

Non-standard Decision-making

Advanced course in Behavioural and Psychological Economics

Tampere University

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[Link to updated version](#)

Bibliography:

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Topics

Introduction

Framing Effects

Limited Attention

Menu Effects

Persuasion

Emotions

Introduction

Standard theory poses:

$$\max_{x_t^i \in X_t} \sum_{t=0}^{\infty} \delta^t \sum_{s_t \in S_t} p(s_t) U(x_t^i | s_t) \quad (1)$$

- $U(x | s)$: utility
- x^t : period t payoffs
- $p(s)$: probability of state s
- δ : (time-consistent) discount factor

Introduction

Standard theory poses:

$$\max_{x_t^i \in X_t} \sum_{t=0}^{\infty} \delta^t \sum_{s_t \in S_t} p(s_t) U(x_t^i | s_t) \quad (1)$$

- $U(x | s)$: utility
- x^t : period t payoffs
- $p(s)$: probability of state s
- δ : (time-consistent) discount factor

... but **individuals not always optimize**

Topics

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Framing Effect

Observation

Context, and the framing, of a situation matter

Framing Effect

Rabin & Weizsäcker (2009):

- Setup:
 - Decision 1
 - A. Sure gain of \$2.40
 - B. 25% chance to gain \$10 and 75% chance to gain \$0
 - Decision 2
 - C. Sure loss of \$7.50
 - D. 75% chance to lose \$10 and 25% chance to lose \$0
- Evidence:
 - 49% choose A over B
 - 68% choose D over C
 - 28% choose the combination of A and D

Framing Effect

Rabin & Weizsäcker (2009):

- Theory:

- Choosing A+C

$$\begin{cases} \$2.40 - \$7.50 = -\$5.10 & \text{with 100% chance} \end{cases}$$

→ 100% chance to lose \$5.10

- Choosing A+D

$$\begin{cases} \$2.40 - \$10 = -\$7.60 & \text{with 75% chance} \\ \$2.40 - \$0 = \$2.40 & \text{with 25% chance} \end{cases}$$

→ 75% chance to lose \$7.60 and a 25% chance to gain \$2.40

Framing Effect

Rabin & Weizsäcker (2009):

- Theory:

- Choosing B+C

$$\begin{cases} \$0 - \$7.50 = -\$7.50 & \text{with 75% chance} \\ \$10 - \$7.50 = \$2.50 & \text{with 25% chance} \end{cases}$$

→ 75% chance to lose \$7.50 and a 25% chance to gain \$2.50

- Choosing B+D

$$\begin{cases} \$10 - \$0 = \$10 & \text{with 6.25% chance} \\ \$10(\$0) - \$10(\$0) = \$0 & \text{with 37.5% chance} \\ \$0 - \$10 = -\$10.00 & \text{with 56.25% chance} \end{cases}$$

→ 6.25% chance to gain \$10, 37.5% chance to lose \$0 and a 56.25% chance to lose \$10

Framing Effect

Rabin & Weizsäcker (2009):

- Additional Setup:
 - Separate group is presented with choice between A+D and B+C
- Evidence:
 - 100% choose B+C
 - vs. 72% when choice was framed separately

Framing Effect

Rabin & Weizsäcker (2009):

- Interpretation:
 - Framing matters
 - Reference-dependent utility
 - People evaluate each decision separately, comparing with a reference point
 - Risk-neutral on wins
 - Risk-seeking on losses
 - People accept the frame induced by experimenter

Framing Effect

[TO FILL]

Topics

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Limited Attention

Rational Inattention

People do not use all available information, choosing rationally what to pay attention to
(Simon, 1955)

Broadbent (1958):

- Setup:
 - Participants use headphones to hear message
 - Different message played for each ear
 - T0: Instructed to hear message in left ear
 - T1: Instructed to hear message in right ear
- Evidence:
 - Participants recalled little from the unattended message

Theoretical Framework

Following DellaVigna (2009)

Suppose that an individual i considers her utility from consumption of one good:

$$U_i = v + o \tag{12}$$

$$\hat{U}_i = v + (1 - \theta)o \tag{13}$$

- v : good's visible component
- o : good's opaque component
- θ : degree of inattention, restricted to $\theta \geq 0$

Theoretical Framework

- For $\theta = 0$ (*attentive individuals*)

$$\hat{U}_i = v + (1 - (0))o = v + o = U_i$$

- Individual i decides taking into account (at correct weight) all good's components

