Delay Discounting Comparisons Among Polysubstance Using Menthol Cigarette Smokers

Prasad, Shefalika; Hidalgo, Samantha J.; John, Lovina M.; Quisenberry, Amanda J.
Roswell Park Comprehensive Cancer Center, Buffalo, NY 14263

Background

- Previous research has demonstrated that smokers discount delayed monetary rewards more than never smokers across different delayed constant reinforcer magnitudes.
- Furthermore, polysubstance users consistently discount more than purely nicotine-dependent participants.
- Greater delayed reinforcer magnitudes are discounted less than smaller magnitudes.
- The aim of the current study was to examine the existing association between polysubstance use and delay discounting rates in current menthol cigarette smokers.
- We hypothesize that nicotine-users who use two or more other substances will discount more than those who use only nicotine or one other substance.

Methods

- Methods: 47 current menthol cigarette smokers completed a purchasing task and survey measures.
- Within the survey, each participant was given an adjusting delay discounting task that uses the psychophysical titrating procedure to present five delays to the participant.
- Each participant completed a delay discounting task for $100 and $1000.
- We evaluated frequencies and measures of central tendency on substance use and impulsivity.

- Statistical Analysis: Following descriptive statistical analysis, an interim GLM repeated measures (SPSS 26) of currently enrolled participants (n=47) was conducted.

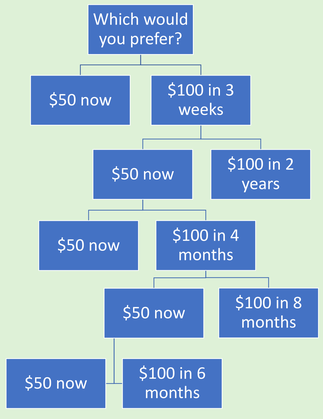
Table 1. Participant Demographics

Gender	
Female	45.7%
Race	
White	35%
Black	46%
Asian	2%
More than one	11%
Ethnicity	
Hispanic or Latino	6.5%
Sexual Orientation	
Heterosexual	78%
Homosexual	4%
Bisexual	4%
No response	6.5%

Table 2. More Descriptors of Participants

Age	40.70 (13.00)
Cigarettes Per Day	11.26 (6.19)
CO Level	19.17 (14.23)
FTND Score	4.30 (1.67)

Figure 1. Example of 5-trial Adjusted Delay Task



Figures

Table 3. GLM Repeated Measures Results

Category	Type III ∑x²	df	Mean Square	F	Sig.
Magnitude Effect	30.103	1	30.103	29.847	0.000
Total Products	10.132	5	2.026	2.291	0.063
Total Products No Caffeine	11.048	5	2.210	2.563	0.041
Alcohol Current	3.006	1	3.006	3.118	0.084
Cannabis Current	0.213	1	0.213	0.207	0.651

