Coherent arbitrariness

Stable preferences in an unstable world

Pricing?

- How do we decide if we should buy a cup of coffee (for $3)?

- Ideally an internal representation of coffee will be compared to price.

  - If value > price ➜ buy

  - If value < price ➜ don't buy

Fundamental Values

- Economic theories assume underlying "fundamental" values.

- Rarely, however, is it possible to measure fundamental values.

  - Virtually all tests of economic predictions examine the effect of changes in circumstances on valuation.

- Such results are necessary but not sufficient condition for fundamental valuation.

A psychological perspective

- Reasons you love your spouse
  - Schwartz, 2002
- Sensitivity to anchors
  - Kahneman & Tversky, 1974
- Context effects
  - Simonson & Tversky, 1992
- ➥People often have an imperfect understanding of their own values

How about new products?

- How much is this sound worth?
  - How do we set such prices?
- How come the the sound is so different from coffee?
  - Sound should be simpler…

Some intuitions

- Can one map the pleasure of a chocolate-bar to money?

- Is this mapping immediate & direct?

- How about chocolate vs. ice-cream?

The parts

Economics (theory)	Psychology (fuzzy preferences)
Intuitions (mapping $ is hard)	Market (behavior is predictable)

A toy example
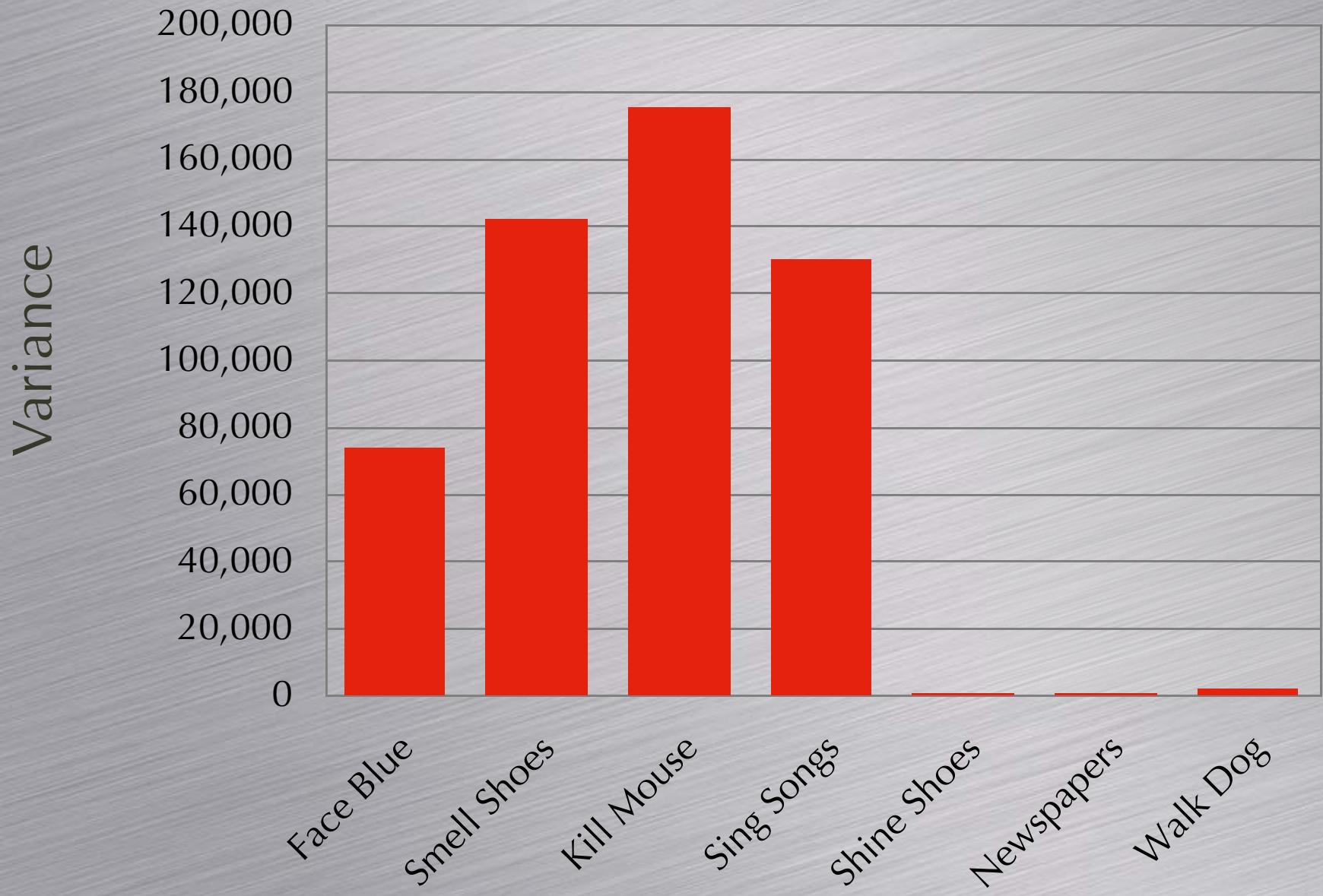
Experiment 1 Procedure

- Do people have fundamental values?

- 2 (Anchor) by 2 (order) by 3 (duration) by 3 (replications)