Theoretical Framework

- For $\theta = 0$ (*attentive individuals*)

$$\hat{U}_i = v + (1 - (0))o = v + o = U_i$$

- Individual i decides taking into account (at correct weight) all good's components
 - *Standard behavior model*

Theoretical Framework

- For $\theta = 0$ (*attentive individuals*)

$$\hat{U}_i = v + (1 - (0))o = v + o = U_i$$

- Individual i decides taking into account (at correct weight) all good's components
→ *Standard behavior model*

- For $o = 0$ (*goods with no opaque components*)

$$\hat{U}_i = v + (1 - \theta)(0) = v = U_i$$

- Individual i decides taking into account (at correct weight) all good's components

Theoretical Framework

- For $\theta = 0$ (*attentive individuals*)

$$\hat{U}_i = v + (1 - (0))o = v + o = U_i$$

- Individual i decides taking into account (at correct weight) all good's components
→ *Standard behavior model*

- For $o = 0$ (*goods with no opaque components*)

$$\hat{U}_i = v + (1 - \theta)(0) = v = U_i$$

- Individual i decides taking into account (at correct weight) all good's components
→ *Standard behavior model*

Theoretical Framework

- For $\theta > 0, o \neq 0$

$$\frac{\partial \hat{U}_i}{\partial \theta} = -o$$

- Individual i decides failing to fully interiorize the opaque component value
 - Larger inattention degrees incur in larger utility loses from o
 - For $o > 0$: Decision fails to fully interiorize higher value of good
 - For $o < 0$: Decision fails to fully interiorize lower value of good

Theoretical Framework

Consider $\theta = \theta(s, N)$

- s : salience of opaque component, restricted to $s \in [0, 1]$
the more salient the opaque component, the less inattention: $\frac{\partial \theta}{\partial s} < 0$
- N : number of competing stimuli
the more competing stimuli, the more inattention to the opaque component: $\frac{\partial \theta}{\partial N} > 0$

Theoretical Framework

Strategies to identify inattention (θ)

① Change in Value of Opaque Component

$$\frac{\partial \hat{U}_i}{\partial o} = (1 - \theta)$$

- Can be compared with reaction to change in value of visible component

→ i.e., $\frac{\partial \hat{U}_i}{\partial v} = 1$

Theoretical Framework

Strategies to identify inattention (θ)

② Change in Salience of Opaque Component

$$\frac{\partial \hat{U}_i}{\partial s} = -\theta'_s o$$

- Reaction depends on value of opaque component (o)
 - For $o \neq 0$: Can assess whether salience impacts inattention (θ'_s)

Theoretical Framework

Strategies to identify inattention (θ)

③ Change in Number of Competing Stimuli

$$\frac{\partial \hat{U}_i}{\partial N} = -\theta'_N o$$

- Reaction depends on value of opaque component (o)
 - For $o \neq 0$: Can assess whether number of competing stimuli impacts inattention (θ'_N)

Theoretical Framework

Limitations

- Measurements on saliency of opaque component tend to be subjective
 - No clear, universal criteria for saliency
- Question on whether inattention is rational or not is not addressed
 - See Maćkowiak, B., Matějka, F., & Wiederholt, M. (2023)

Change in Value of Opaque Component

Hossain & Morgan (2006):

CDs purchases on eBay



Change in Value of Opaque Component

Hossain & Morgan (2006):

CDs purchases on eBay

- Setup:
 - Change of shipping cost of CDs auctioned in eBay
 - T0: \$4 reserve price
 - T1: \$.01 reserve price + \$3.99 shipping cost
- Evidence:
 - Paid prices is \$1.79 higher in T1 vs. T0
 - \$10.16 in T1 vs \$8.37 in T0

Change in Value of Opaque Component

Hossain & Morgan (2006):

CDs purchases on eBay

- Interpretation:

- Consider o is opposite of the shipping cost (c):
$$o = -c$$

$$U_i = v - (1 - \theta)c = v - c + \theta c$$

- Paid prices ($b + c$) reflect individual's utility

$$b = v - (1 - \theta)c \Rightarrow b + c = v + \theta c$$

- For $\theta = 0$ (*fully attentive individuals*):
$$\frac{\partial(b + c)}{\partial c} = 0$$