Figure 2. Distribution of Number of Substances Used

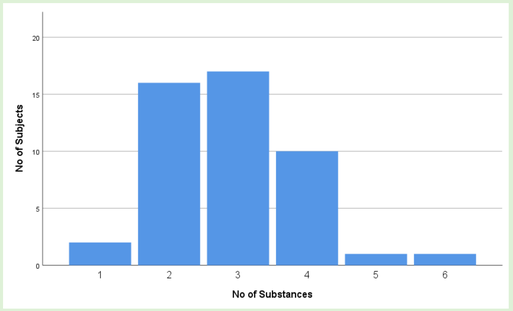


Figure 3. Estimated Marginal Means by Number of Substances Used

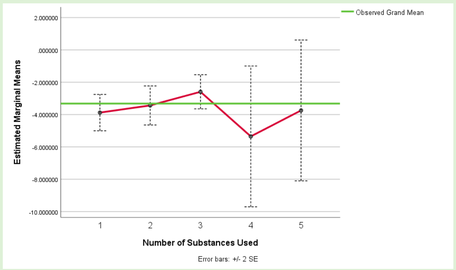


Figure 4. Estimated Marginal Means by Substance(s) Used

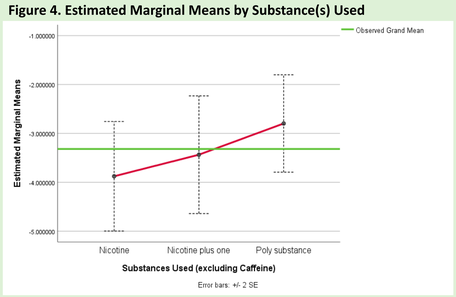


Figure 5. Magnitude Effect on Delay Discounting for Entire Population

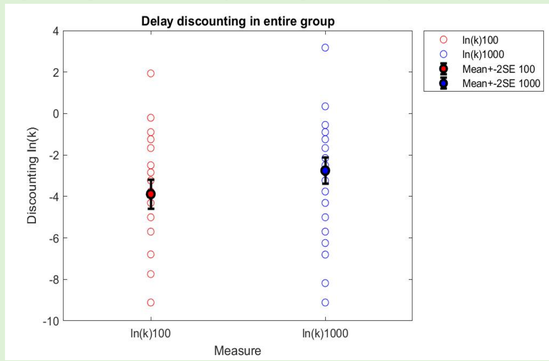


Figure 6. Delay Discounting by Substance Profile

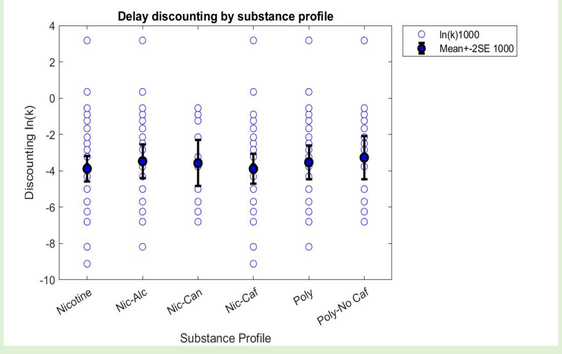


Figure 7. Mean Discounting by Categories

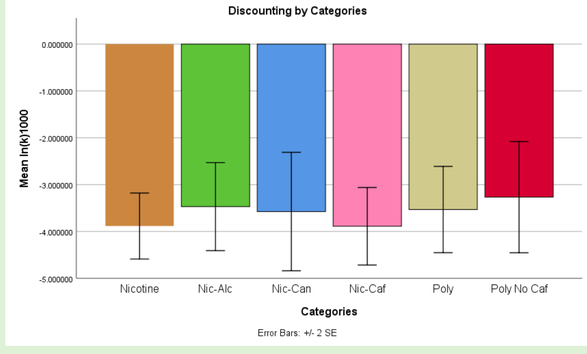


Figure 8. Delay Discounting by Substance Profile

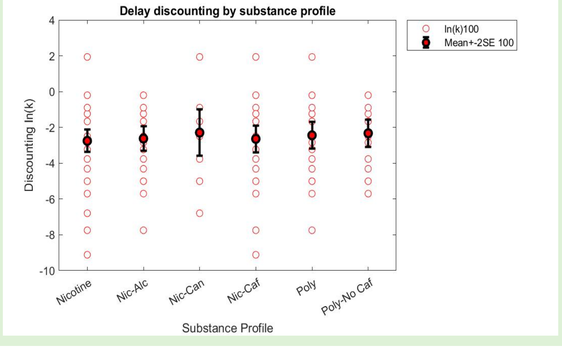
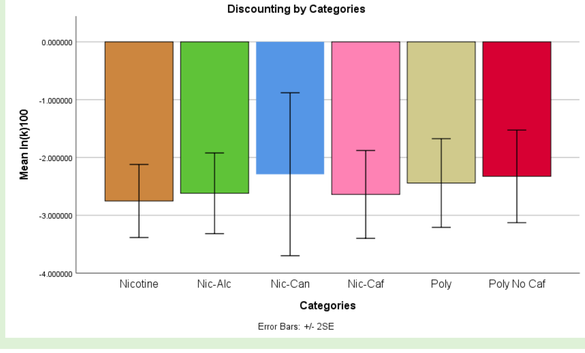


Figure 9. Mean Discounting by Categories



Results

- The GLM repeated measures tests revealed a significant main effect of magnitude (p=0.000) and using an increasing number of substances, excluding caffeine (p = 0.041).
- Including caffeine as a substance weakened the strength of association, but still showed a trend towards significance (p = 0.063).
- On dividing the participants into roughly equal groups based on number of substances used (1 = Nicotine, 2 = Nicotine plus one other substance, 3 and more = Poly substance) significance in association was no longer found.
- There was also a trend toward the main effect between alcohol users (n=29) and non-users (n=18) (p = 0.084).
- Cannabis users (n=13) did not discount more than others (p= 0.651).

Conclusion

- The magnitude effect was found in the opposite direction of previous literature, possibly due to extreme outliers.
- These results are not consistent with previous delayed discounting results on magnitude and polysubstance users.
- Polysubstance users are underrepresented in the current 47 participants.
- Data from the remaining 132 participants may strengthen current associations.
- These results cover Tobacco Regulatory Science priority areas of addiction and behavior, as polysubstance use is important for policy efforts geared at decreased consumption.

References

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