Human Judgement and Decision Making

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Outline

- Research on human decision-making has uncovered important insights into choice and judgement biases
- Illustration of robust behavioral biases
  - Sunk cost fallacy
  - Framing and presentation effects
  - Neglect of others' strategic behavior
  - Are professionals immune to behavioral biases?
  - Asymmetric evaluation of gains and losses
    - Hedonic framing and choice bracketing
  - The relevance of irrelevant alternatives
- Summary

Sunk Cost

- Restaurant Example
  - Pay fixed entry fee – each as much as you want

- Escalation of Commitment
- Referendum about a completely built nuclear power plant

- Hiring committee decision about an excellent new candidate late in the process

Framing Effects

Imagine you you have to decide between the following two medical treatments – surgery or radiation therapy. The empirical evidence shows that the two methods have the following consequences:

Surgery versus Radiation Therapy

Group A

Surgery/Operation

When 100 patients have the operation, 90 survive the operation, 68 are alive at the end of one year, and 34 are alive after five years.

(82%)

Radiation therapy

When 100 patients opt for radiation therapy, all of them survive the treatment, 77 are alive at the end of one year, and 22 are alive after five years.

(18%)

Group B

Surgery/Operation

When 100 patients have the operation, 10 die during the operation, 32 are dead at the end of one year, and 66 are dead after five years.

(56%)

Radiation therapy

When 100 patients opt for radiation therapy, no one dies during the treatment, 23 are dead at the end of one year, and 78 are dead after five years.

(44%)

Framing (reference point) effects

Gruppe A

Suppose you are CHF 300 richer than you currently are. You have to choose between:

- A sure gain of CHF 100

  (56% approval)

- a 50% chance to gain CHF 200 and a 50% chance to gain nothing

  (44% approval)

Gruppe B

Suppose you are CHF 500 richer than you currently are. You have to choose between:

- A sure loss of CHF100

  (31% approval)

- a 50% chance to lose CHF 200 and a 50% chance to lose nothing

  (69% approval)

Acquiring the Company

- You can make an offer for Company T, which has a value per share of $0 to $100 under the current management.
- When making your offer, you do not know the true value per share. You only know that the value is equally distributed between $0 and $100.
- If you buy Company T you will install a new management such that the shares of the company are 50% higher under the new management.

Which price per share do you offer?

- **More than 100 but less than 150**
- **Between 67 and 100**
- **Between 33 and 66**
- **Between 1 and 32**
- **0**

Acquiring the Company – Rational Choice

- The rational price offer is 0, i.e., not bidding at all.
- For every price P that is offered only those companies will sell whose value is lower than P
  - Expected true value per share under the old managment is P/2
  - Expected true value with new management is
    P/2 + (1/2)(P/2) = (P/2 + P/4) = (3/4)P
  - **Thus the true expected value is below P**

  - Failing to take into account the selection effects ("only those worth less than P will sell") causes irrational bidding

