9.00 Introduction to Psychology
Professor S. Pinker
Week 10, Lecture 1: Emotions about People, Part 1: Reciprocity

Emotions about People (Part 1: Reciprocity)

How can Organisms Behave toward One Another?

- Benefit others, benefit self: Symbiosis or mutualism.
- Impose cost on others, benefit self: Predation, parasitism, aggression.
- Benefit others, impose cost on self: Altruism.
  - Technical vs. Everyday meaning of "altruism"
- Impose cost on others, impose cost on self: Punishment or spite.

The Puzzle of Biological Altruism

- In evolution, nice guys finish last.
- So how can altruism evolve?

A Popular but Incorrect Explanation of Altruism: Group Selection (community, species, ecosystem)

- Supposed examples:
  - Lemmings commit suicide to save species from starvation
  - Stags fight so only the best males will pass their genes on to the species
  - Wolves eat only the sick and old deer, keeping the deer species strong
  - The "BBC Fallacy"

The Problem with Group Selection

- Individuals replicate faster than groups; will win any conflict between them.
- Selfish individuals (mutants, immigrants) will take over unselfish groups.
  - Lemmings
  - Wolves

Genes as the Units of Selection

Why *individuals* don't replicate:

1. We don't clone ourselves; we reproduce sexually
2. Lamarck was wrong: acquired traits aren't inherited.

Genes *do* replicate:

- Most genes are passed on intact in sexual reproduction
- The gene is the unit of selection giving rise to adaptations: "The Selfish Gene."
- "Replicators" (genes) versus "Vehicles" (organisms)

Rarity (but not absence) of altruism in animal kingdom.

- Rutting males; deadbeat dads; males in general.
- Blackheaded gulls; Emperor penguins.
- Commonness of extinction.
- Alternative explanations for apparent altruism in lemmings, wolves.

Some *Real* Cases of Altruism in the Animal Kingdom

- Parenting
- Helpers at the nest
- Grooming
- Food sharing.

How to Solve the Puzzle of Altruism

- See how selfish (nonaltruistic) *genes* can give rise to unselfish (altruistic) *individuals.*

Two ways that Unselfishness can Pay off for the Genes

- 1. Nepotism (kin selection, inclusive fitness). (Next lecture)
- 2. Reciprocation (tit for tat).

Reciprocal Altruism

- Gains in trade (simultaneous exchange).
- The problem of delayed exchange: Vulnerability to cheating.
- Trivers: Reciprocal Altruism.
  - Example: grooming
  - "You scratch my back; I'll scratch yours"

Requirements of reciprocal altruism:

- Confer large benefit to others at small cost to self.
- Roles must often reverse.
- Recognize other animals as individuals.
- Remember who helped, who hurt.
- Grant, withhold favors accordingly.

NOTE: Last three are predictions about *psychology*.

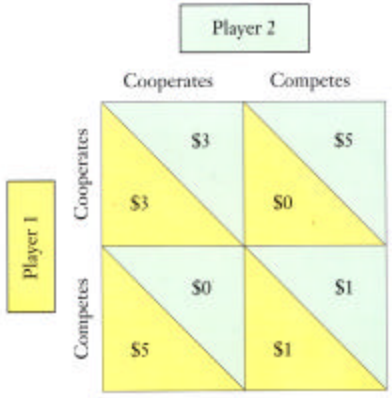
Formal Support for Trivers' Theory: The Prisoners' Dilemma

"Cooperate" (with partner) = stay mum
"Defect" (against partner) = rat on partner

Lefty's Choices:	Brutus's Choices: Cooperate:	Brutus's Choices: Defect:
Cooperate:	L: 6 months (reward) B: 6 months (reward)	L: 10 years (sucker's payoff) B: Go free (temptation)
Defect:	L: Go free (temptation) B: 10 years (sucker's payoff)	L: 5 years (punishment) B: 5 years (punishment)

Formal structure of a prisoners' dilemma:

- Best individual payoff: defect while other guy cooperates
- Lowest individual payoff: cooperate while other guy defects
- Highest total payoff: both cooperate
- Lowest total payoff: both defect



- Some other examples of a Prisoners' Dilemma
  - Divorce lawyers
  - Arms races

The Tragedy of Prisoners' Dilemmas

- If both parties are selfish, they end up worse off than they would be if both cooperated
- BUT if one decides to cooperate, he will be worse off than if he decides to be selfish, regardless of what the other one does
- SO both act selfishly, and both end up worse off!
- There is no solution to this paradox. But ….

