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College students' drinking patterns, impulsivity, and estimation of peers' drinking patterns

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Abstract

The current study investigated how college students' drinking patterns were associated with performance on tasks assessing impulsive choice for two different hypothetical commodities: money and alcohol. Participants made a series of choices between gaining a smaller amount of money immediately, or gaining \$100 after a delay of 7, 30, or 60 days. In a second task, participants chose between gaining a smaller quantity of alcohol immediately, or gaining a larger amount (10 bottles of wine or 10 six-packs of beer, depending on the participant's preference for beer or wine, established before the task) after the above delays. As expected, increasing the delay to receipt of the delayed reward (\$100 or alcohol) systematically decreased the subjective value of that outcome. Wine drinkers discounted monetary and alcohol rewards slightly less than did beer drinkers. Compared to those who drank fewer drinks per sitting, students who drank more showed an increased sensitivity to delay to monetary outcomes, but not to alcohol outcomes, and were less accurate at estimating their peers' number of drinks per sitting. Future directions include refinement of procedures used to compare impulsive choice between commodities, such as using individually-determined alcohol-unit values in formulating alcohol-discounting questions.

Introduction

- College students' heavy drinking is related to a variety of negative outcomes (Jennison, K.M., 2004. *Amer J Drug Alcohol Abuse* 30, 659-684.).
- Heavy alcohol use is associated with more-steeply discounting the value of delayed monetary and alcohol rewards relative to that of light-drinking controls (Petry, N.M., 2001. *Psychopharm* 154, 243-250.).
- Alcohol use among college students is linked to overestimating the number of drinks peers consume (Perkins, H.W., 2002. *J Stud Alcohol, Supp. No. 14*, 164-172.).
- We asked whether college students' heavy drinking correlated with higher impulsivity, and we sought to replicate the peer-drinking overestimation effect.

Participants

36 female and 24 male students attending Lewis & Clark College, Portland OR

Dependent Variables

- Estimates of peers' drinking patterns – College Behavioral Norm Questionnaire
- Descriptions of own drinking patterns – College Drinking Survey
- Delay discounting task performance – (see description)

Delay Discounting Task

Choice questions were presented one at a time, in random order, on the computer screen. For each question, participants selected which of two hypothetical alternatives they preferred. They completed the task once for monetary rewards and once for alcohol rewards.

Monetary rewards:

Small \$ Now: Variable amount (\$0 - \$105) available now	OR	Large \$\$ Later: \$100 available in 7, 30, or 60 days
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Alcohol rewards (participant indicated beer or wine preference before task):

Small Alcohol Now: Variable number of 6-packs of beer or bottles of wine (0 - 10) available now	OR	Large Alcohol Later: 10 6-packs of beer or 10 bottles of wine in 7, 30, or 60 days
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Assessed the amount of money or alcohol at which each participant was indifferent between the amount available immediately and the amount available later (**indifference point**).

Delay Discounting continued

To assess the rate at which the delayed outcome was discounted, we fitted a hyperbolic equation to each participant's indifference points (V):

$$V = \frac{\text{Amount of delayed reward}}{1 + k \cdot \text{Delay to delayed reward}}$$