Experiment 1 Procedure

Introduction

Subjects listen to sound

Hypothetical question

No anchor
10¢ / 50¢

Bidding for real X 9

Getting real payoffs

Increasing 10 sec, 30 sec, 60 sec
Decreasing 60 sec, 30 sec, 10 sec
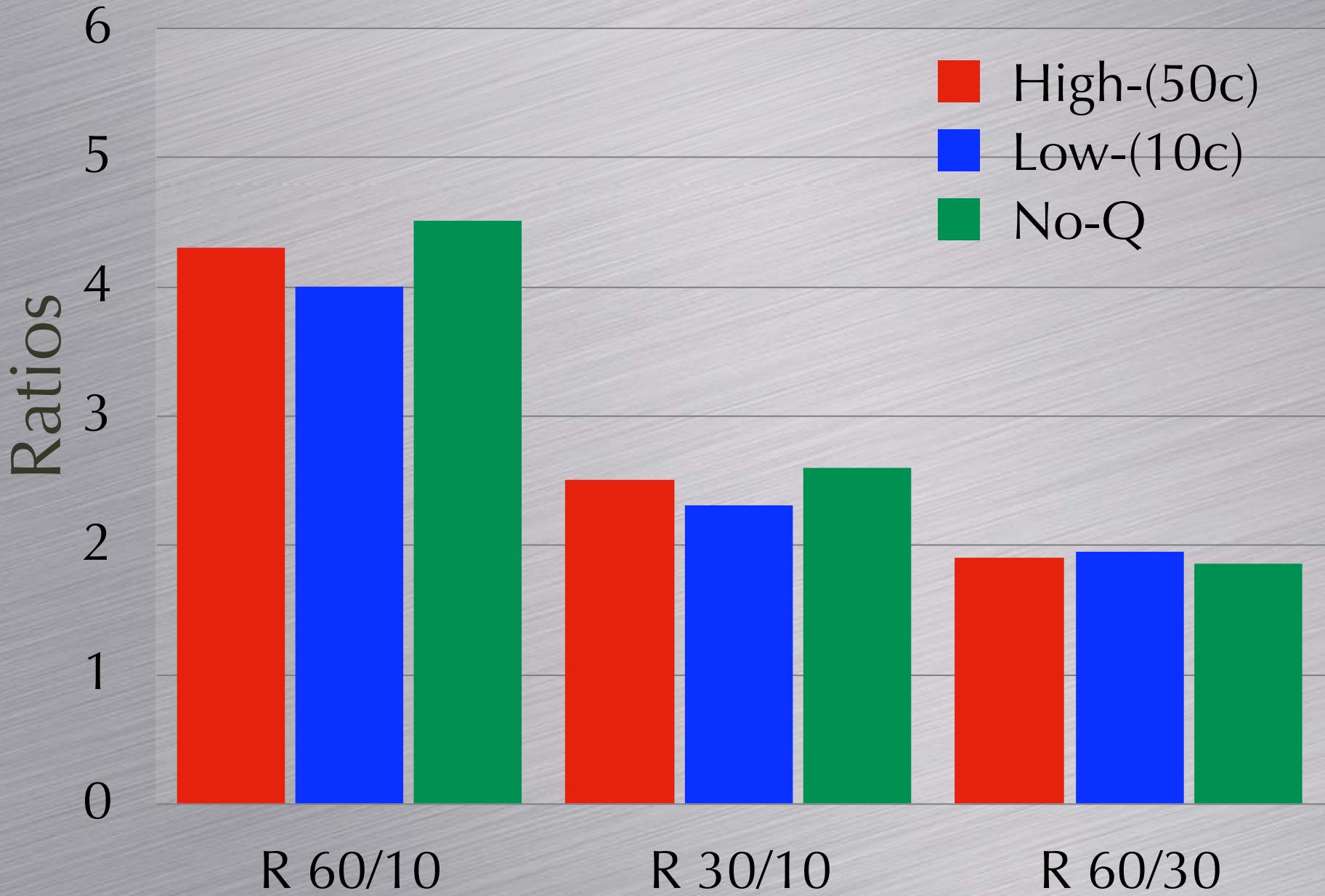
Experiment 1: Interpretation 1
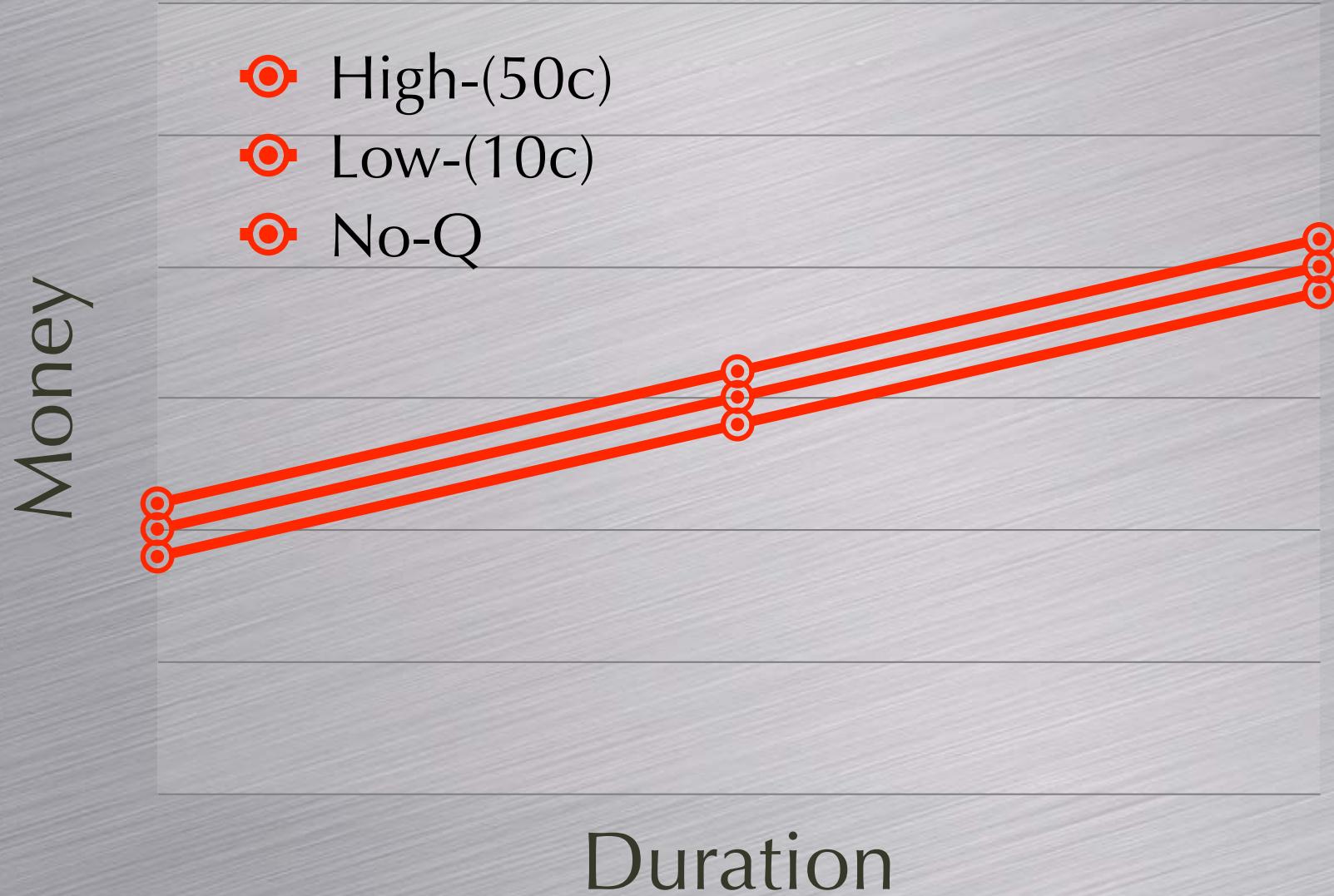
Experiment 1 Results II
WTH over time
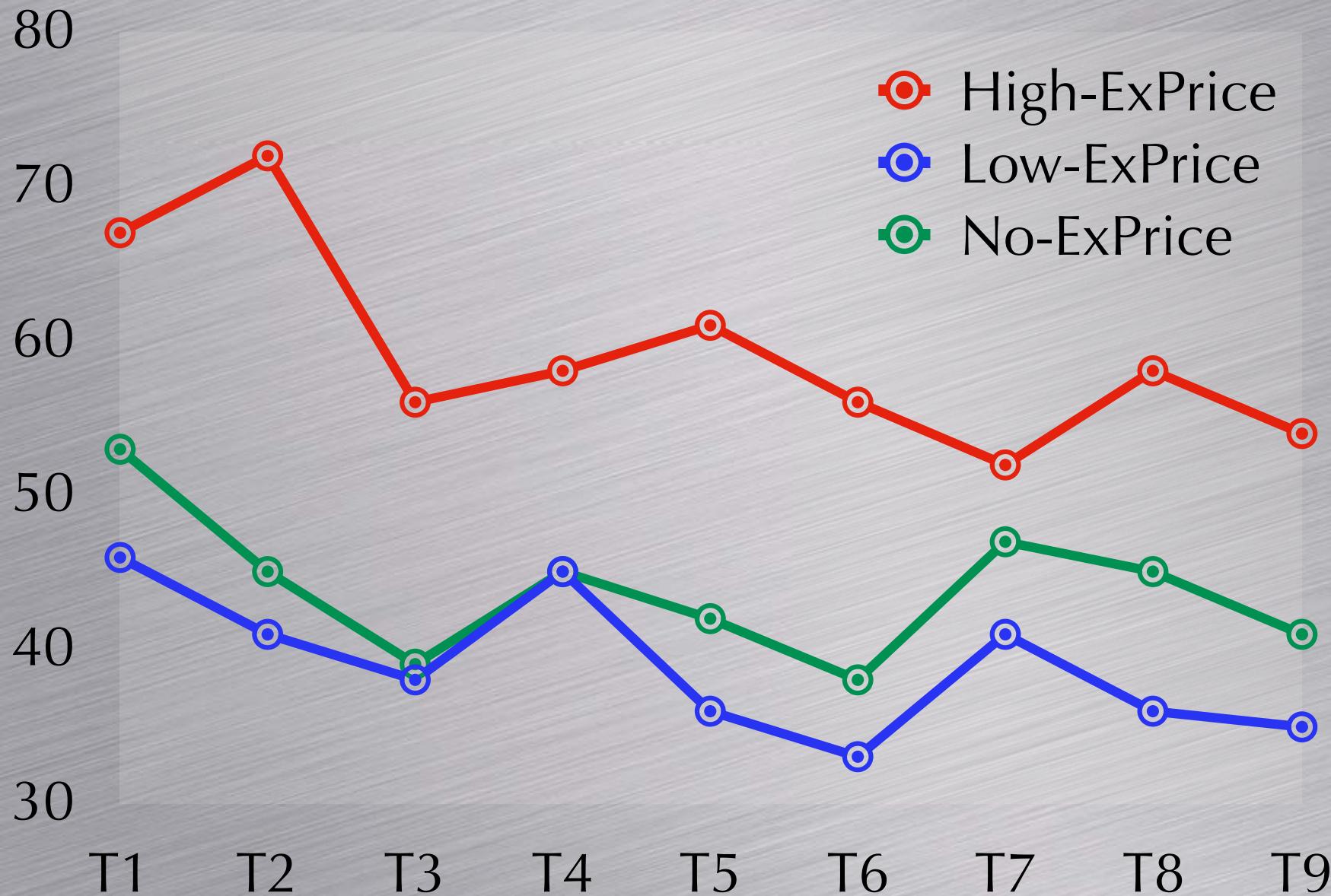
Experiment 1 Conclusions

- Subjects do not have internal value for novel hedonic stimuli

- Once a response is made, other responses follow

- → Coherent arbitrariness
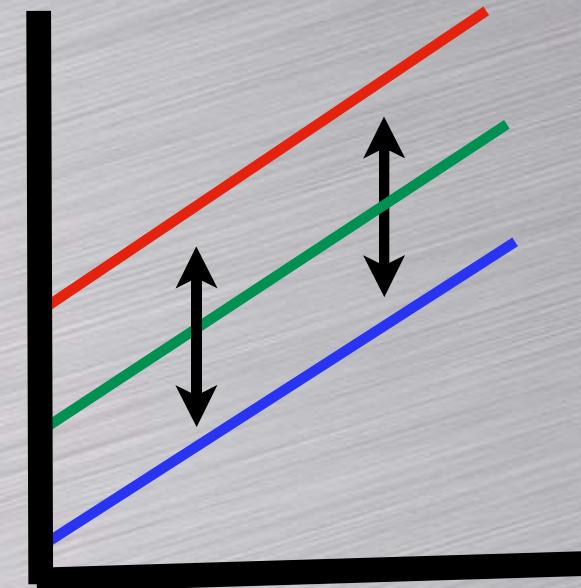
Real products

