



The Effects of Alcohol Consumption on Executive Function Performance in College Students



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Abstract

In the current study, college students between the ages of 21 and 25 were examined to determine if alcohol consumption has an impact on executive function. Parts A and B of the Trail-Making Task were used to time each student both pre-alcohol consumption and post-alcohol consumption. The findings identified that the higher number of drinks that the individuals had, the faster they performed Part B of the Trail-Making task. There was no relationship between Part A of the Trail-Making task and drinking.

Introduction

- Execution function can be referred to as attention shifting, working memory, and inhibitory control processes to use in planning, problem-solving, and goal-directed activities (Blair & Razza, 2007).
- Future well-being is affected by more than just executive function performance, for it also looks at social interactions, emotional development, and environment.
- A 2017 study confirmed the relationship between emotion and alcohol consumption using the social learning theory and found that alcohol consumption heavily impacts social, affective, cognitive, and behavioral tendencies (Sayette, 2017).
- An inebriated individual would have deteriorated executive function skills, such as focus, visual search, organization, and sequencing, would decrease.

Method

Participants

- The subjects in this study were 45 female and 10 male college students (aged 21-25 years).
- The data was collected from a bar at a private liberal arts university in Fairfield, CT.

Materials

- A small, private bar, located on the ground floor with all alcohol provided by the facility, not the researchers.
- A questionnaire that looked at participants' gender, age, how many times they drink a week, athlete vs. non-athlete, GPA, and what they ate the day of the experiment.
- Part A and B of the Trail-Making Task.

Procedure:

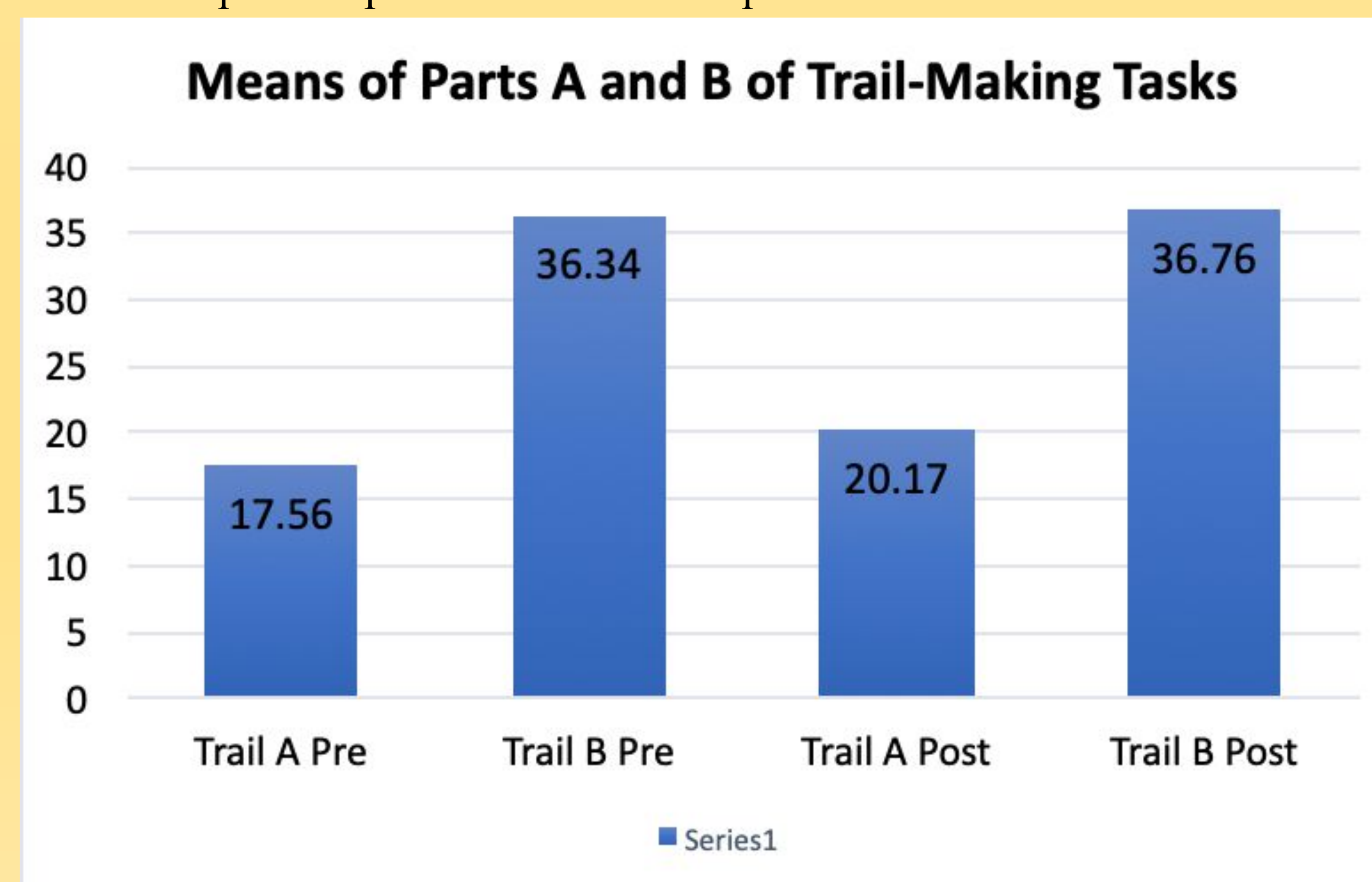
- The correlational design was conducted to examine the difference in performance time for an executive function task pre-alcohol versus post-alcohol consumption.
- Participants were naturally observed and alcohol was provided by the facility, not the researchers.
- Participants were asked to take Parts A and B of the Trail-Making Task before any alcohol consumption. 1.5 hours later, the participants were asked to take both parts again. Number of drinks were recorded and all sessions were timed and recorded.



Table 1. Values represent the means and standard deviations of each trial of the Trail-Making Task pre and post-alcohol consumption.

	M	SD
Pre-Alcohol Consumption		
Trail A	17.56	3.63
Trail B	36.34	6.31
Post-Alcohol Consumption		
Trail A	20.17	5.18
Trail B	36.76	11.87

Figure 1. Mean time (in seconds) of parts A and B of the Trail-Making Task both pre and post-alcohol consumption



Results

- A correlation found the significant relationship between drinking and performance on Part B of the Trail-Making Task, $r(df) = -0.293, p = .03$. The higher number of drinks that individuals had, the faster they performed the second part of the trail-making task.
- There was no relationship found between Part A of the Trail-Making Task and drinking.

Discussion

- It was found that alcohol consumption did impact EF skills among college students.
- These results were different than our original hypothesis.
- Results showed an enhancement in their performance of the task, rather than an impairment.
- Montgomery (2011) found that alcohol intoxication shown to impair executive function, selectively. Montgomery, C., Ashmore, K., Jansari, A. (2011).
- Participants were very competitive trying to complete the task quickly, as they knew that they were being timed and wanted to beat their original time score.
- In the future, studies should have increased number of participants.
- Also, including different subjects would most likely give us different results.

Acknowledgments

We would like to acknowledge the students who participated at the bar in the private liberal arts college in Fairfield, Connecticut for collaborating with us on testing sessions to understand how alcohol consumption impacts executive. A special thanks to our mentor, Dr. Dawn K. Melzer for supporting and guiding us throughout this whole research process.