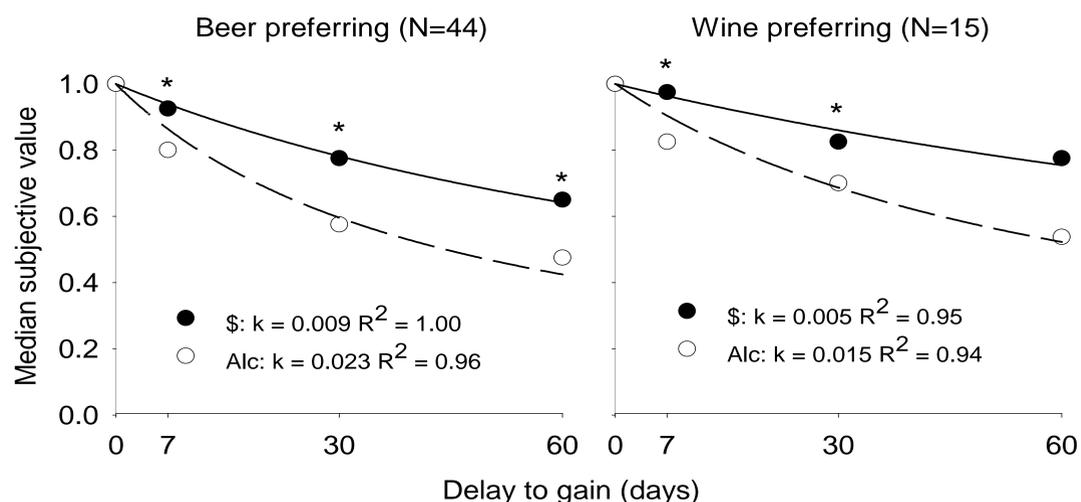
- k : Fitted parameter; represents the steepness of the discounting function.

Larger values indicate lower indifference points, a greater preference for the immediate alternative, and are interpreted as indicating greater impulsivity.

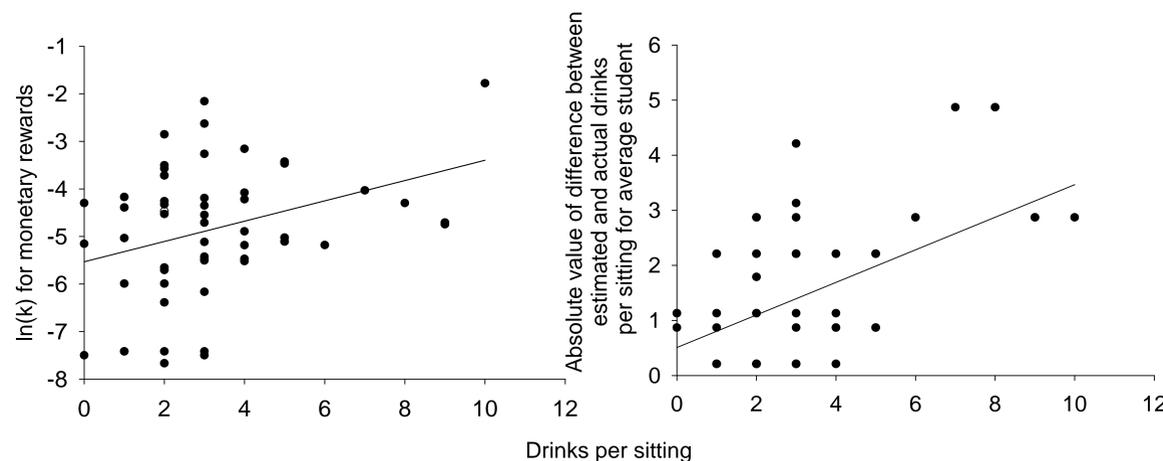
Results

- Participants discounted alcohol more than they did monetary rewards (Task: $F[1, 50] = 11.20, p = .002$)
- Wine-preferring participants discounted money and alcohol rewards less than did beer-preferring participants ($F[1, 50] = 4.19, p = .046$)

(* $p < 0.05$ for paired t-tests comparing indifference points at each delay)



- Number of drinks consumed/sitting was positively correlated with $\ln(k)_{\$}$ ($r = .34, n = 56, p = .012$) but not associated with $\ln(k)_{alc}$
- Number of drinks consumed/sitting was positively correlated with the difference between estimated and actual drinks consumed per sitting for the average student ($r = .53, n = 60, p = .00$)



Conclusions

- College students' alcohol preferences and consumption levels are positively related to discounting delayed monetary rewards and hence their impulsivity.
- Future studies could include pre-experimental rapid determination of individual demand curves for alcohol types to better-equate compared commodities.