The *Iterated* Prisoner's Dilemma

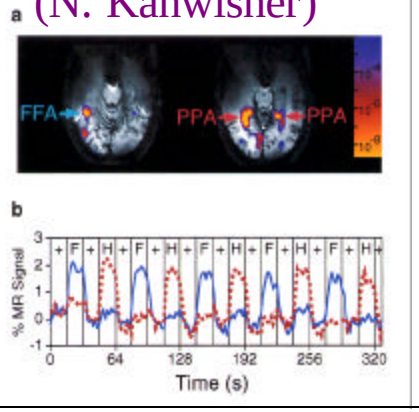
- Prisoners *repeatedly* encounter each other
- The Axelrod-Hamilton tournament.
- **Tit for Tat Strategy:**
  - Cooperate on first move.
  - Thereafter, cooperate if partner cooperated on preceding move; defect if partner defected.
- Requirements of Tit for Tat:
  - Interact repeatedly.
  - Remember each other's behavior.
  - Reciprocate.

(Psychological predictions!)

Human Cognitive and EmotionalAdaptations to Reciprocal Altruism?

- Cognitive abilities:
  - 1. Face and voice recognition. Prosopagnosia and fMRI.

"Fusiform Face Area" vs. "Parahippocampal Place Area" (N. Kanwisher)

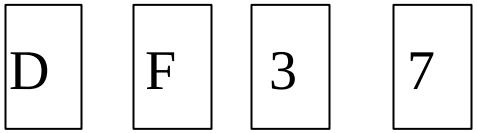


Human Cognitive and EmotionalAdaptations to Reciprocal Altruism?

- Cognitive abilities:
  - 1. Face and voice recognition. Prosopagnosia and fMRI.
  - 2. Cheater detector: sensitivity to anyone taking a benefit without paying a cost.

Card Selection Task (from lecture on reasoning)

- Every card has a number on one side and a letter on the other.
- "If card has a D on one side, then it has 3 on the other side."
- Which cards do you have to turn over?



- Most people say: "D" or "D & 3"
- Correct answer: "D & 7"
- "Confirmation bias":
  - People seek evidence to confirm, not falsify, their hypotheses.

The Content Effect: A Cheater-Detector Strategy?

- If an employee collects a pension, he must have worked for 20 years
- You work for the Benefits Office, and have to verify which of the following?
  - Collects a pension: Worked how long?
  - Doesn't collect a pension: Worked how long?
  - Worked 20 years: Collects a pension?
  - Worked 15 years: Collects a pension?

Content effects in syllogistic reasoning, cont.

- People are logicians when it comes to *social contracts* – "If you take a benefit, you must pay a cost"
- Choices reverse if the person imagines he works for the *employees' union* rather than the *benefits office*.
- Equivalent to a "cheater detector"

Emotions adapted to reciprocal altruism:

- **Liking:** Initiate altruistic partnership to those likely to reciprocate ("cooperate on first move")
- **Anger:** Reaction to being cheated; avoid and/or punish cheater. ("defect if other guy defected")
- **Gratitude:** Reaction to being helped: return favor in future. ("cooperate if other guy cooperated")

More Complicated Emotions Related to Reciprocal Altruism:

- **Sympathy:** Help those most in need (earn gratitude) (great benefit to other @ small cost to self)
- **Guilt:** Bestow extra benefit after cheating (cooperation compensating for defection)
- **Shame:** Display contrition when cheating has been discovered (avoid punishment for defection)
  - Mencken: "Conscience is the inner voice that tells us someone might be looking."

Even More Complex Emotions Adapted to Reciprocal Altruism:

- **Sham emotions:** Generosity, anger, guilt, sympathy, gratitude.
- **Trust & distrust:** Discriminate real from sham emotions.
- Gossip, reputation, honor.
- Universality of gossip.

"Cognitive Arms Race"

- **Why are humans so smart?**
  1. Tool use & technology?
  2. *Social* intelligence: get advantages of reciprocal altruism without being cheated
     - Most intelligent animals are social (primates, parrots, dolphins, wolves & dogs)
     - Humans show more cooperation among non-kin than any other animal
     - Explanation for "Theory of Mind" in humans

So deep down, are we all selfish?

- No!
- Selfish genes ≠ selfish people
- "Proximate" cause of behavior (what feels right now) versus "ultimate" causes of behavior (what works over evolutionary time in leaving the greatest number of descendants)

Examples of Proximate vs. Ultimate Causes

- Eating: taste *versus* nutrition
- Sex: pleasure *versus* procreation
- Reciprocal altruism: liking, gratitude, generosity, sympathy, etc. *versus* gains in trade, rewards of cooperation

What about *Genuine* Altruism (no possible gain?)

- Examples:
  - Leave tip in restaurant during a trip
  - Donate blood
  - Sacrifice life to save fellow firefighters

Why *genuine* altruism may sometimes be the best ultimate strategy:

- The Problem with Promises:
  - Why shouldn't you *double-cross* the supposed beneficiary?
  - Why should the supposed beneficiary trust you?
- Niceness, honor, guilt as guarantors that one's promises are not double-crosses.
- The best way to convince someone you're nice is to *be* nice!

If Selfish Strategies are Evolutionarily Effective, *Should* we be selfish?

- No!
- Animals, people being selfish does not imply that selfishness is good
- Selfishness being selected for does not imply that selfishness is good
- Naturalistic fallacy: "Whatever is found in nature is morally right"