The Effect of Drinking Behaviors on Prospective Memory among College Students

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Abstract

Prospective Memory (PM) refers to the ability to remember information obtained in the past to dictate future actions or behaviors (Rendell & Thompson, 1999). This study compares college student's drinking habits during the COVID-19 pandemic and their PM as tested by a virtual version of the Memory for Intentions Test (MIST) by Raskin, Buckheit, and Sherrod (2011). Results showed that most participants reported either no change or slight increases in their drinking behaviors as a result of COVID-19. Consistent with prior research, participants performed better on the 2-minute tasks than the 15-minute tasks. Inconsistent with prior research, participants did not perform better on the verbal response tasks (rather than the action response tasks) and did not perform better on tasks with event-based cues (rather than time-based cues). Additionally, results showed no significant effect of when the participant began drinking, their drinking group (heavy, social, non-drinker), their campus involvement, their Race/Ethnicity and gender. Future research should include more participants in each demographic group and consider whether the MIST is an appropriate test for college level students.

Introduction

- PM is important to both healthy populations and those with brain injuries or neurological disorders as it includes activities of daily living (ADLs) including remembering to take medication at a certain time, remembering future appointments, or doing homework for class the following day (Raskin et al., 2018).

Background Research:

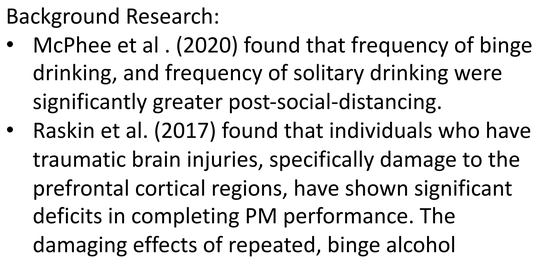
- McPhee et al . (2020) found that frequency of binge drinking, and frequency of solitary drinking were significantly greater post-social-distancing.
- Raskin et al. (2017) found that individuals who have traumatic brain injuries, specifically damage to the prefrontal cortical regions, have shown significant deficits in completing PM performance. The damaging effects of repeated, binge alcohol consumption, as is widespread among colleges and particularly disastrous to individuals who are either underage or recently turned 21, as it produces significant damage to the frontal lobe.

Methods

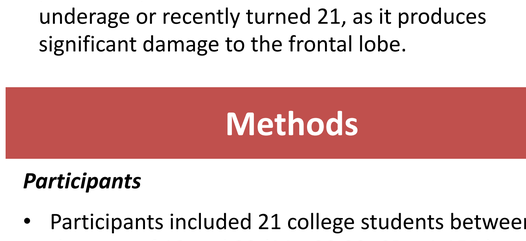
Participants

- Participants included 21 college students between the ages of 18 and 22 (*M* = 20.33, *SD* = 1.155)
- 16 participants identified as female, 5 identified as male