Aquring the Comapny – offers of 123 Boston University MBA students

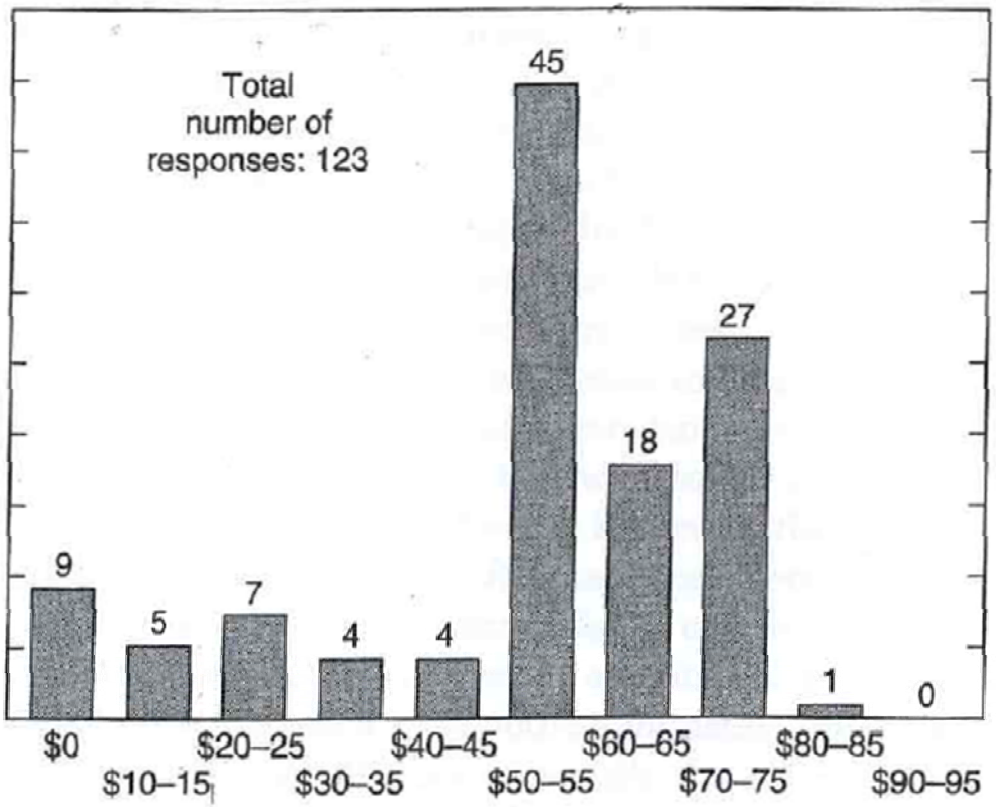

Figure 8.1 The distribution of price offers

Are professionals immune to cognitive biases and irrational influences on behavior?

Risk task

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CHF (200 – X)

CHF X

Safe account

Risky asset

Red ball

Yellow ball

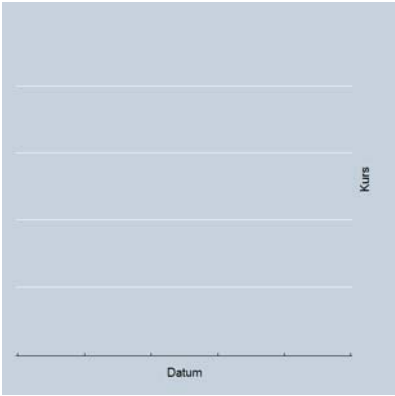
CHF (200 – X)

CHF 0

2.5·CHF X

Risk taking by financial professionals

Boom



Imagine you find yourself in a continuing stock market **boom**, would you …

1) buy or sell particular stocks?
2) invest in gold or other precious metals?
3) deposit part of your assets on your savings account?
4) invest in Exchange Traded Funds?
5) consider purchasing real estate (e.g. a house)?

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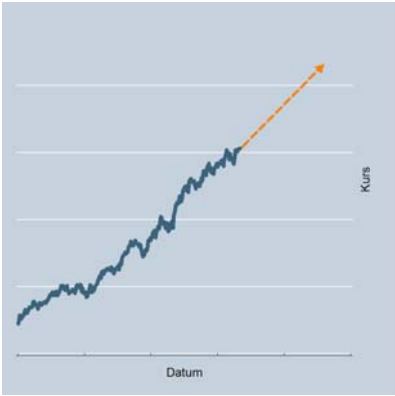

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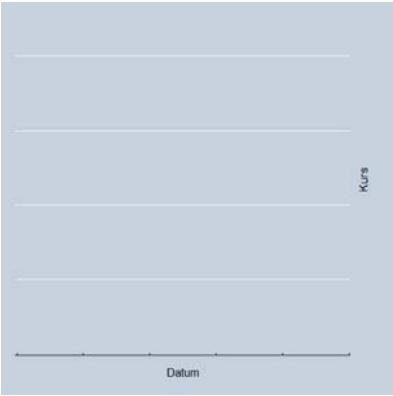
Bust



