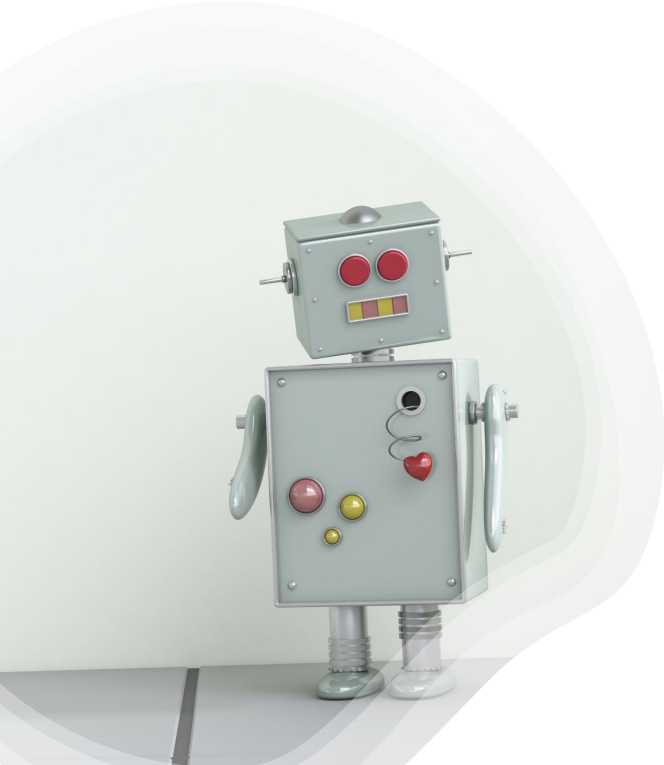

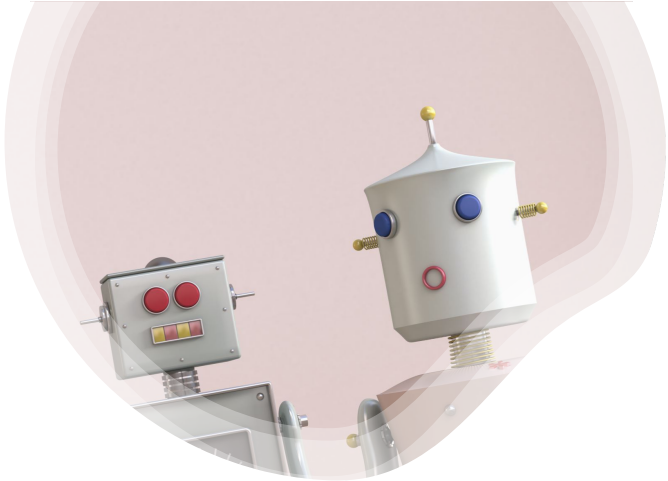

The role of cognition and emotion in decision making

EE416, sem2/2021 Sunsiree Kosindesha

The dual process theory

The financial cost of sadness

The dual process theory

Loewenstein&Odonoghue (2015)

Modeling the Interplay Between Affect and Deliberation

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Drawing on diverse lines of research in psychology, economics, and neuroscience, we develop a model in which a person's behavior is determined by an interaction between *deliberative processes* that assess options with a broad, goal-based perspective, and *affective processes* that encompass emotions and other motivational states. Our model provides a framework for understanding many departures from rationality discussed in the literature and captures the familiar feeling of being "of 2 minds." Most important, by focusing on factors that moderate the relative influence of the 2 processes, our model generates a variety of novel testable predictions. We apply our model to intertemporal choice, risky decisions, and social preferences.

Keywords: decision making, dual process, dual system, willpower, intertemporal choice, risk, social preferences

Modeling the Interplay Between Affect and Deliberation

- Choice behavior can be seen as the product of two motivational processes, one more deliberative, more focused on long-term goal-oriented and the other more reflexive and driven by emotions (e.g. anger, fear), other motivational states (e.g. hunger, pain), and short-term drives.

cold system | system 2

hot system | system 1

- Affect—has long been viewed as erratic and unpredictable, and hence too complicated to incorporate into formal models.

Modeling the Interplay Between Affect and Deliberation

- In recent years, however, there has been a renewed interest in emotion, which has revealed a number of systematic properties of both the determinants and consequences of affect.