- For $\theta \neq 0$:
$$\frac{\partial(b + c)}{\partial c} = \theta$$

→ Raise in shipping cost raises revenue

Change in Value of Opaque Component

Hossain & Morgan (2006):

CDs purchases on eBay

- Interpretation:
 - What is the inattention degree?
 - Compare revenues in T0 and T1
 - Raise in shipping costs of \$3.99 (∂c)
 - ... yields an increase in revenue of \$1.79 ($\partial(b + c)$)
 - Implied inattention of .45

$$\frac{\partial(b + c)}{\partial c} = \frac{1.79}{3.99} = \boxed{.45 = \theta}$$

Change in Salience of Opaque Component

Chetty et al. (2009):

Price tags in grocery stores in California



Change in Salience of Opaque Component

Chetty et al. (2009):

Price tags in grocery stores in California

- Setup:
 - Taxes are not always included in posted prices in the United States
 - Final prices is only revealed at the register
 - Authors team up with grocery chain
 - California sales tax (7.375%) normally excluded grocery chain
 - T0: Only pre-tax price
 - T1: Includes post-tax price
- Evidence:
 - Sales drop ~9% in T1 vs. T0

Change in Salience of Opaque Component

Chetty et al. (2009):

Price tags in grocery stores in California

- Setup:
 - Changes of excise and sales taxes across states in the US
 - Excise taxes normally included in posted price
 - Sales taxes are only added in register
- Evidence:
 - Price-elasticity larger in excise taxes
 - Implying .94 inattention degree

Change in Salience of Opaque Component

Pope (2007):

Universities and Hospital Rankings



Change in Salience of Opaque Component

Pope (2007):

Universities and Hospital Rankings

- Setup:
 - US News produces annual rankings of Universities and Hospitals
 - Score and rank
 - e.g., Yale: 95/100 and 9th
- Evidence:
 - Demand responds to ranking, even holding constant scores
 - i.e., *college applications, hospital discharges*
- Interpretation:
 - Complexity of information is also relevant for inattention
 - e.g., *reducing information saliency*
 - Easier to consider rank than score (e.g., *what is 89/100 in the US News ranking?*)

Change in Number of Competing Stimuli

Hong & Stein (2007):

Front-cover news reaction



Change in Number of Competing Stimuli

Hong & Stein (2007):

Front-cover news reaction

- Setup:
 - Positive results are found on a drug to cure a type of cancer, patented by EntreMed
 - 1 On November 28th, 1997:
 - Article extensively covered on *Nature*
 - The New York Times Paper reports the article on page 28
 - 2 On November 29th, 1997:
 - The New York Times Paper reports the article on front page

Change in Number of Competing Stimuli

Hong & Stein (2007):

Front-cover news reaction

- Evidence:
 - Stock price of EntreMed climbs by 28% on 28.11.1997
 - Stock price of EntreMed climbs by 330% on 29.11.1997
 - New price does not revert on the rest of the year
 - Remaining bio-tech companies get ~7.5% price hike

Topics

Introduction

Framing Effects

Limited Attention

Menu Effects

Persuasion

Emotions

Menu Effects

- Consider choices among many options
 - e.g., *'restaurant, vacations, investment options*
- People tend to simplify decisions using heuristics:
 - 1 Excess Diversification
 - 2 Preference for Familiarity
 - 3 Preference for Salience
 - 4 Choice Avoidance
 - 5 Confusion

Excess Diversification

Simonson (1990):

Snack consumption



Excess Diversification

Simonson (1990):

Snack consumption

- Setup:
 - Students choose snacks for the next 3 classes:
 - 1 T0: Simultaneous choice, all snacks chosen one day
 - 2 T1: Sequential choice, each class chooses for the next class
- Evidence:
 - Larger diversification when planning ahead
 - 64% choose 3 different snacks in T1 vs. 9% in T0

Excess Diversification

① Inconditional

- More options imply more consumption
- **Benartzi & Thaler (2001):**
 - Employees from companies offering more retirement plans options invest 3.6% more in equity
- **Huberman & Jiang (2006):**
 - Benartzi & Thaler (2001) results hold for companies with fewer than 10 options
 - ... but disappear thereafter
 - Interpretation: Heuristic is stronger when the number of options is small