	Mean value	Low ss#	High ss#	Increase
Trackball	16.25	10.38	21.52	107%
Keyboard	32.47	21.81	42.03	93%
$9 wine	15.80	11.62	19.55	68%
$82 wine	22.89	17.42	27.76	59%
Design book	18.81	14.15	23.00	62%
Belgian Chocolates	13.31	10.04	16.24	62%

- High dependency between the prices of the 2 wines and 2 computer accessories

Tom Sawyer
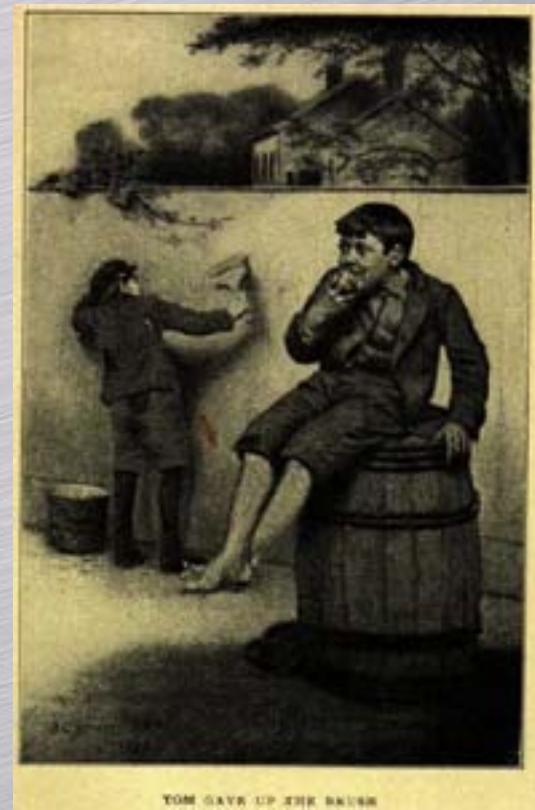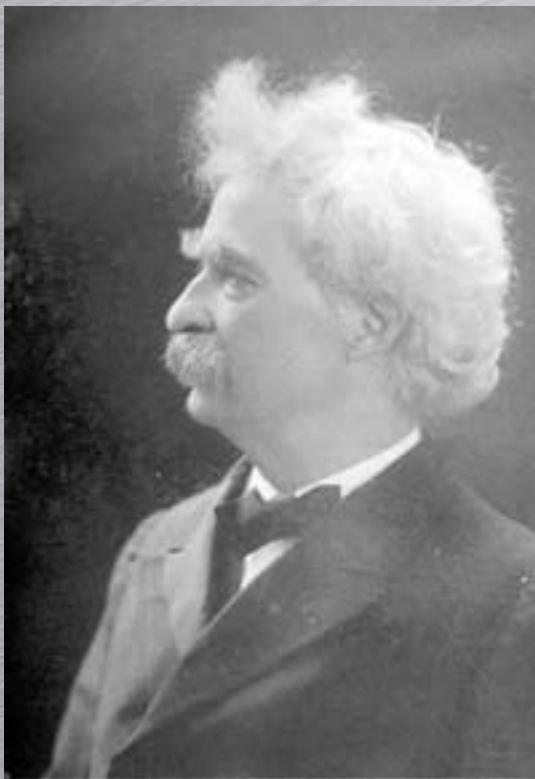
TOM GAVE UP THE BRUSH
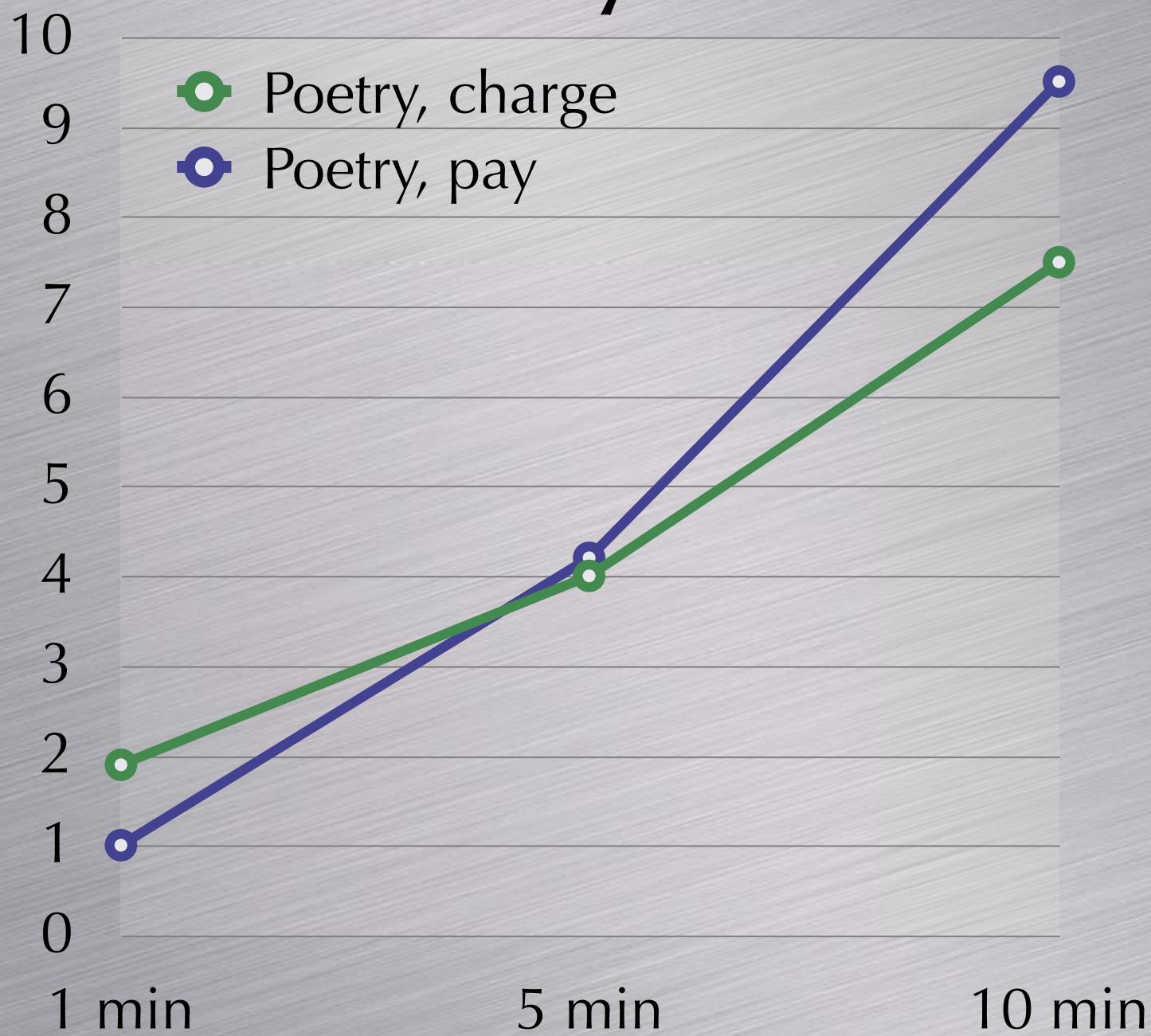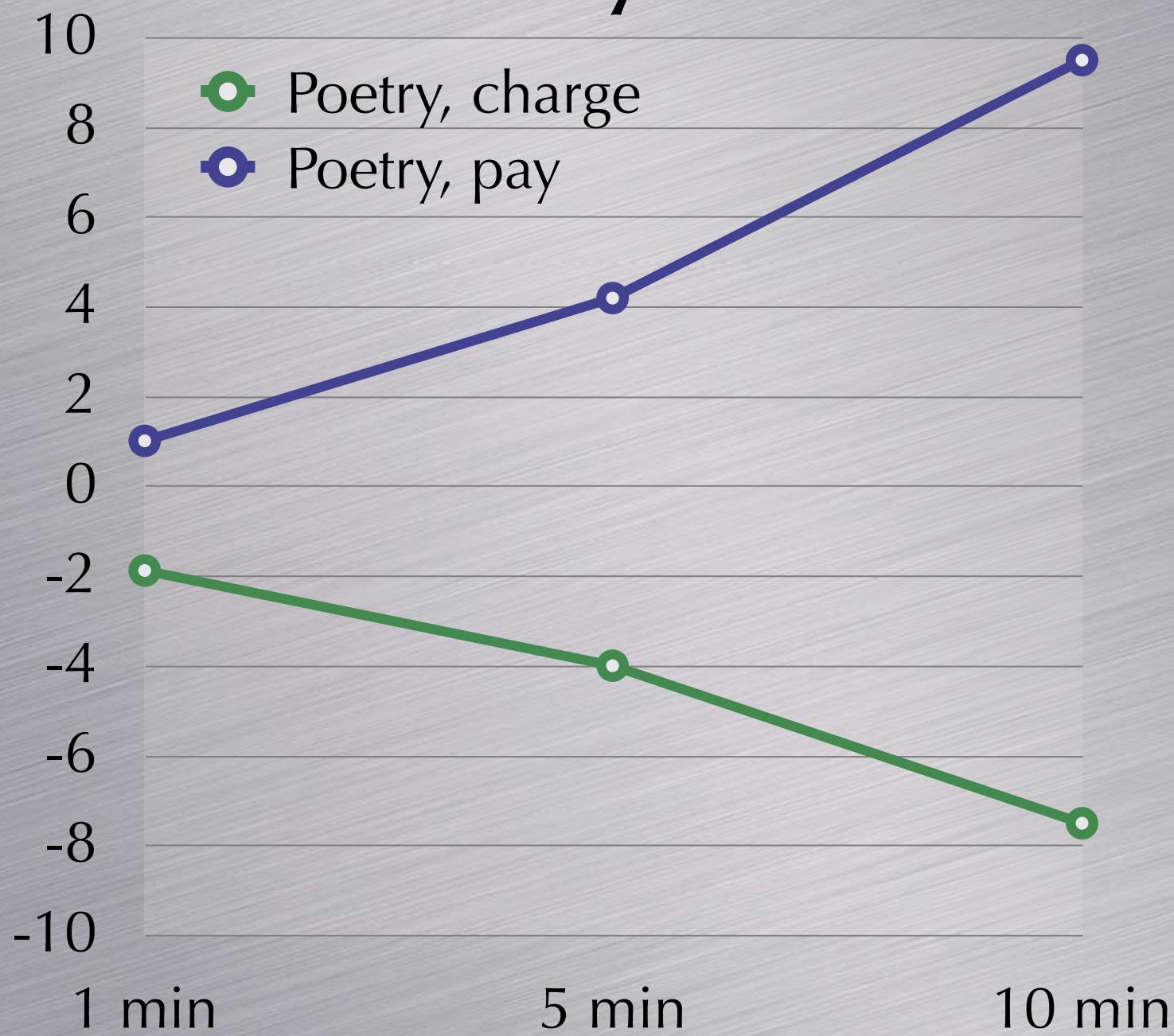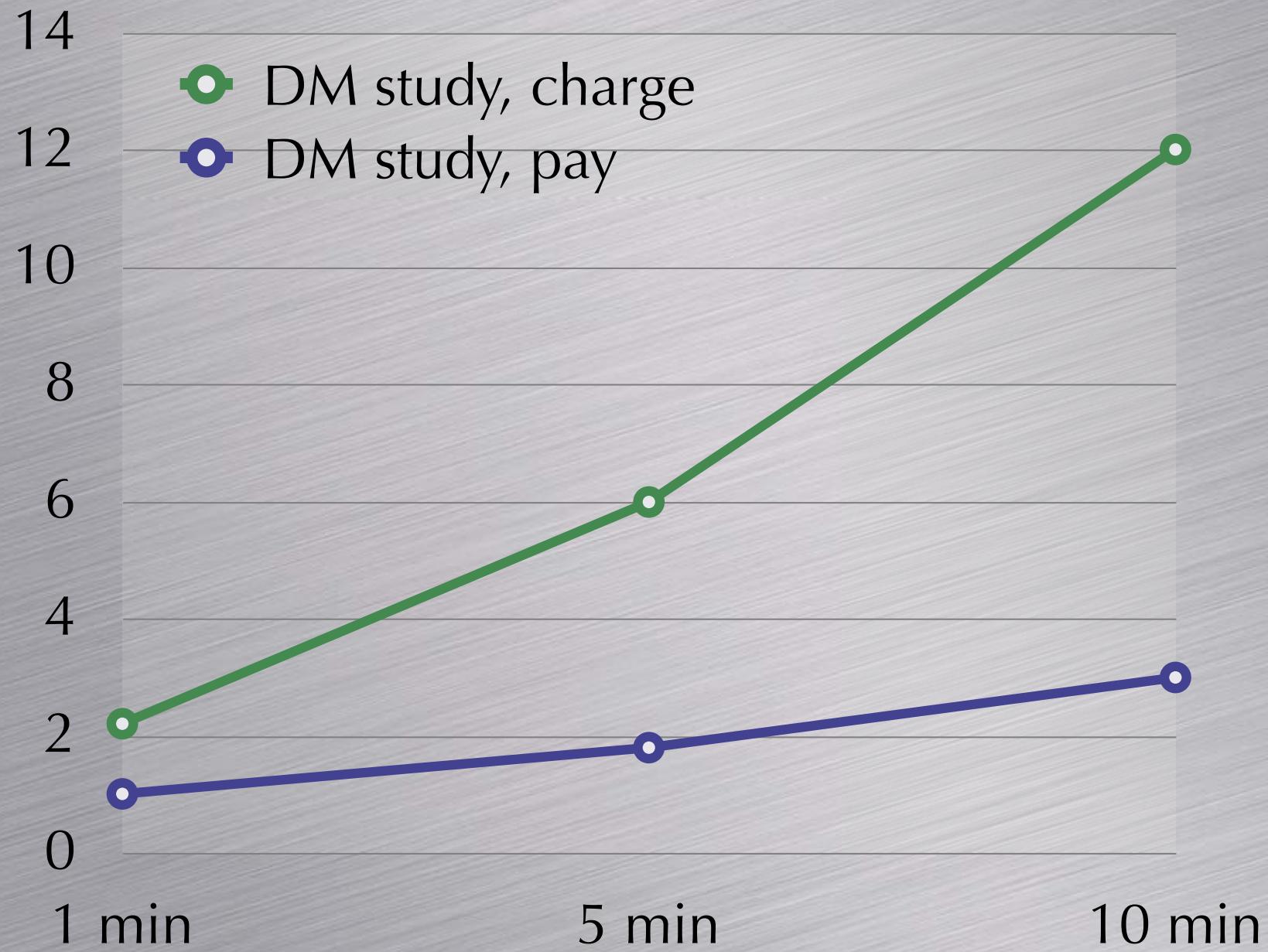
Poetry I