Graph 1: Participant composition by class year

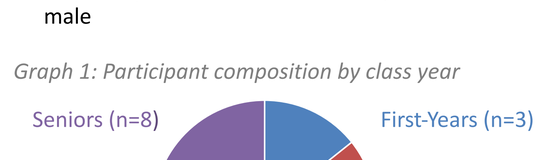


Graph 2: Participant composition by Race/Ethnicity

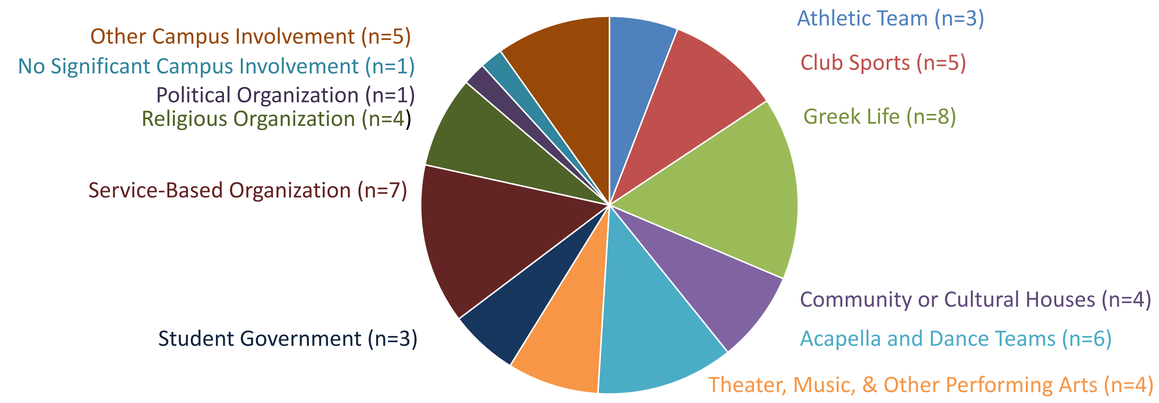


Measures

Graph 3: Participant composition by drinking behavior

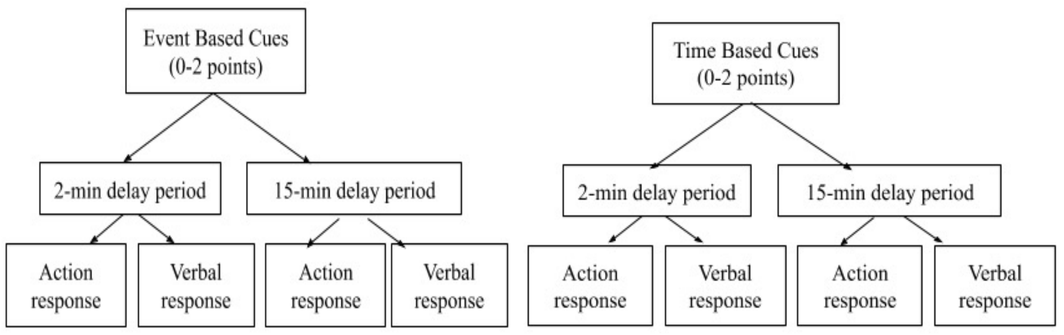


Graph 4: Participant composition by campus involvement.



The Memory for Intentions Test (MIST)

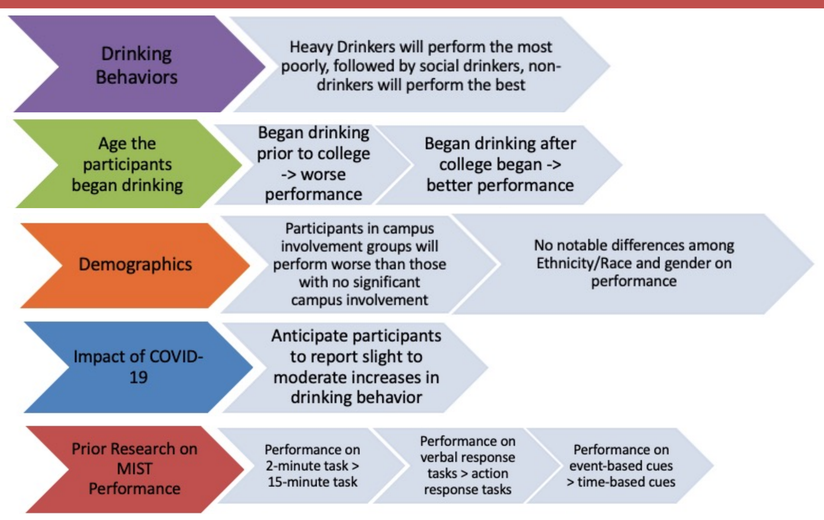
- A virtual version of the MIST by Raskin, Buckheit, and Sherrod (2011) was used to test PM, in conjunction with Zoom



Procedure

- The Qualtrics survey took approximately 10 minutes and the virtual MIST spanned 40 minutes

Hypothesis



Results

Drinking Behaviors

Table 1: Means and standard deviations of performance on the MIST separated by drinking group.

Group: *Mean* (*SD*)	2-min	15-min	Time	Event	Verbal	Action	Recognition	24-hour	Number of PM Errors	Total Number of Errors
Non-Drinker	8.00 (0.00)	5.33 (2.52)	6.67 (1.53)	6.67 (1.16)	7.33 (1.16)	6.00 (1.73)	8.00 (0.00)	0.67 (1.16)	0.67 (1.16)	1.67 (1.53)
Social Drinkers	7.44 (0.88)	6.11 (1.17)	6.44 (1.42)	7.11 (1.76)	7.44 (0.73)	6.11 (1.36)	7.78 (0.44)	1.33 (1.00)	0.78 (0.83)	1.56 (0.73)
Heavy Drinkers	7.44 (0.88)	7.22 (0.88)	7.11 (1.05)	7.56 (0.88)	7.22 (1.30)	7.44 (0.73)	8.00 (0.00)	0.67 (1.00)	0.33 (0.50)	1.00 (1.12)

Age the participant began drinking

Table 2: Means and standard deviations of performance on the MIST separated by age drinking began.