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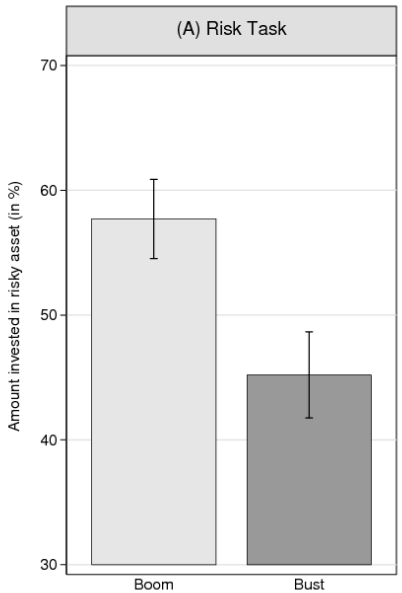
How does priming affect risk aversion?



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During bust 22% lower investment in risky asset

Causes and Relevance

- Bust prime induces fear
- Fear is associated with lower investment
- Completely unrelated fear dampens investment in risky assets

- Mechanism for the amplification of booms and busts through emotional processes
- Helps solve a long-standing problem (raised by Bob Shiller's paper)

Asymmetric Value Function

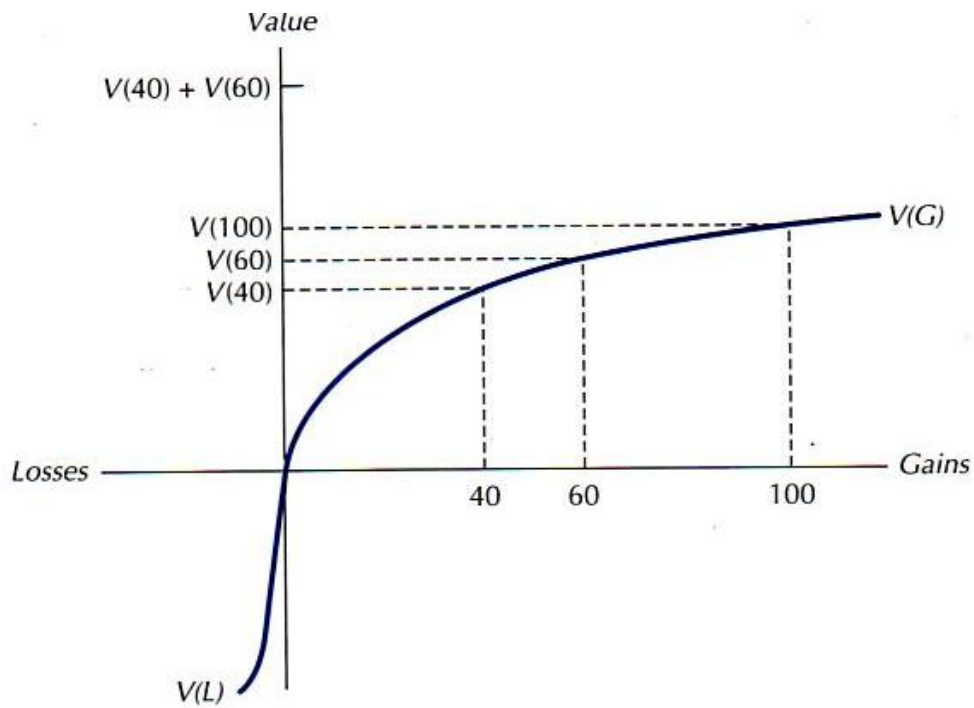
Hedonic Framing & Choice Bracketing

Losses and Gains

- What produces higher subjective utility for the recipient?
  - Two smaller gifts occurring at two distinct points in time
  - One large gift with the same overall monetary cost as the two small gifts together
- What produces lower subjective **dis**utility?
  - Two smaller losses occurring at two distinct points in time
  - One large loss with the same monetary cost as the two small losses together