Excess Diversification

② Conditional

- Given consumption, more options imply more diversity
- **Huberman & Jiang (2006):**
 - Those that invest, divide rather equally
 - 26% of those investing in 4 funds
 - 53% of those investing in 10 funds

Preference for Familiarity

- **French & Poterba (1991):**
 - Investors prefer equities from their own country
 - US: 94%
 - Japan: 98%
 - UK: 82%

Preference for Familiarity

Huberman (2001):

Investment in Regional Bells

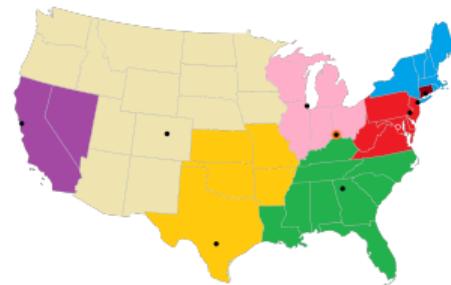


Preference for Familiarity

Huberman (2001):

Investment in Regional Bells

- Setup:
 - US antitrust split AT&T into 7 regional companies in 1980s



- Evidence:
 - Investments in own-state Regional Bell 82% larger than 2nd most-invested Regional Bell
 - Not due to costs of foreign assets!

Preference for Familiarity

- **Benartzi (2001):**
 - Evidence:
 - Employees invest approximately 25% of funds in employer stocks
 - Interpretation
 - Not due to insider information
 - Companies with a higher share of employee investments have lower future returns

Preference for Salience

Preference for Salience

People simplify complex decisions by choosing a salient option

Preference for Salience

Barber & Odean (2008):

Investment portfolio choice

- Evidence:
 - Investors trade more companies
 - In highest/lowest deciles in previous day returns
 - With high trading volume
 - Appearing in news

Preference for Salience

Ho & Imai (2008):

Voting in California

<p>Vote for candidate or write in names of persons both write-in lines. A write-in vote for only a vice presidential candidate will not be counted.</p> <p>President / Vice President Vote for 1</p>		<p><input type="radio"/> Khary Pencus (Democratic)</p> <p><input type="radio"/> John Arndt (Libertarian)</p>
<p><input type="radio"/> Donald J. Trump / Michael R. Pence (Republican)</p> <p><input type="radio"/> Hillary Clinton / Tim Kaine (Democratic)</p> <p><input type="radio"/> Darrell L. Castle / Scott N. Bradley (Constitution)</p> <p><input type="radio"/> Gary Johnson / Bill Weld (Libertarian)</p> <p><input type="radio"/> Jill Stein / Ajamu Baraka (Wisconsin Green)</p> <p><input type="radio"/> Anna Moorehead /</p>		<p><input type="radio"/> write-in:</p> <p>Legislative</p> <p>State Senator, D</p> <p>Vote for 1</p>
		<p><input type="radio"/> Dave Craig (Republican)</p> <p><input type="radio"/> write-in:</p> <p>Representative Assembly,</p> <p>Vote for 1</p>
		<p><input type="radio"/> Ken S (Rep)</p> <p><input type="radio"/> write-in:</p>

Preference for Salience

Ho & Imai (2008):

Voting in California

- Setup:
 - California randomly orders candidates in ballot for each county
- Evidence:
 - Minor party candidates perform 10% better when listed first in ballot
 - Within primaries (less known candidates): 20% increase
- Interpretation:
 - Heuristic used in cases when people have little information

Preference for Salience

Patterson et al. (2023):

Major choice in the US Military Academy



Choice Avoidance

Choice Avoidance

People avoid choices altogether, possibly in favor of the default action

Choice Avoidance

Iyengar & Lepper (2000):

Consumer purchases after tasting jams



Choice Avoidance

Iyengar & Lepper (2000):

Consumer purchases after tasting jams

- Setup:
 - Offer for tasting in jam stand
 - T0: 6 jams for tasting
 - T1: 24 jams for tasting
- Evidence:
 - More people stop for tasting in T1 than in T0
 - 145 in T1 vs. 104 in T0
 - Less people buy jams in T1 than in T0
 - 4 in T1 vs. 31 in T0

Choice Avoidance

Iyengar & Lepper (2000):

Consumer purchases after tasting jams

- Interpretation:
 - *Standard theory*
 - Surprising! More choice can only lead to more purchases
 - **Choice Avoidance**
 - Difficult choices are stressful and people avoid them

Confusion

Shue & Luttmer (2009):