Group: *Mean* (*SD*)	2-min	15-min	Time	Event	Verbal	Action	Recognition	24-hour	Number of PM Errors	Total Number of Errors
Began drinking after college began (≤ 18 years)	7.14 (1.07)	6.43 (0.98)	6.71 (1.11)	6.86 (1.57)	7.00 (1.41)	6.57 (1.40)	8.00 (0.00)	1.14 (1.07)	0.86 (0.69)	1.57 (0.98)
Began drinking prior to college (>18 years)	7.71 (0.61)	6.50 (1.61)	6.79 (1.37)	7.43 (1.22)	7.50 (0.76)	6.71 (1.33)	7.86 (0.36)	0.86 (1.03)	0.43 (0.76)	1.21 (1.05)

Demographics

No significant differences between campus involvement and performance on the MIST.

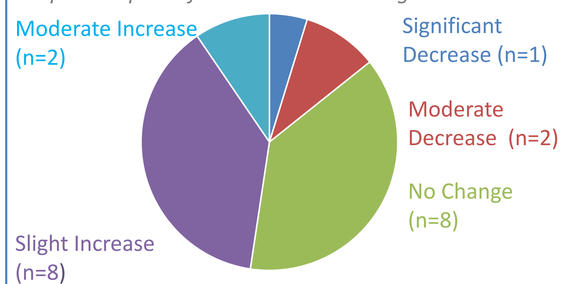
No significant differences between Race/Ethnicity and performance on the MIST

Table 3: Means and standard deviations of performance on the MIST separated by gender

Group: *Mean* (*SD*)	Time	Event	Verbal	Action	Recognition	24-hour	Number of PM Errors	Total Number of Errors
Male	6.00 (1.00)	6.80 (1.79)	7.00 (1.00)	5.80 (1.79)	7.60 (0.89)	1.40 (0.89)	0.80 (1.20)	2.40 (1.67)
Female	6.88 (1.36)	7.25 (1.44)	7.31 (1.08)	6.81 (1.38)	7.88 (0.34)	0.75 (1.00)	0.63 (0.72)	1.19 (1.05)

Impact of COVID

Graph 5: Impact of COVID-19 on drinking behaviors.



Prior Research on MIST Performance

Table 4: Impact of COVID-19 on drinking behaviors.

Comparisons (M, SD)		
Pair One	2-minute tasks 7.48 (0.81)	*t* = 3.009 *p* = 0.007
	15-minute tasks 6.33 (1.68)	
Pair Two	Event tasks 6.67 (1.32)	*t* = -1.096 *p* = 0.286
	Time tasks 7.14 (1.49)	
Pair Three	Action tasks 7.24 (1.04)	*t* = 1.848 *p* = 0.079
	Verbal tasks 6.57 (1.50)	

Discussion

Drinking Behaviors

- Heavy, Social, and Non-Drinker simply based on drinking behaviors for the past 30 days (not based on guidelines for Alcohol Abuse Disorder (AUD))
- One participant who was a non-drinker, abstained from drinking for the past 6 months however was a heavy drinker before then
- Participants also report recreation drug use (42.9%) and/or have a pre-existing psychological disorder (28.6%)
- Are these percentages in line with the larger composition of the Trinity Campus?

Age the participant began drinking

- We conducted additional analysis and found that non-drinkers experience significantly fewer blackout than those participants that began drinking during late adulthood/adolescence (13-17 years of age)
- The hypothesized decrease in performance by participants who began drinking before college may have been counteracted with the fact that drinking is not a taboo for these participants. These participants are more aware of their limits, and because they do not view drinking as rebellious, do not feel the need to overcompensate by heavy drinking

Demographics

- Participants do not need to reply on older-members in campus involvement groups to provide alcohol
- Ethnicity/Race/Gender – Again, at a "party-school" all members are under the same pressures to drink
- Do we need a distribution that is more aligned with Trinity's larger campus (in terms of class year, and Race/Ethnicity?) Why didn't we find a difference in age considering the fact that seniors have been drinking for longer than first-years?

Impact of COVID-19

- Individuals are spending more time at home and do not need to drive themselves to their places of work or school.

Prior Research on MIST performance

- Even individuals with traumatic brain injuries perform significantly better on mentioned tasks (Raskin, Shum, Ellis, Pereira, and Mills, 2008)
- Could the MIST be a test that is too difficult for college students? Were participants taking a test that was administered by their peer and over Zoom seriously?

Acknowledgments

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