Asymmetric value function in the gain domain

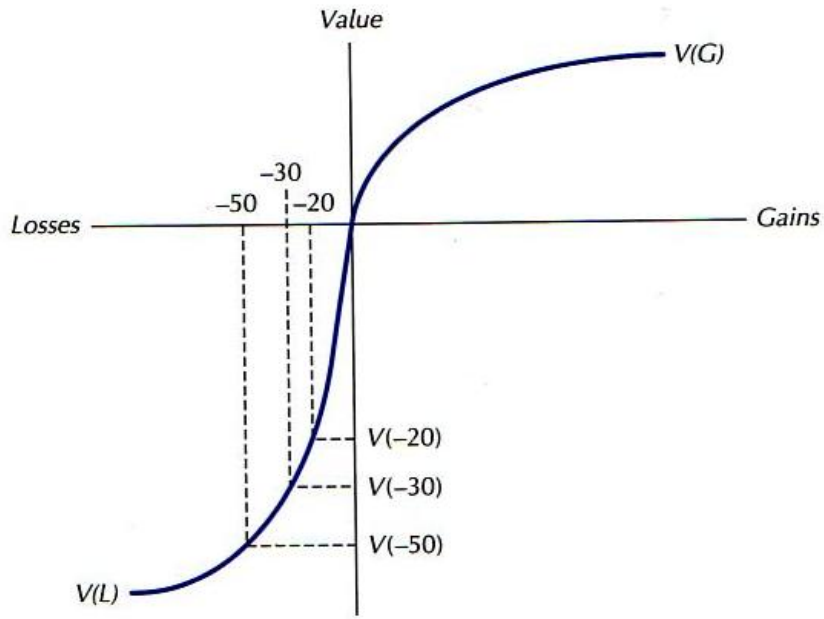
- **Two small gifts generate more subjective utility/value than one large one does!**



- **Choice bracketing: tendency to separately evaluate events and then integrating them instead of integrating them from the beginning**
- Division of one large gain into several smaller ones

Asymmetric value function in the loss domain

- **One large loss produces less pain than two smaller losses that have the same aggregate size**



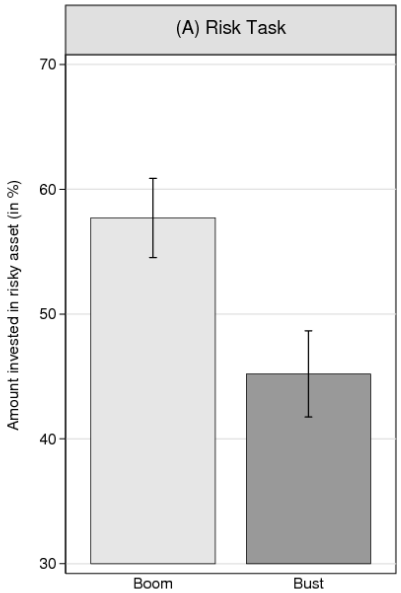
- Combination of several smaller losses to one large one
- A person is more likely to pay $200 for a car radio after spending $20’000 on a car
- “If corporate losses are unavoidable, then it is best to put everything on the table right away.”

Asymmetric value function – further implications

- Combine small losses with a larger gain ("hide small losses")
  - In case of a bad business trend, firms first try to avoid any sign of losses

- Separate small gains from larger losses ("make small gains visible")
  - If one branch of the company makes larger losses and another one makes a small profit, separately report the small profit