- Poetry, charge
- Poetry, pay

Poetry 2

- Poetry, charge
- Poetry, pay

Other examples

PRINT EDITION

You're in the jailhouse now, but will you pay to stay?

Eager volunteers help size up the market for a night in an old Trois-Rivières prison

By INGRID PERITZ

Tuesday, February 11, 2003 – Page A3

- Mountain climbing, giving public talks, performing on stage, cooking for others, taking pictures, etc.

"The model"

- Self herding

- Evaluating self preferences is hard
- Behavior is a signal for preferences
- Frequent behavior is taken as a strong signal

Experiment 2 Procedure

- Will the forces of the market correct arbitrariness?

  - 2 (Anchor) by 2 (order) by 3 (duration) by 3 (replications)

  - Anchors were 10¢ and 100¢

  - Groups (Markets), not individuals

Experiment 2 Procedure

Introduction

Subjects listen to sound

Hypothetical question

10¢ / 50¢

Bidding for real X 9

Getting real payoffs

Increasing 10 sec, 30 sec, 60 sec

Decreasing 60 sec, 30 sec, 10 sec
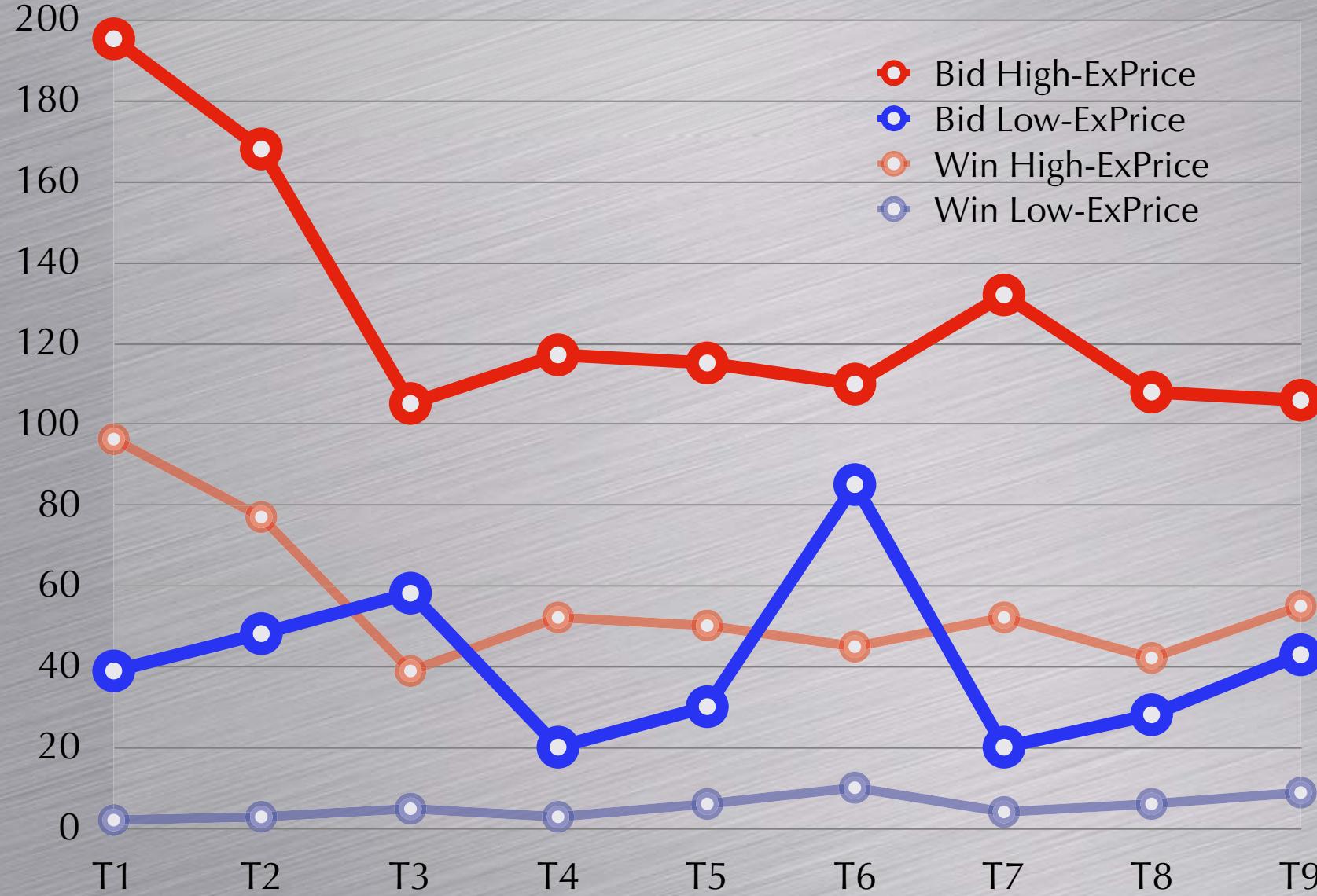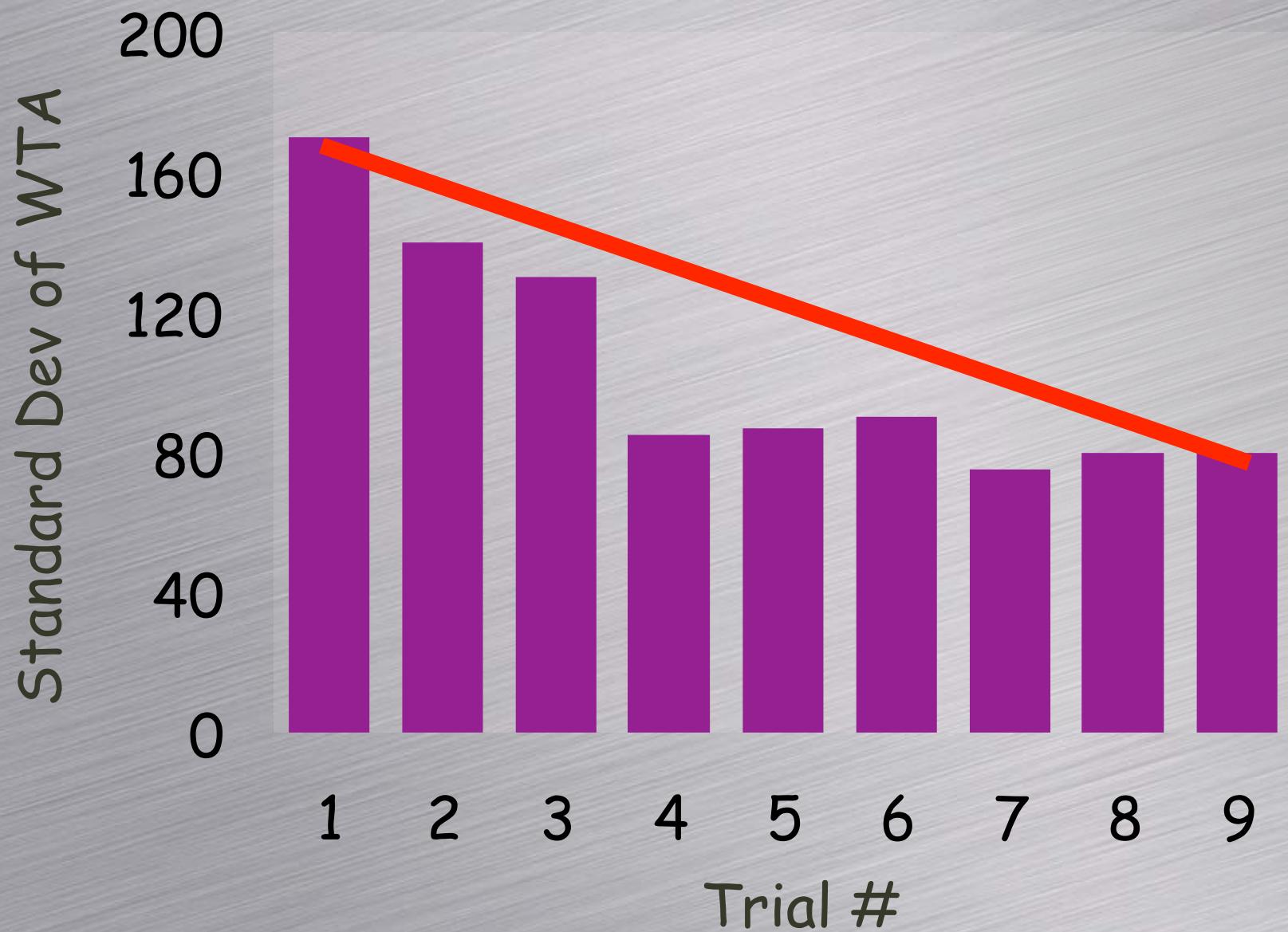
Experiment 2 Conclusions

- Arbitrary values are not "corrected" over time

- Arbitrary values are not "corrected" in marketplaces

- Learning to arbitrary values?

Experiment 3

- Known random anchors
  - Use subjects' own SS#
- Larger magnitude
  - 100 sec, 300 sec, 600 sec
- Same basic procedure as in Exp 1
  - Plus ranking of small annoying tasks