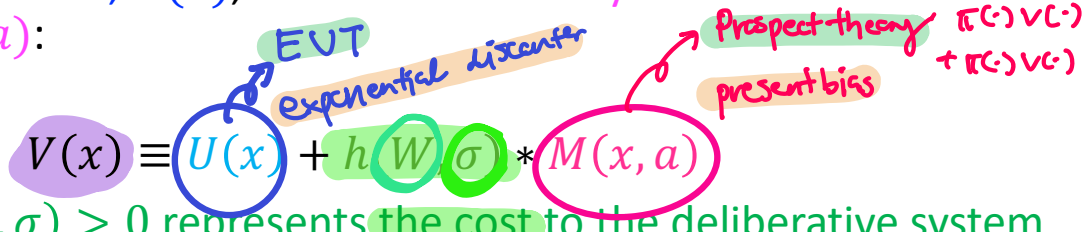
- The paper focuses on factors that moderate the relative influence of the 2 processes.

A Dual-Process Model of Behavior

- The dual-process models distinguish between a “hot emotional system” and a “cool cognitive system” and assume that a person’s behavior depends on which system is dominant at a particular moment.

Making a choice

- Maximize an objective function which combine the deliberative system with a utility function, $U(x)$, and the affective system's motivational function, $M(x,a)$:



- The factor $h(W,\sigma) > 0$ represents the cost to the deliberative system of mobilizing willpower. The cost depends on the stock of willpower *W* and cognitive load σ.

$W \uparrow \rightarrow h(W,\sigma) \downarrow$, $h_W < 0$

$\sigma \uparrow \rightarrow h(W,\sigma) \uparrow$, $h_\sigma > 0$

Making a choice

$$V(x) \equiv U(x) + h(W, \sigma) * M(x, a)$$

- It follows that the person will choose an option that is somewhere in between the deliberative optimum and the affective optimum.

- As the cost of willpower decreases, behavior will be closer to the deliberative optimum, and as it increases, behavior will be closer to the affective optimum.

Intertemporal Choice Predictions

: An increase in $h(W, \sigma)$ will lead to more myopic behavior.

$W \downarrow$, $\sigma \uparrow$

Risky Choice Predictions

underweighting of large probabilities
more overweighting of small probabilities

: Because insensitivity to probabilities and loss aversion derive from the affective system, willpower depletion or unrelated cognitive demands, such as cognitive load, will magnify these behavioral tendencies.

more loss aversion

The financial cost of sadness

Research Article

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The Financial Costs of Sadness

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Abstract

We hypothesized a phenomenon that we term myopic misery. According to our hypothesis, sadness increases impatience and creates a myopic focus on obtaining money immediately instead of later. This focus, in turn, increases intertemporal discount rates and thereby produces substantial financial costs. In three experiments, we randomly assigned participants to sad- and neutral-state conditions, and then offered intertemporal choices. Disgust served as a comparison condition in Experiments 1 and 2. Sadness significantly increased impatience: Relative to median neutral-state participants, median sad-state participants accepted 13% to 34% less money immediately to avoid waiting 3 months for payment. In Experiment 2, impatient thoughts mediated the effects. Experiment 3 revealed that sadness made people more present biased (i.e., wanting something immediately), but not globally more impatient. Disgusted participants were not more impatient than neutral participants, and that lack of difference implies that the same financial effects do not arise from all negative emotions. These results show that myopic misery is a robust and potentially harmful phenomenon.

Keywords

decision making, emotion, judgment, myopic misery, sadness, intertemporal choice, present bias

The Financial Costs of Sadness

Hypothesis:

Sadness increases impatience and creates a myopic focus on obtaining money immediately instead of later.

Methodology:

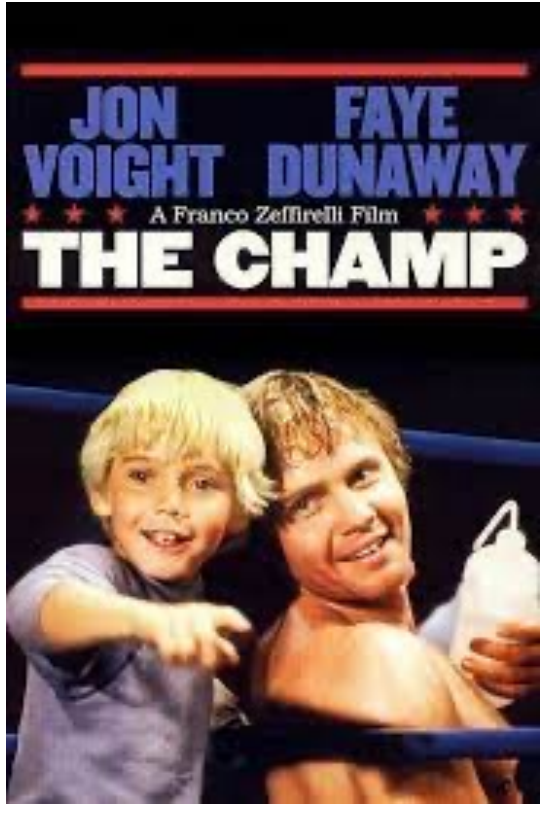
Participants were randomly assigned to sad- , disgusted- , and neutral-state conditions, and then offered intertemporal choices.

Timeline of Experiment

1) Participants reported how intensely they felt each of 19 emotional states.
2) Emotion-induction procedure drew on established methods.
3) Participants first watched a 3-min video clip:
   - **a clip about the death of a boy's mentor in the sadness condition,**
   - **a clip about an unsanitary toilet in the disgust condition,**
   - **a clip about the Great Barrier Reef in the neutral-state condition.**
4) Participants in the sad-state and disgusted-state conditions next wrote an essay about a situation during which they had experienced sadness or disgust, respectively. Participants in the neutral-state condition wrote an essay about their nightly activities.
5) Participants then made 27 intertemporal choices between receiving cash amounts (between $11 and $80) immediately and larger cash amounts (between $25 and $85) at points in the future ranging from 1 week to 6 months.
6) Participants reported how intensely they felt each of 19 emotional states.

The Champ (1979)
Death/
Final Ending Scene
VERY SAD

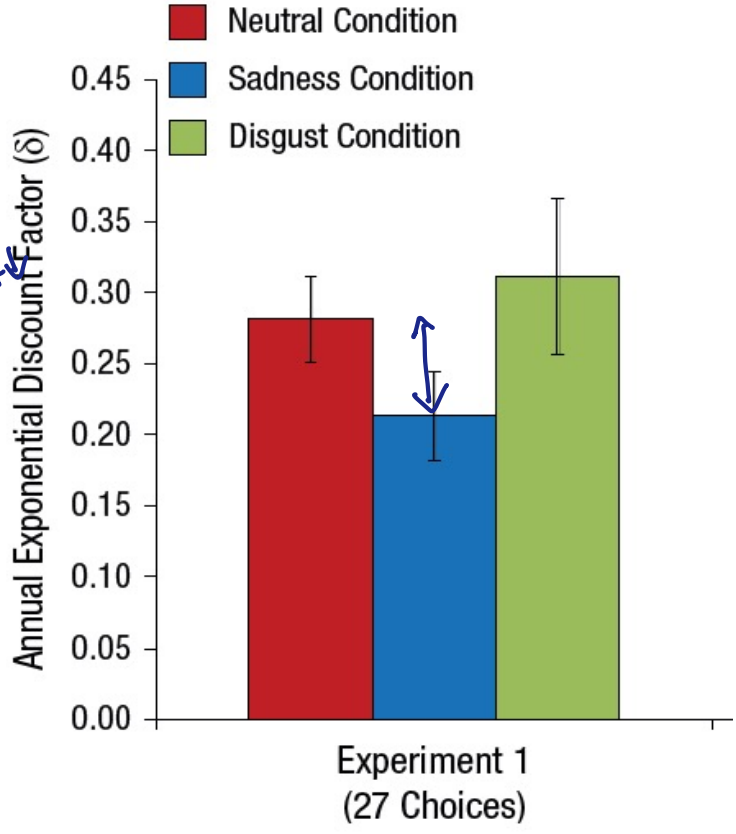
https://youtu.be/SU7NGJw0kR8



Trainspotting | 'The Worst Toilet in Scotland' (HD) - Ewan McGregor | MIRAMAX @1.30 mins

https://www.youtube.com/watch?v=7RoMaS1pzOE

δ ↓
more impatient



The Financial Costs of Sadness

Result:

Sadness significantly increased impatience: Relative to median neutral-state participants, median sad-state participants accepted 13% to 34% less money immediately to avoid waiting 3 months for payment.

Disgusted participants were not more impatient than neutral participants, and that lack of difference implies that the same financial effects do not arise from all negative emotions.