Introduction:
- Risky decision making is prevalent in the age group 18-25, an age group that also consumes large amount of caffeine, on average.
- Stimulants can reduce impulsivity and risky decision making (e.g. in ADHD) and delay discounting.

Hypotheses:
- Caffeine application would result in more optimal choices and higher gains on measures of risky decision making.
- Iowa Gambling Task (IGT)
- Balloon Analogue Risk Task (BART)
- Individual differences would influence caffeine's impact on task performance:
  - decision making style
  - risk propensity
  - impulsivity
  - demographic variables

Methods:
- Double-blind, placebo-controlled experimental design
- Stroop task administered first to deplete cognitive resources
- IV: 200mg caffeine vs. placebo
- DV: Iowa Gambling Task (IGT) and Balloon Analogue Risk Task (BART)
- Individual Difference Measures:
  - General Decision Making Style (GDMS)
  - Abbreviated Barrat Impulsiveness Scale (ABIS)
  - Domain Specific Risk Taking Scale (DOSPERT)
  - Demographic Survey

Conclusions:
Caffeine is one of the most ubiquitous drugs in the world, and is often consumed for its cognitive enhancing properties.

Findings indicated that caffeine, in tandem with individual differences in decision making style, impulsivity, risk propensity and gender, significantly improved performance on the IGT. However, caffeine had no reliable effect on BART performance.

Further research should investigate potential applications (and limitations) of caffeine in populations prone to risky decisions. The differential impact on the two tasks offer hints that caffeine’s impact may be more specific than predicted. Further studies are needed to isolate which cognitive processes respond to the drug and thus enhanced only IGT performance. Our findings also suggest that interventions to improve decision making performance and reduce risk-taking may be differentially effective for individuals with particular personality traits and for men vs. women.

References:

Individual differences in risky decision making were explored using best-fit multiple regression models for each DV. Each of the listed models explained a significant proportion of variance. Along with experimental condition, a variety of variables combined to contribute explanatory power with regards to task performance: decision making style (GDMS), impulsivity (ABIS), risk propensity (DOSPERT), and gender (p = 0.05, ** p = 0.01).

Exercising Rationality: Effects of Caffeine and Exercise on Economic Decision Making

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Caffeine

Exercise and glucose

Introduction:
- Manipulation of blood glucose can impact decision making.
- Exercise offers many benefits, but its impact on decision making is unknown.
- High-intensity exercise can boost blood glucose, suggesting it may be particularly beneficial for decision making.

Hypotheses:
- High-intensity exercise will increase blood glucose and improve decision making relative to low-intensity exercise and no exercise controls as measured by:
  - Apartment Choice Task (attraction effect)
  - Kirby Monetary Choice Questionnaire (delay discounting)

- Individual differences in decision making style (GDMS) would influence the impact of exercise on task performance.

Methods:
- Experimental design with random assignment into:
  - IV: High-intensity exercise (>80% VO2 Max) vs. low-intensity exercise vs. no exercise (on a cycle ergometer)
  - DV: Apartment Choice Task (attraction effect) and Kirby Monetary Choice Questionnaire (delay discounting)

- Individual Difference Measures:
  - Blood Glucose level (pre- and post-exercise)
  - General Decision Making Style (GDMS)
- Demographic survey

Conclusions:
The benefits of exercise, including in the cognitive realm are often touted, but little is known about the effects of exercise on decision making. The fact that different exercise intensities produce distinct effects on blood glucose levels suggest the potential for differential cognitive impact.

Findings indicated that high-intensity exercise increased blood glucose in half the participants. Those participants were resistant to the attraction effect in the apartment task. When intuitive decision-making styles were taken into account, the blood glucose increase also appeared to predict resistance to delay discounting. The results were complex, however, and statistical power was limited by the small number of people in our sample who managed to achieve the blood glucose boost following intense exercise.

Further research should investigate how internally generated changes in blood glucose could impact judgment in real world conditions. Our findings also suggest that decision making styles may complicate our interpretation of delay discounting measures.

References:

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