



# I think therefore I want: A process account of discounting of losses

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## Abstract

People (N=607 U.S. residents) discount delayed gains (default is now) more than accelerated gains (default is later), but accelerated losses more than delayed losses. Mediation confirms that the order and proportion of “now” thoughts mediate the effect of frame on discounting—positively for gains and negatively for losses.

## Introduction

**People discount future outcomes inconsistently.**

- **Sign effect:** Greater discounting of gains vs. losses (Benzion et al., 1989; Shelley, 1993)
- **Direction effect:** Greater discounting of delayed gains (default is now) vs. accelerated gains (default is later; Loewenstein, 1988)
- **Sign x Direction:** Lower discounting of delayed vs. accelerated losses (Benzion et al., 1989; Shelley, 1993)

**Query Theory (QT) explains asymmetric discounting of gains (Weber et al., 2007).**

- To arrive at a choice, people generate internal queries serially beginning with the default.
- Due to output interference, retrieval for later queries is less successful. Thus, the balance of support favors the default (Johnson et al., 2007).
- As predicted by QT, the prominence of now thoughts mediates the effect of direction on discounting of gains (Weber et al., 2007).

**We extend QT to discounting of losses.**

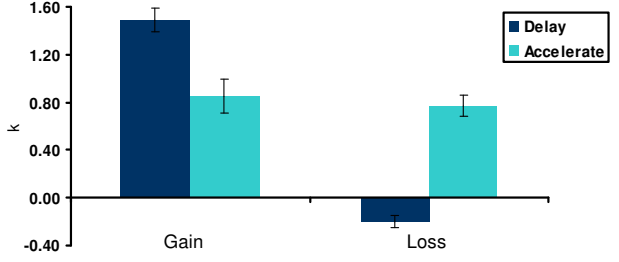
- H1: We will replicate the sign effect, the direction effect, and Sign x Direction.
- H2: The “prominence of now thoughts” will mediate the direction effect for gains and losses, albeit in opposite directions because now thoughts translate to higher discounting of gains and lower discounting of losses.

## Methods

- 607 US residents participated in an online 2 (sign: gain vs. loss) x 2 (direction: delay vs. accelerate) study.
- Ps read a discounting scenario and recorded their thoughts before choosing between smaller, sooner and larger, later outcomes (either gift certificates or fines) via choice titrator. Finally, Ps coded their own thoughts as favoring now, favoring later, or neither.

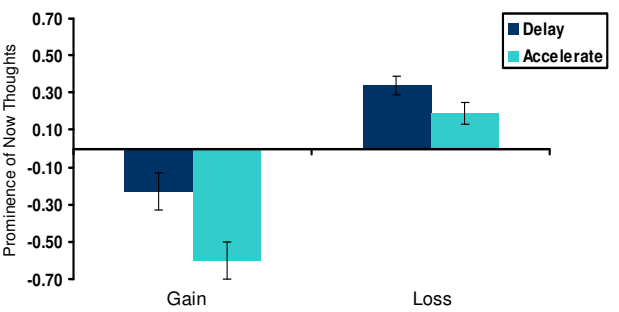
## Results

**Discounting:**  $k = \frac{\text{amount later} - \text{amount now}}{\text{amount now} * \text{delay}}$



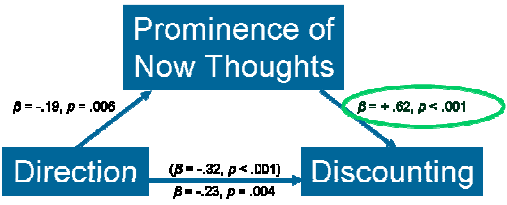
Sign:  $B = .34, p < .001$   
 Direction:  $B = .07, p = .07$   
 Sign X Direction:  $B = -.32, p < .001$

**Prominence of now thoughts** (Cronbach's  $\alpha = 0.91$ ) is the average of proportion of now thoughts, proportion of later thoughts (reverse scored), & order of thoughts

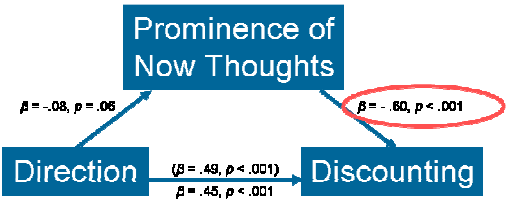


Sign:  $B = -.36, p < .001$   
 Direction:  $B = -.15, p < .001$   
 Sign X Direction:  $B = -.06, p = .13$

Mediation for gains: Sobel  $Z = -2.64, p = .008$



Mediation for losses: Sobel  $Z = 1.89, p = .06$



## Discussion

• We replicate discounting anomalies and find that, as predicted by Query Theory, the prominence of now thoughts mediates the effect of direction on discounting.

• Impatience (as measured by prominence of now thoughts) predicts discounting in opposite directions for gains and losses—greater discounting of gains and lower discounting of losses.

• Query Theory explains discounting of gains and losses.

## References

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