Voting in California

Candidates to succeed GRAY DAVIS as Governor if he is recalled:

Vote for One

<input type="checkbox"/> NATHAN WHITECLOUD WALTON Student	Independent
<input type="checkbox"/> MAURICE WALKER Real Estate Appraiser	Green
<input type="checkbox"/> CHUCK WALKER Business Intelligence Analyst	Republican
<input type="checkbox"/> LINGEL H. WINTERS Consumer Business Attorney	Democratic
<input type="checkbox"/> C.T. WEBER Labor Official/Analyst	Peace and Freedom
<input type="checkbox"/> JIM WEIR Community College Teacher	Democratic
<input type="checkbox"/> BRYAN QUINN Businessman	Republican
<input type="checkbox"/> MICHAEL JACKSON Satellite Project Manager	Republican
<input type="checkbox"/> JOHN 'JACK' MORTENSEN Contractor/Businessman	Democratic
<input type="checkbox"/> DARRYL L. MOBLEY Businessman/Entrepreneur	Independent
<input type="checkbox"/> JEFFREY L. MOCK Business Owner	Republican
<input type="checkbox"/> BRUCE MARGOLIN Marijuana Legalization Attorney	Democratic
<input type="checkbox"/> GINO MARTORANA Restaurant Owner	Republican
<input type="checkbox"/> PAUL MARIAQ Attorney	Democratic
<input type="checkbox"/> ROBERT C. MANNHEIM Retired Businessperson	Democratic
<input type="checkbox"/> FRANK A. MACALUSO, JR. Physician/Medical Doctor	Democratic
<input type="checkbox"/> PAUL 'CHIP' MAILANDER	

<input type="checkbox"/> JOEL BRITTON Retired Meat Packer	Independent
<input type="checkbox"/> AUDIE BOCK Educator/Small Businesswoman	Democratic
<input type="checkbox"/> VIK S. BAJWA Businessman/Father/Entrepreneur	Democratic
<input type="checkbox"/> BADI BADIGAZAMANI Entrepreneur/Author/Executive	Independent
<input type="checkbox"/> VIP BHOLA Attorney/Businessowner	Republican
<input type="checkbox"/> JOHN W. BEARD Businessman	Republican
<input type="checkbox"/> ED BEYER Chief Operations Officer	Republican
<input type="checkbox"/> JOHN CHRISTOPHER BURTON Civil Rights Lawyer	Independent
<input type="checkbox"/> CRUZ M. BUSTAMANTE Lieutenant Governor	Democratic
<input type="checkbox"/> CHERYL BLY-CHESTER Businesswoman/Environmental Engineer	Republican
<input type="checkbox"/> B.E. SMITH Lecturer	Independent
<input type="checkbox"/> DAVID RONALD SAMS Businessman/Producer/Writer	Republican
<input type="checkbox"/> JAMIE ROSEMARY SAFFORD Business Owner	Republican
<input type="checkbox"/> LAWRENCE STEVEN STRAUSS Lawyer/Businessperson/Student	Democratic
<input type="checkbox"/> MICHAEL SCHWARZENEGGER Actor/Businessman	Republican
<input type="checkbox"/> GEORGE B. SCHWARTZMAN Businessman	Independent
<input type="checkbox"/> MIKE SCHMIER	

<input type="checkbox"/> S. ISSA Engineer	Republican
<input type="checkbox"/> BOB LYNN EDWARDS Attorney	Democratic
<input type="checkbox"/> ERIC KOREVAAR Scientist/Businessman	Democratic
<input type="checkbox"/> STEPHEN L. KNAPP Engineer	Republican
<input type="checkbox"/> KELLY P. KIMBALL Business Executive	Democratic
<input type="checkbox"/> D.E. KESSINGER Paralegal/Property Manager	Democratic
<input type="checkbox"/> EDWARD 'ED' KENNEDY Businessman/Educator	Democratic
<input type="checkbox"/> TREK THUNDER KELLY Business Executive/Artist	Independent
<input type="checkbox"/> JERRY KUNZMAN Chief Executive Officer	Independent
<input type="checkbox"/> PETER V. UEBERROTH Businessman/Olympics Advisor	Republican
<input type="checkbox"/> BILL PRADY Television Writer/Producer	Democratic
<input type="checkbox"/> DARIN PRICE University Chemistry Instructor	Natural Law
<input type="checkbox"/> GREGORY J. PAWLIK Realtor/Businessman	Republican
<input type="checkbox"/> LEONARD PADILLA Law School President	Independent
<input type="checkbox"/> RONALD JASON PALMIERI Gay Rights Attorney	Democratic
<input type="checkbox"/> CHARLES 'CHUCK' PINEDA, JR. State Hearing Officer	Democratic
<input type="checkbox"/> HEATHER PETERS	