Financial traders' risk aversion in small stakes gambles

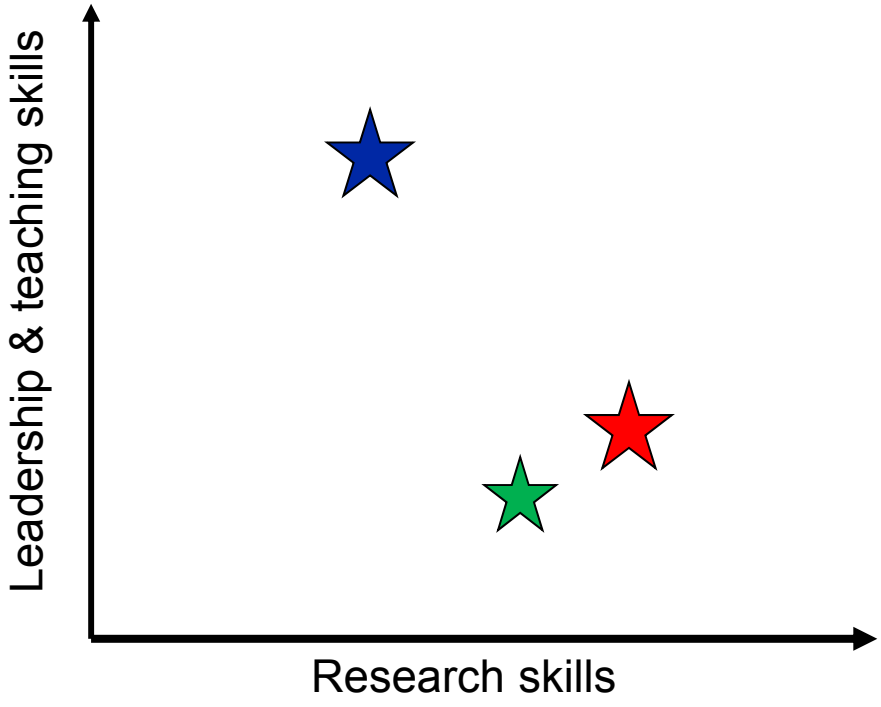


Relatively little is invested in the risky asset

Is risk aversion in small stake gambles rational?