Experiment 3 results I

Legend:
- High Anchor
- Low Anchor

Y-axis: WTA ($), values 0 to 10

X-axis: 100 sec., 300 sec., 600 sec.
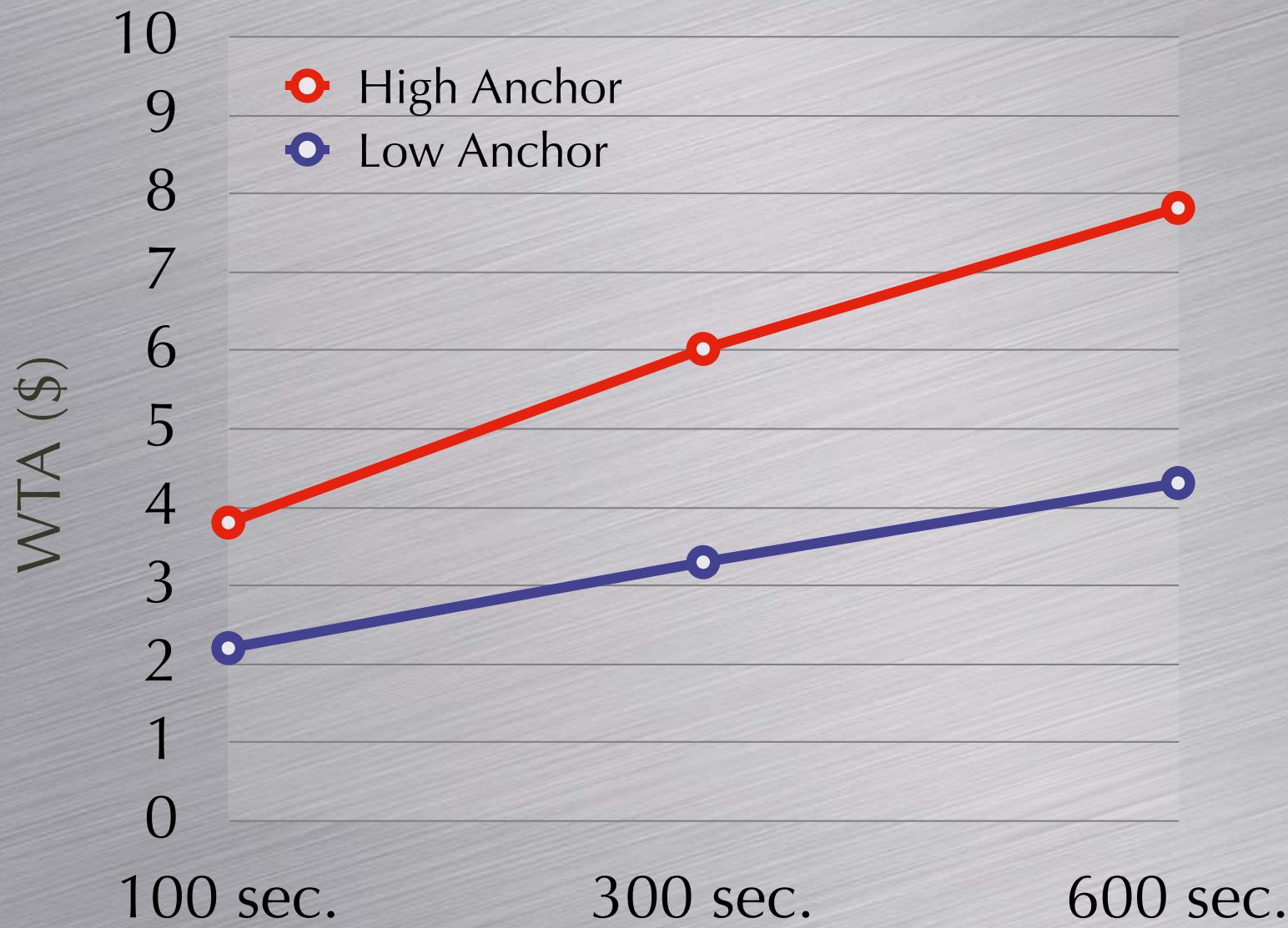
Experiment 3 results II
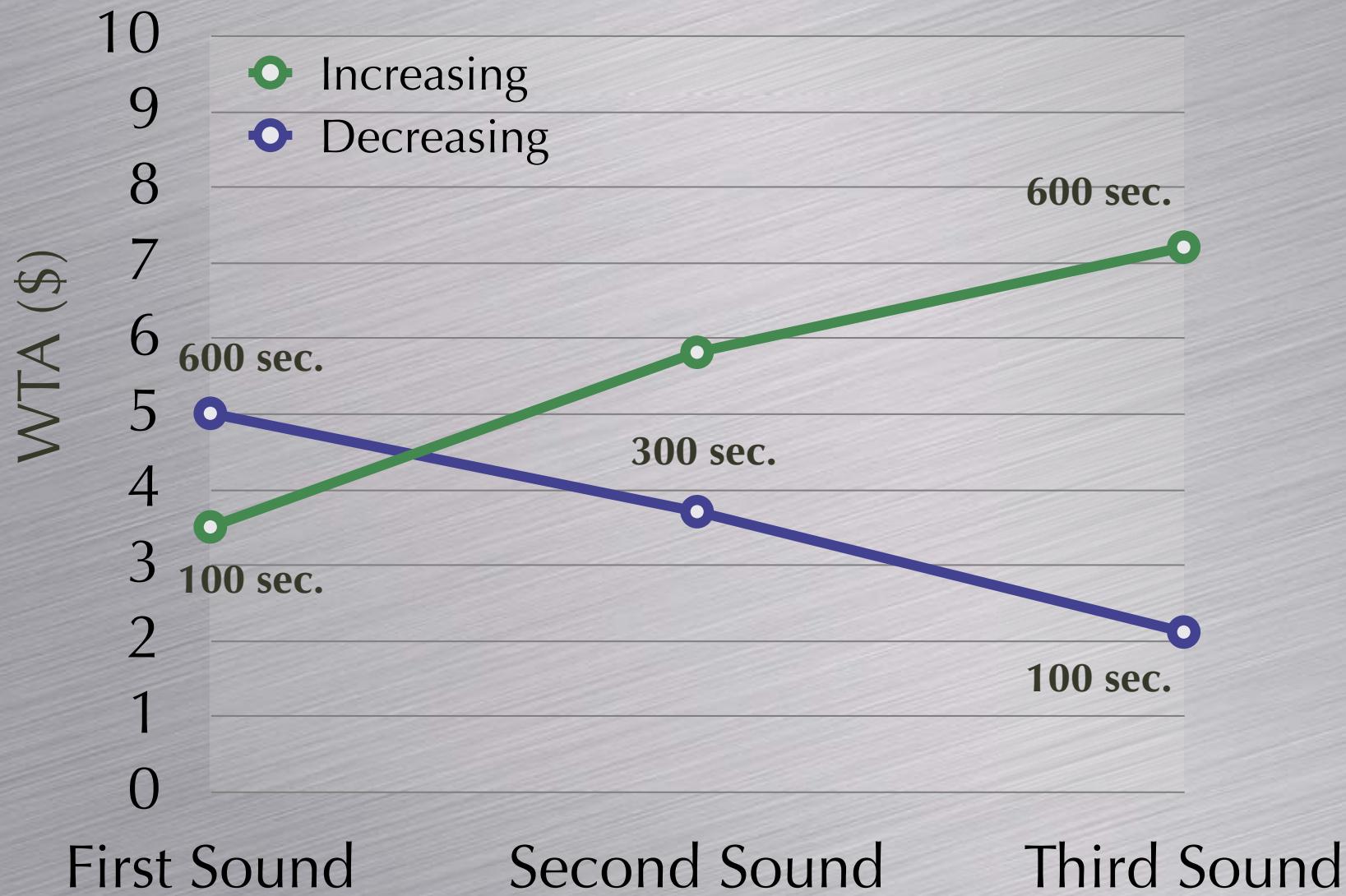
Experiment 4

- What is the role of the first anchor?

  - Information?

  - Changes utility or mapping?

- 3 (sounds) by 2 (order) by 3 (Anchor)

  - Anchors were 10¢, 50¢ and 90¢

  - Duration was constant at 30 sec.

  - Type of sound changed

  - Fourth trail was the same as trial#1 + vise

Experiment 4 Procedure I

Introduction

Subjects listen to sound

Bidding for real
Getting real payoffs ✝

Hypothetical question

10¢ / 50¢ / 90¢
90¢ / 50¢ / 10¢

Why the vise?

