subjects: **30 M, 30 F**
- Method of Alcohol Consumption: **30 mL vodka**
- Waiting Time between tests: **10 minutes**
- Time (seconds) recorded after Islander finished test before and after drinking

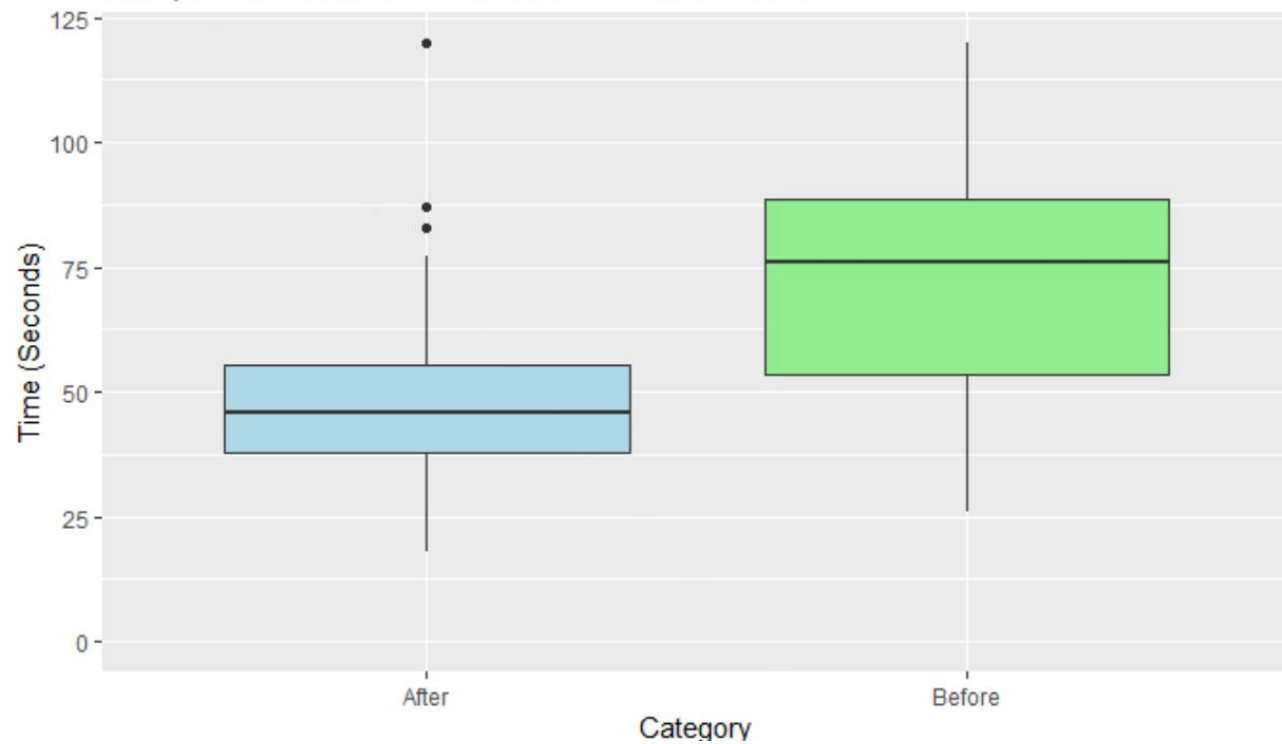


Coordination Test Scores Before and After Alcohol Consumption

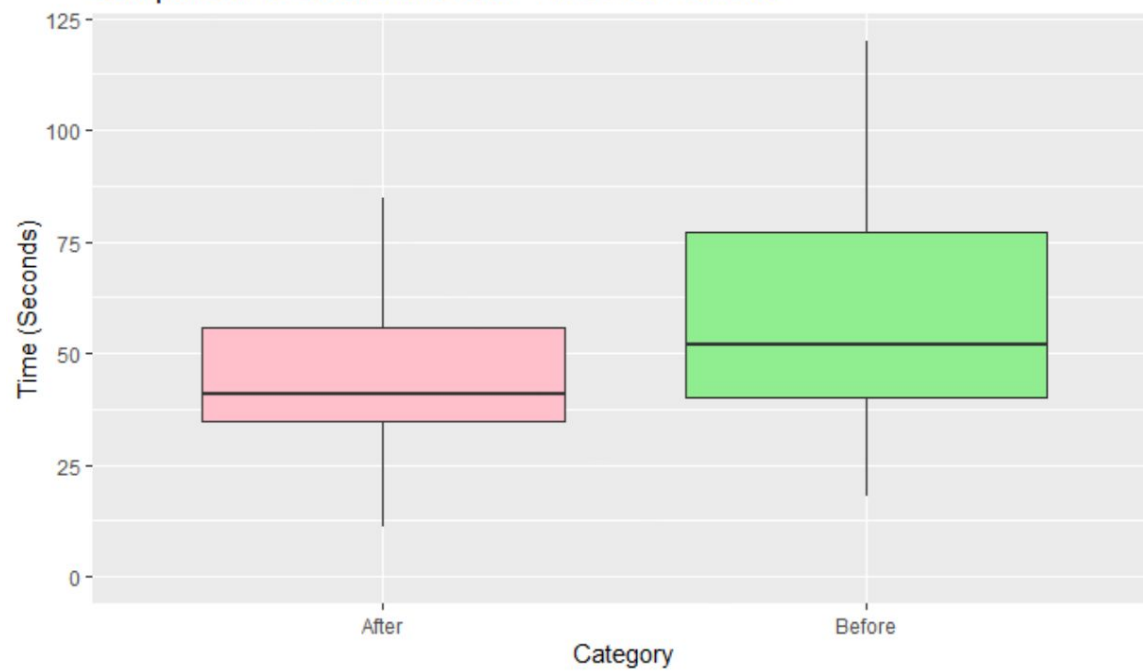




Comparison of Before and After Times for Males



Comparison of Before and After Times for Females



ANOVA results

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
Sex	1	1817	1817	3.149	0.0779
Condition	1	19936	19936	4.561	2.43e-08 ***
Sex:Condition	1	524	524	0.908	0.0.3422
Residuals	156	89989	629		

Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

ANOVA Conclusion

From our ANOVA results, we see that the effect of Gender on samples scores is statistically significant. ($\alpha = 0.05$) We can conclude there is a significant difference in scores between males and females.

The effect of Condition (before/after alcohol) on scores is also highly significant, indicating a significant difference in scores before and after one shot of vodka.

Our measured interaction effect between Gender and Condition resulted in a insignificant p-value, with little to no influence on our model. This implies that the effect of our Condition on our balance test times does not depend on the level of Gender.