Confusion

Shue & Luttmer (2009):

Voting in California

- Setup:
 - California randomly orders candidates in ballot for each county
- Evidence:
 - Minor party candidates perform better when listed next to major party candidate
- Interpretation:
 - Inattention?
 - Confusion
 - Effect is almost entirely due to horizontal adjacency on the confusing side
 - e.g., ○ MANNHEIM, ○ SCHWARZENEGGER, ○ PALMIERI

Palmieri gets increase in voting

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Persuasion

Persuasion

Neglection in taking into account the incentives of the information provider

Persuasion

Cain, Loewenstein & Moore (2005):

Guessing coins in a jar



Persuasion

Cain, Loewenstein & Moore (2005):

Guessing coins in a jar

- Setup:
 - Group 0: Inspects a jar of coins
 - T0: Paid for how **close** Group 1's guess is
 - T1: Paid for how **high** Group 1's guess is
 - Group 1: Takes advice from Group 0 and guesses the number of coins
- Evidence:
 - Group 1 is aware of Group 0's incentives
 - Guesses in T1 are ~30% higher than in T0
- Interpretation:
 - People don't sufficiently discount for advisor conflicts of interest

Persuasion

Malmendier & Shanthikumar (2007):
Incorporating recommendations



Persuasion

Malmendier & Shanthikumar (2007):

Incorporating recommendations

- Setup:
 - Extract analyst recommendations from the NY Stock Exchange from 1994 to 2001
 - Differentiate affiliated: from a bank that has relationships with the firms they are reporting on
 - Categorize recommendations in: *strong buy*, *buy*, *hold*, *sell*, and *strong sell*
 - Strong upward bias
 - ~95% recommendations are positive (e.g., *hold*, *buy*, *strong buy*)
 - Link recommendations to investors trading by date
 - Reaction if trade occurs on days following the recommendation
 - Differentiate investors by trade size
 - Large investors: institutional investors (e.g., *pension funds*)
 - Small investors: individual investors

Persuasion

Malmendier & Shanthikumar (2007):

Incorporating recommendations

- Evidence:
 - Large investors discount bias
 - Interpret buy as hold, and hold as sell
 - Do not adjust after affiliated analyst recommendations
 - Small investors follow recommendations literally
 - Even respond to affiliated analyst recommendations
- Interpretation:
 - Naiveté about distortions in analyst recommendations
 - Higher costs of information for small investors
 - Unlikely to explain why small investors do not account for the general distortion
 - But may explain the undifferentiated reaction to affiliated recommendations

Persuasion

DellaVigna & Kaplan (2007):

Impact of Fox News coverage on voting in the 2000 United States election



Persuasion

DellaVigna & Kaplan (2007):

Impact of Fox News coverage on voting in the 2000 United States election

- Setup:
 - Fox News created in 1996
 - 24hrs news oriented cable channel
 - Right-wing ideology, aligned with the Republican Party
 - Rapid expansion across ~9,000 U.S. towns pre-2000
 - Availability depends on decentralized local cable markets
 - Idiosyncratic expansion, conditional on covariates
 - e.g., town may have *Fox News*, while close town do not

Persuasion

DellaVigna & Kaplan (2007):

Impact of Fox News coverage on voting in the 2000 United States election

- Evidence:
 - Republican votes are .5pp higher in towns with Fox News
 - Larger impact in towns with less competing cable channels
 - Fox News availability increased voter turnout, particularly in more Democratic districts
 - Taking into account audience measure:
 - Fox News convinced 5%-30% of the non-Republican audience
- Interpretation:
 - Rational learning
 - Town citizens were initially unaware of Fox News bias
 - ... but effect persists on 2004 election
 - Media can persuade voters

Social Pressure

Social Pressure

Pressure to conform with other's norms, beliefs, or decisions

Social Pressure

Milgram (1963):

Obedience to authority



Social Pressure

Milgram (1963):