$$\overbrace{\qquad}\quad\overbrace{\qquad}$$

$$\wedge \qquad \|$$
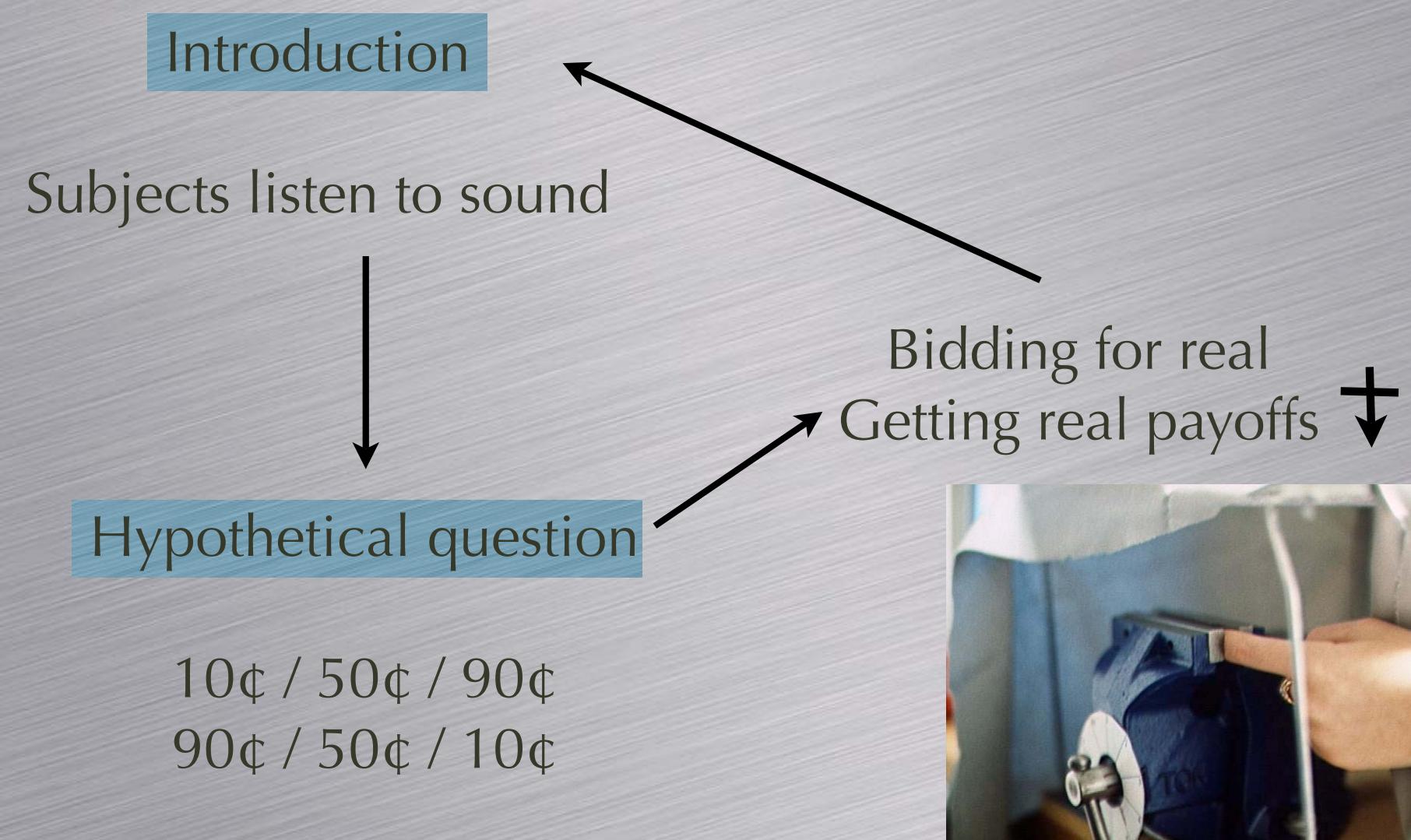
$ | Vise   Vise

$$\wedge \qquad \|$$
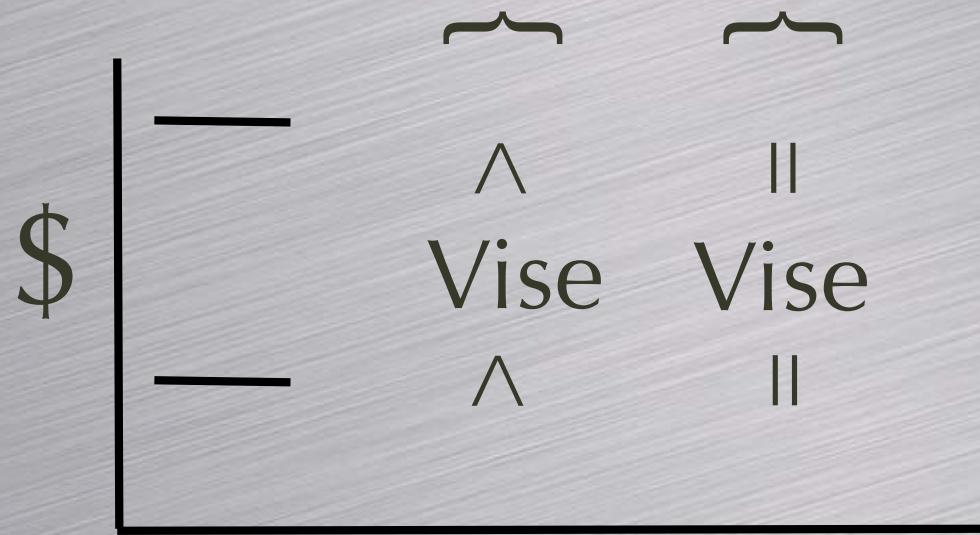
Experiment 4 Results II

- Significant effect of order

- No effect for anchors

  - No effect for Vise/Sound choice

Experiment 4 Conclusions

- The first trial had a large role

- The first response determines future responses

- Not an inference process
 - Using the anchor as information

Utility theory interpretation

- Traditional view on tradeoffs
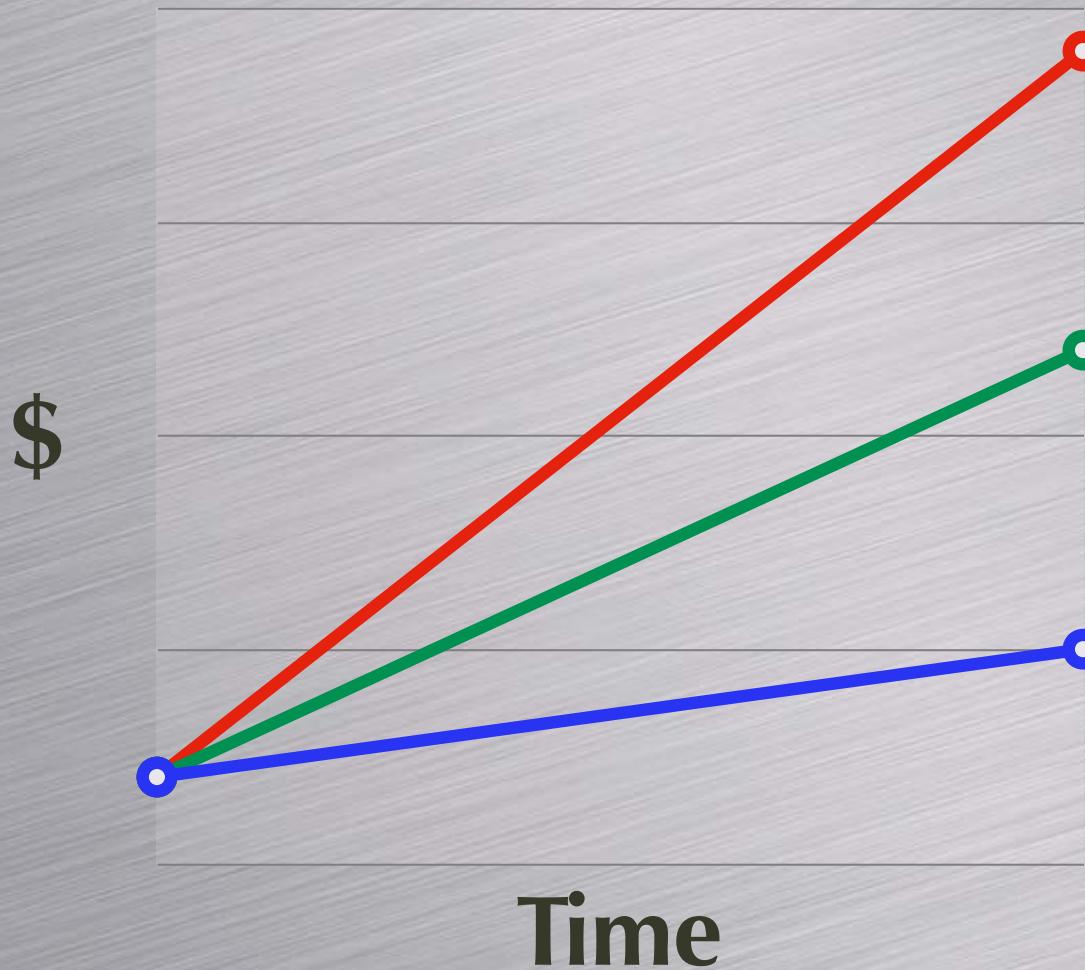
Utility theory interpretation

- "Incomplete preference" view on tradeoffs
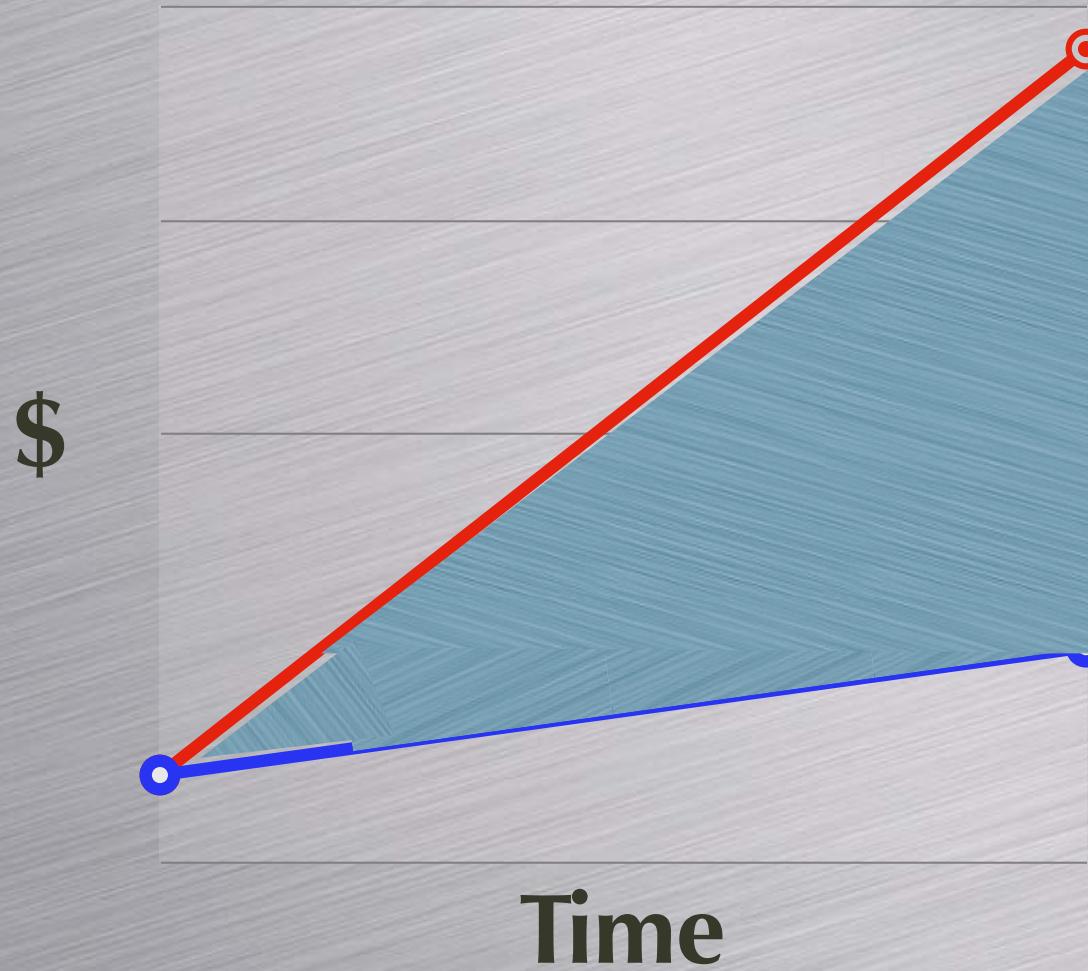
Utility theory interpretation

