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Decision Making in Students Differing in Binge Drinking Patterns

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Introduction

- Alcohol and substance dependent persons perform less well on behavioral decision making tasks, like the Iowa Gambling Task (IGT; Bechara et al., 1999).
- Heavy social drinking has been associated with diminished attention and visuospatial skills, especially for heavy social drinkers (>21 drinks/week; Parsons and Nixon, 1998).
- Little is known regarding the relation between heavy social drinking or binge drinking and decision making skills among young adults.
- The goal of this study was to determine whether levels of alcohol use and binge drinking are related to differential decision making, as measured by the IGT.
- We also investigated the relation between decision making and self-report measures of impulsivity, real life negative consequences of alcohol use, and a more general heavy drinking measure.

Method

- Participants were selected from a cohort of 2866 individuals taking part in a longitudinal study of student health (IMPACTS), assessing alcohol and substance related behaviors every six months, from precollege (Wave 0) through Fall of the third college year (Wave 4).
- Latent Class Growth Analysis (LCGA) was used to classify students into one of four groups, based on their binge drinking across 5 time points:
  - Non-binge drinking at any time point (36%)
  - Moderate binge drinking at any time point (30%)
  - Increasing binge drinking across time (10%)
  - Heavy binge drinking at all time points (24%)
- 50 participants were selected from each binge drinking group.

Measures

Decision Making Task:
- Iowa Gambling Task – computerized (Bechara et al. 1999)
  - The task required 100 choices from one of four card decks:
    - 2 disadvantageous decks: high rewards, but even higher losses
    - 2 advantageous decks: lower rewards but also lower losses
- Subjects had to discover which decks were advantageous and learn to select cards accordingly.

Diagnostic Interview Schedule (DIS; Robins et al., 1998)
- Axis-1 Diagnoses established based on this structured clinical interview

Impulsivity: 
- Barratt Impulsivity Scale (BIS)
- Zuckerman Impulsivity/Sensation Seeking Scale (ImpSS)

Negative Alcohol Consequences:
- Composite of a 5-item inventory, e.g.: Drunk driving, not showing up at class or work, being drunk at school/work, continuing drinking despite physical/psychological problems that get worse with drinking.

Data Analysis

- The LCGM resulted in a four class solution, with a probability of categorization in the correct class (frequent binge drinking class: see left Figure) of:
  - 88% for the Non binge drinkers
  - 71% for the Moderate binge drinkers
  - 71% for the Increasing binge drinkers
  - 82% for the High binge drinkers

Results

- MANCOVAs Iowa Gambling Task:
  - Although all four groups learned to choose the advantageous decks (positive slope over 4 learning stages: see Figure on the right):
    - A Group by Advantageous choice interaction was present, F(3,184)=5.40, p<.01, η²=.08.
    - Posthoc analyses showed that the high binge drinking group performed worse than the non-binge drinking group (p<.01, Bonferroni corrected).

- Correlations
  - IGT Advantageous Choices (Stage 2 + 3 + 4) and Impulsivity: No significant correlations.
  - IGT Advantageous Choices correlates negatively with Negative Alcohol Consequences at Wave 0 through Wave 4 (r=-.28 to -.19), but was non-significant for Wave 5 and Wave 6.
  - IGT Advantageous Choices correlates negatively with a composite score of heavy drinking (binge drinking, getting high, and getting drunk), but only at wave 0 (r=-.28) and wave 2 (r=-.24).

- Effects of Alcohol Use Disorders
  - Manovas with the AUD group (n=68) and non-AUD group (n=124), did not reveal significant effects.
  - Decision making was not affected by lifetime presence of alcohol abuse or dependence.

Conclusions

- Chronic binge drinking students, who consume high amounts of alcohol, perform worse on a decision making task than non-binge drinking students.
- Less advantageous decision making is associated with higher levels of real life disadvantageous decisions related to alcohol use (Negative Alcohol Consequences).
- Decision making strategies are not related to impulsivity or sensation seeking.
- The results imply that in young adults, the amount of alcohol used, and pattern of alcohol use (binge drinking) may have a stronger relation to diminished neurocognitive functions, than alcohol use diagnoses per se.

References


Reprints

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