The relevance of irrelevant alternatives

The relevance of irrelevant alternatives when evaluating trade offs



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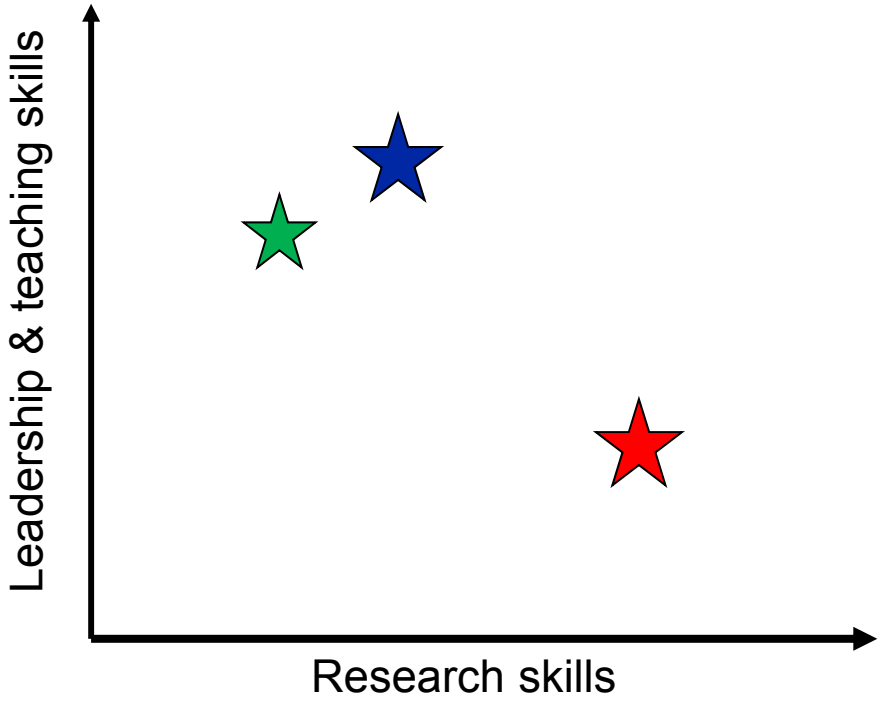
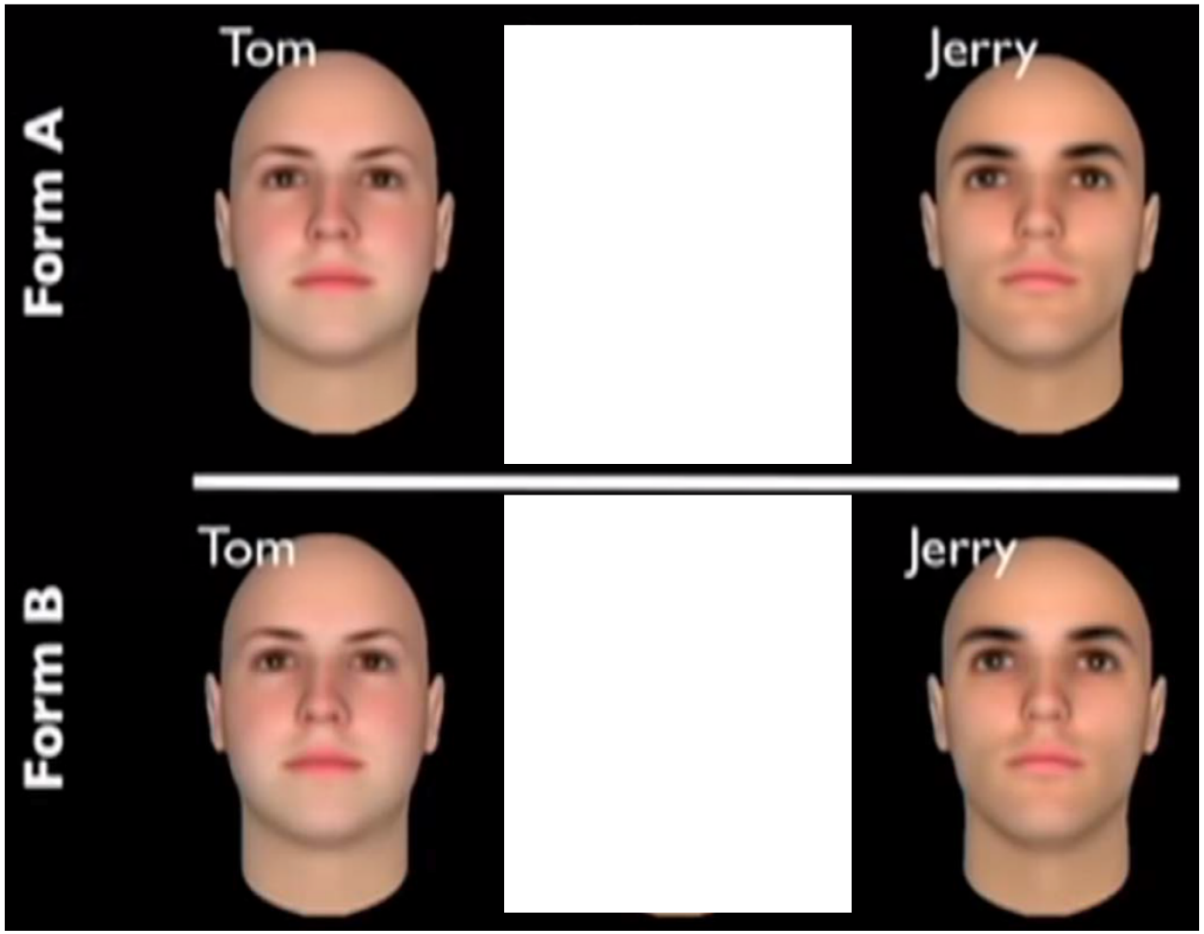


With whom do women prefer to go out for a date?