- Initial response and its consequences
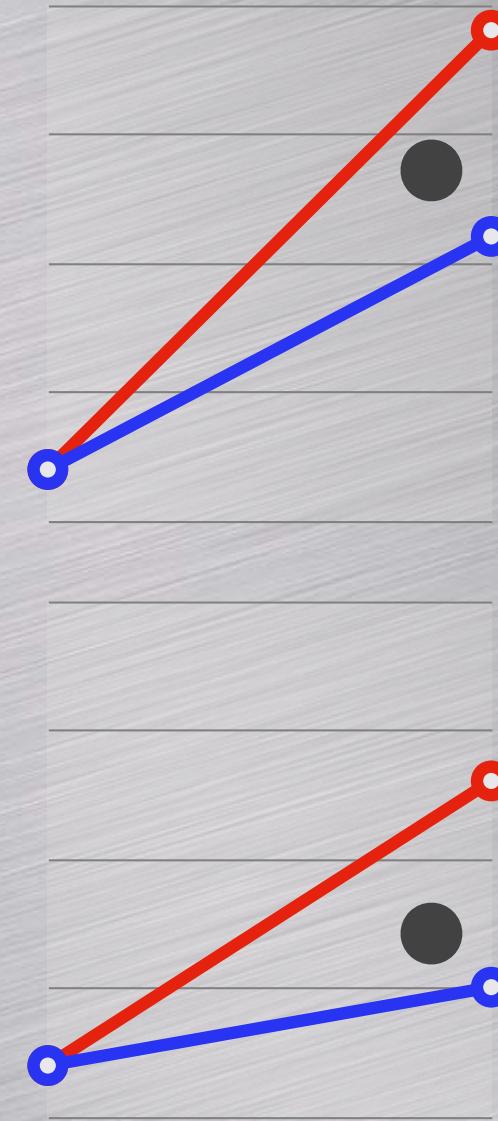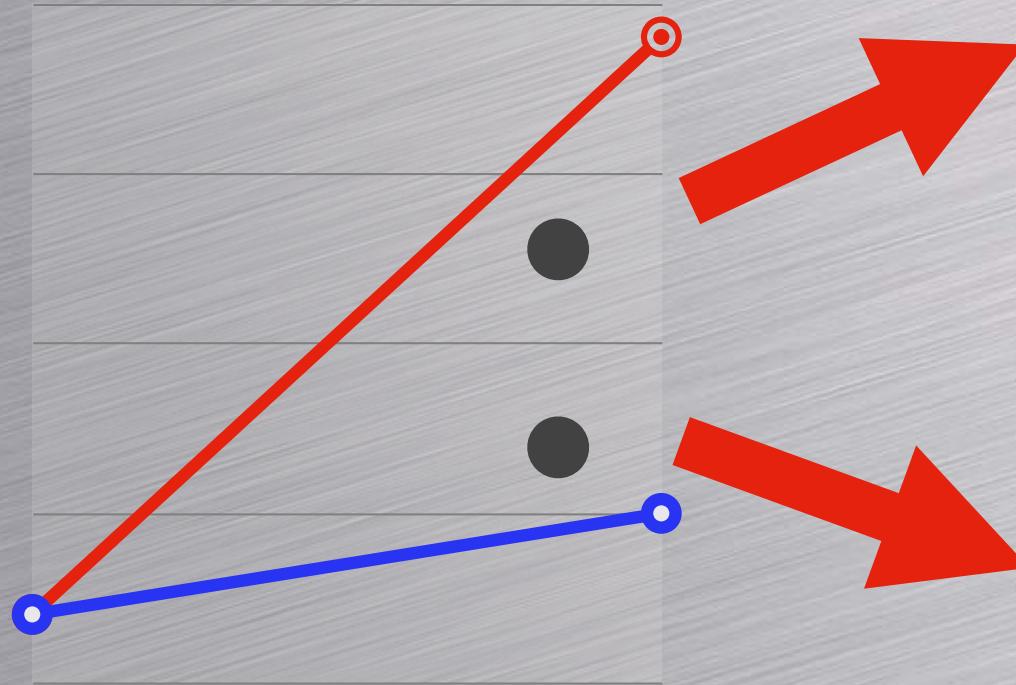
Utilities or mapping?

- Leftovers
  - Experiment 3 (large payoffs & Random anchor)
    - Rank order of small annoying tasks [Blood test, missing a bus, dropping your ice-cream etc.]
  - Experiment 4 (3 different anchors)
  - Choice of sound vs vise
- No effect for anchoring!

Utilities vs. mapping experiment
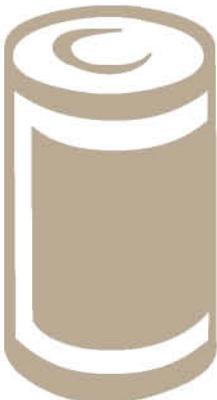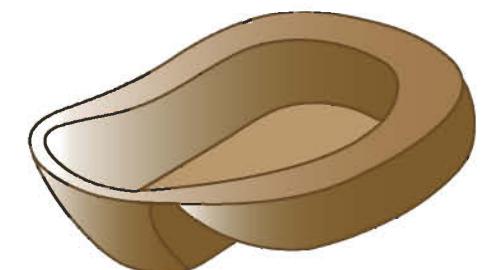
4 Values ($0.5, $1, $2, $4)

The procedure

Pair-wise preference

OR

No measurement

Anchoring Y/N Question

↓

WTA

Pair-wise preference

Time

Results Anchoring

- Bedpan: $[R^2 = 0.46, F = 17.96, p < 0.01]$

- Butter: $[R^2 = 0.28, F = 5.8, p < 0.02]$

- Shock: $[R^2 = 0.34, F = 8.8, p < 0.01]$

- Drink: $[R^2 = 0.29, F = 6.23, p < 0.02]$

Results effects on pair-wise

- Are the pair-wise preferences influenced by the ratios of the pair-wise anchors?

  - Shock/bedpan ($R^2 = 0.046$)

  - Bedpan/butter ($R^2 = 0.023$)

  - Bedpan/drink ($R^2 = 0.002$)

  - Butter/shock ($R^2 = 0.002$)

  - Drink/Shock ($R^2 = 0.011$)

Mapping or utilities? summary

- So far evidence for mapping

- Questions
  - What makes mapping difficult?
  - Money? (sound vs. drink ➜ no)
  - Abstract attributes?
  - Distance?

Conclusions

- The coherence of the market seem to reflect the psychology of relative valuations

- People do not seem to have fundamental values even for simple experiences

- Is money a bad idea?

The parts

Economics (theory) ✘	Psychology (fuzzy preferences) ✔
Intuitions (mapping $ is hard) ✔	Market (behavior is predictable) ✔

Possible Applications / economics I

- Financial markets (Shiller, 1987)

  - "Who would know what the value of the Dow Jones Industrial Average should be? Is it really "worth" 6,000 today? Or 5,000 or 7,000? or 2,000 or 10,000? There is no agreed-upon economic theory that would answer these questions. In the absence of any better information, past prices (or asking prices or prices of similar objects or other simple comparisons) are likely to be important determinants of prices today."

  - Market reactions are sensitive to performance relative to expectations (IBM is doing X better than expected) and to other relative changes (IBM is buying back X stocks)

Possible Applications / economics II

- Labor markets Bewley (1998).

  - "Non-union companies seemed to be isolated islands, with most workers having little systematic knowledge of pay rates at other firms. Pay rates in different non-union companies were loosely linked by the forces of supply and demand, but these allowed a good deal of latitude in setting pay"

  -

  - Well being within a company is related to relative pay to others and to former levels

Possible Applications / economics III

- contingent valuation

  - "valuations of any particular quantity [of a good] would be sensitive to its relative position within the range selected for valuation, but insensitive to which range is chosen, resulting in insensitive (or incoherent) values across studies using different quantity ranges" Frederick and Fischhoff (1998, p. 116)

  - BUT, within subjects evaluations are coherent

Possible Applications / economics IV

- Criminal deterrence (Ross, 1973)
  - People seem sensitive to policy changes in deterrence (perhaps only short term)
  - People seem insensitive to absolute levels of probability of punishment
  - Reactions to crime also have a very strong cultural effects

Questions for neuro- science

- Is there cardinal utility?

- When pain is experienced as pleasure (and the other way) what is the associated brain activity?

Marketing implications

- First price has long lasting implications

- Products are comparative in nature
  - Understanding what a product will be compared to is important

- Product lines and product extensions