Obedience to authority

- Setup:
 - Participants are appointed as judges of 'learners'
 - Ordered to punish errors with **increasing electric shocks**
 - Increases of 15 Volts for each cumulative error
 - Intensity from 15 Volts (*slight shock*) to 450 Volts (*danger: severe shock*)
 - Caveat: no actual shocks! 'Learners' are hired actors
 - Participants are encouraged by experimenter to increase the shock
- Evidence:
 - Independent poll predicts ~1% would inflict 450 Volts punishment
 - 62% of participants escalated shocks to 450 Volts

Social Pressure

Garicano et al. (2005):

Extra time given in football games



Social Pressure

Garicano et al. (2005):

Extra time given in football games

- Setup:
 - Football referees add extra time at the end of each period
 - Rationale: to compensate lost time of gameplay
 - Referees has sufficient wiggling room to decide
 - Extra time provides both teams the opportunity to change the score
 - Comparison taking into account home team result
 - T0: Home team 1 goal ahead (winning)
 - T1: Home team 1 goal behind (losing)

Social Pressure

Garicano et al. (2005):

Extra time given in football games

- Evidence:
 - 2 minutes in T0 vs. 4 minutes in T1
 - Higher difference when stakes are higher
 - e.g., *end of season, larger attendance to game*
 - What happened (during Covid) when games were played without supporters?
 - **Bryson et al. (2020)**: no change in extra time, but less cards for visiting team

Social Pressure

Falk & Ichino (2006):

Stuffing letters into envelopes



Social Pressure

Falk & Ichino (2006):

Stuffing letters into envelopes

- Setup:
 - Swiss students paid to stuff letters into envelopes
 - T0: Individually
 - T1: Alongside another student
- Evidence:
 - Participant stuffed 221 letters in T1 vs. 190 in T0
 - 16% more letters in T1
 - Participants in T1 work more aligned
 - Lower SD within-pair compared to simulated pairs in T0

Social Pressure

Falk & Ichino (2006):

Stuffing letters into envelopes

- Interpretation:
 - Social pressure
 - Learning?
 - Participants may work more because low-productive learn from high-productive
 - Altruism?
 - Participants may work more because it cooperates in overall outcomes

Social Pressure

Mas & Moretti (2009):

Supermarket cashiers



Social Pressure

Mas & Moretti (2009):

Supermarket cashiers

- Setup:
 - Productivity of supermarket cashiers is easy to assess
 - Number of items scanned per second
 - Productivity can be assessed in high-frequency (every 10 minutes)
 - Supermarket cashiers are paired with different co-workers permanently
 - Flexibility in working hours, with two-weeks prior notice
 - Workers shifts do not necessarily overlap
 - T0: All low-productivity workers
 - T1: High-productivity worker ahead: low-productivity can observe
 - T2: High-productivity worker behind: low-productivity cannot observe, but feels observed

Social Pressure

Mas & Moretti (2009):

Supermarket cashiers

- Evidence:
 - High-productivity workers increase other's productivity in the same shift in 1%
 - Particularly relevant for low-productivity workers
 - No negative impact for high-productivity workers
 - Positive impact of high-productivity workers only in T2
 - No impact in T1
 - Impact declines with distance from other workers
 - Impact increases when workers coincide more in same shift

Social Pressure

Mas & Moretti (2009):

Supermarket cashiers

- Interpretation:
 - Social pressure
 - Pressure to perform as high-productive worker
 - Lower productivity generates negative externalities on other workers
 - Learning
 - Increased performance not caused by observing work of high-productive worker
 - Altruism
 - Increased performance reverts when not observed by high-productive worker

Topics

Introduction

Framing Effects

Limited Attention

Menu Effects

Persuasion

Emotions

Mood

- Higher tipping on sunnier days (Rind, 1996)
- People express more happiness on sunnier days (Schwarz & Clore, 1983)
- **Sauders (1996):**
 - Cloudier days in NYC associated with lower returns in US stocks
 - Extension to 18/26 countries, considering stock market city
 - Complete cloud has .09% lower return than sunny day
 - Given clouds, no effect of rain/snow

Mood

Edman et al. (2007):

Stock returns after international football games



Mood

Edman et al. (2007):

Stock returns after international football games

- Setup:
 - National football teams play in representation of their country
 - T0: No game
 - T1: National team win
 - T2: National team loss

