Which method of delay discounting is the best method of measuring impulsive behavior?

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Monetary Delay Discounting is a psychological technique used in measuring patience.

It is solicited by finding an individuals **indifference point** by asking them series of now or later questions about money

Method 1: Time Discounting
(small, present)

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	Option 1	Option 2	
$0.01 today	○	○	$30 in six months
$2 today	○	○	$30 in six months
$4 today	○	○	$30 in six months
$6 today	○	○	$30 in six months
$8 today	○	○	$30 in six months
$10 today	○	○	$30 in six months
$12 today	○	○	$30 in six months
$14 today	○	○	$30 in six months
$16 today	○	○	$30 in six months
$18 today	○	○	$30 in six months

Method 1: Time Discounting
(small, present)

But there are different ways to measure delay discounting. These can also vary across **size** and **time**

	Yes	No
Would you pay $0.01 to get the $300 today?	○	○
Would you pay $20 to get the $300 today?	○	○
Would you pay $40 to get the $300 today?	○	○
Would you pay $60 to get the $300 today?	○	○
Would you pay $80 to get the $300 today?	○	○
Would you pay $100 to get the $300 today?	○	○
Would you pay $120 to get the $300 today?	○	○
Would you pay $140 to get the $300 today?	○	○
Would you pay $160 to get the $300 today?	○	○

Method 2: Speedup Method (large, present)

In this study we will measure delay discounting **8 (2x4) different ways**

Time Discounting (either or small now or larger later)	Speed Up Method (*pay* to get money now or wait for full amount later)	
Small present	Small present	30 now
Large present	Large present	300 now
Small future	Small future	30 in one month
Large future	Large future	300 in one month

All of these methods involve indifference points that can be standardized and then compared via AUC

$x_2 - x_1 [(y_1 + y_2)/2]$, where x1 and x2 are successive delays and y1 and y2 are the indifference points associated with those delays

Previously, delay discounting has been linked to many impulsive and patient behaviors...*

- Risky Sexual Behavior (Chesson, 2006)
- Debt and poor financial planning (Chabris et al., 2008)
- Not finishing prescriptions (Chabris et al., 2008)
- Poor dental status (Kang & Ikeda, 2015)
- Interest in the political campaigns (Fowler & Kam, 2006)

Which method of the 8 time discounting methods is the best at measuring impulsive behavior?

*Full references available upon request

The Proposed Study:

- A large mTurk survey establishing a rate with all 8 methods AND questions about various categories of impulsive behaviors (n ≈ 600)

- Survey will cover substance use, political interest, financial behavior, health behavior, & sexual behavior (approx. 100 questions total)

- Already IRB approved & will be paid for by our friends at Chicago Booth

- Useful for finding most accurate predictor of behavior for future research or supports the idea that there is no best predictor

- Multivariate Regression

Why is this important?

- Discounting is useful for summarizing the results of experiments on sensitivity to delayed rewards

- Has powerful cross-species, cross-population, as well as intraindividual replicability

- If we provide more evidence of that humans either treat the models differently or not, this can be useful for researchers

Predictions

- Based on findings from behavioral economics, I think we can expect to see large, present condition willingness to pay will be the best overall predictor

- Most discounting research overlooks the question of stakes instead opting to use a standardized questionnaire

Questions