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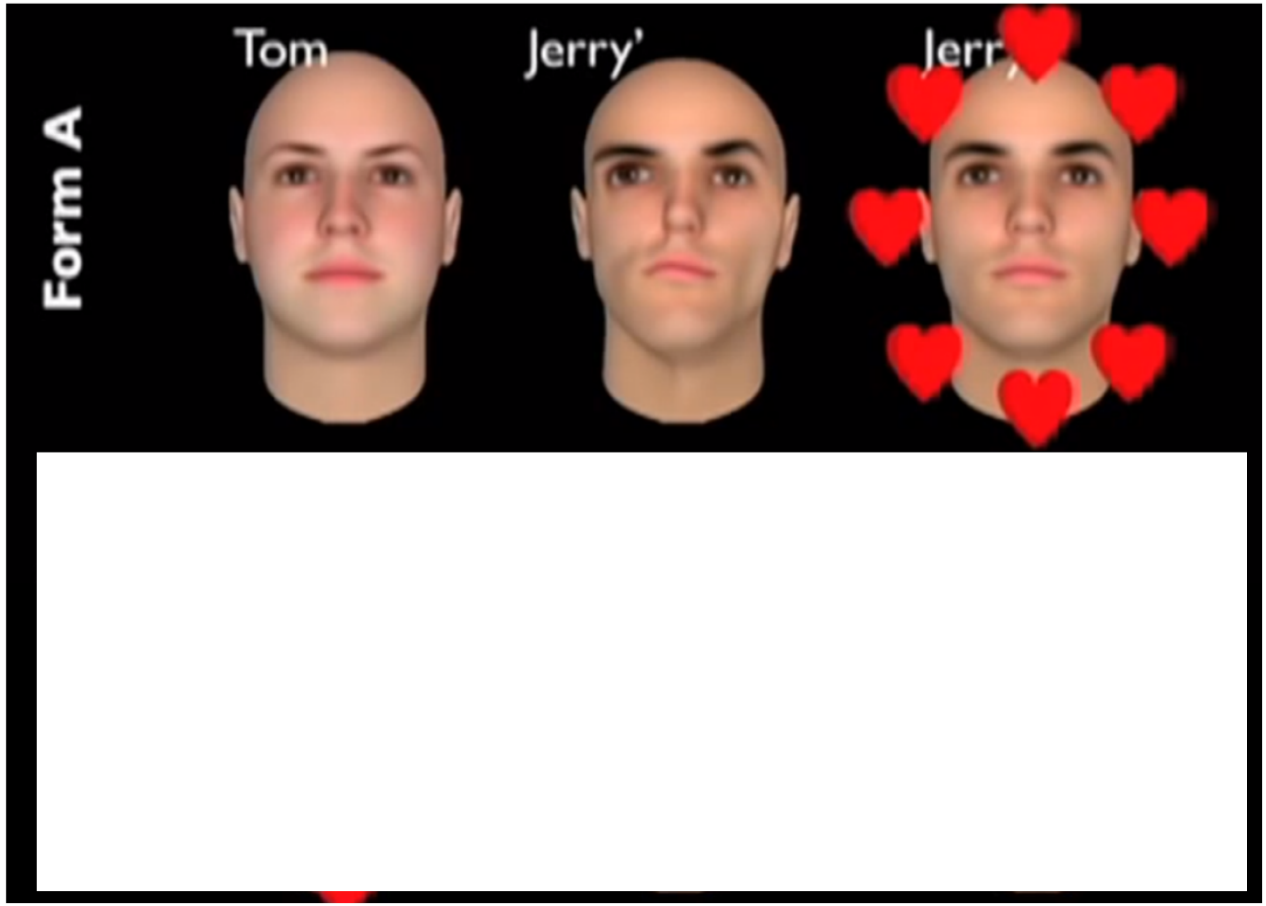

Summary

- A large amount of research reveals systematic biases in judgement and decision-making
- Many of these biases have important consequences for individuals and for society as a whole
- Knowing these biases can help you to fall prey to them
- Not all people display these biases!! But sufficiently many to matter for society
- We are now also in the position to uncover the brain bases of judgement and decision-making biases
  - Changing the neural activity in specific brain areas can trigger dramatically different behaviors
  - Risk taking, generosity, patience, etc.
- But going into the exciting details of this research would be another talk