Mood

Edman et al. (2007):

Stock returns after international football games

- Evidence:
 - Stock returns are similar in T0 and T1
 - Stock returns are .23% lower in T2 vs. T0
 - Larger difference in more important games (e.g., *world cup*)
- Interpretation:
 - Change in citizen's risk aversion
 - Projection of mood into fundamentals
 - Mood can impact consumptions and investment decisions

Arousal

Josephson (1987):

Violence exposure



Arousal

Josephson (1987):

Violence exposure

- Setup:
 - Previous to hockey games, ~400 school students are shown videos
 - T0: Non-violent clip
 - T1: Violent clip (non-sport related)

Arousal

Josephson (1987):

Violence exposure

- Evidence:
 - More aggressive behavior in T1 vs. T0
 - Assessed by teachers through a 9-point checking list
 - e.g., starts *fights over nothing, pushes or shoves other students, says mean things*
- Interpretation:
 - Imitation?
 - Violent acts performed are different from those in clips
 - Arousal

Arousal

DellaVigna & Dahl (2009):

Violent films impact on crime



Arousal

DellaVigna & Dahl (2009):

Violent films impact on crime

- Setup:
 - Blockbuster films in United States during 1996-2004
 - Categorize films by violence (*kids-in-mind.com*)
 - T0: Non-violent (e.g., *Runaway Bride*)
 - T1: Mildly violent (e.g., *Spider-Man*)
 - T2: Strongly violent (e.g., *Hannibal*)
 - Collect daily box-office for major films
 - Films accumulate largest audiences in opening days
 - Low quantity of films creates variation in exposure to violence
 - e.g., 25 million (or less than 1 million) Americans can be exposed to violent movies

Arousal

DellaVigna & Dahl (2009):

Violent films impact on crime

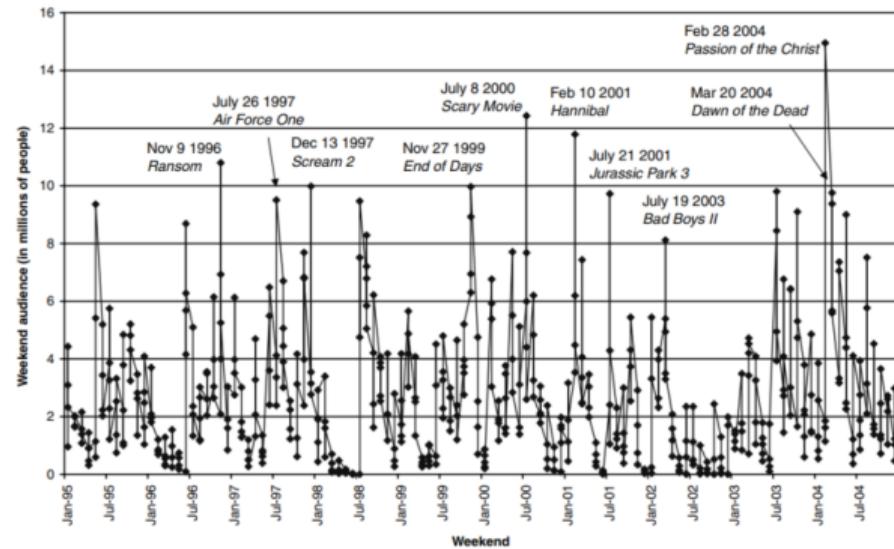


FIGURE Ia
Weekend Theater Audience of Strongly Violent Movies

Arousal

DellaVigna & Dahl (2009):

Violent films impact on crime

- Evidence:
 - Violent crime is 2% lower T2+T1 vs. T0
 - Effect is minimal on morning and afternoon (06:00 to 18:00)
 - Effect is relevant in evenings (18:00 to 00:00), when audiences are larger
 - Effect is relevant in nights (00:00 to 06:00)
 - For each million people watching a violent film, violent crimes drop by ~1%
 - No effect for non-violent film viewers

Arousal

DellaVigna & Dahl (2009):

Violent films impact on crime

- Interpretation:
 - Self-selection into activity
 - Individuals go to cinemas instead of being in the streets
 - Violent films attract more violent individuals
 - who are more prompt to violent crimes
 - Watching films prevents pre-violent acts
 - (e.g., *no alcohol consumption in cinemas in the US*)
 - Alcohol- and drug-related assaults also drop