

Collective Action Problems Class Demonstration
Designed by Sarah Sklar

The key to this activity is flexibility on the part of the instructor and the ability to anticipate and manipulate student decisions and then alter the rules to complicate or highlight certain behaviors. 50 minutes.

Objective:

- Explore how the misalignment of individual incentives and the collective goals can impact the provision of **public goods**.

Learning Goals

- Experience how Individual incentives don't always align with general goals
- Describe how people have different personal preferences/inherent desires to cooperate
- Brainstorm and experiment with different ways to solve collective action problems

Pre activity: Defining terms

Prior to demonstration define collective action and public goods and write these definitions on the board so students can see them throughout the demonstration.

- Collective action problems are situations where individual incentives don't align with the collective good.
 - The prisoner's dilemma is one such example of a collective action problem that highlights social incentives to cooperate with others vs individual incentives to defect.
- Public goods are benefits that are non-excludable, so no one can be denied access to them. (in econ they emphasize non-excludable and also non-rival—so one person's enjoyment doesn't detract from anyone else's, but we don't go that far in this course) Examples are national defense, a fireworks display, clean air.

Activity:

Part 1: Prisoner's Dilemma

The goal of this part is to introduce students to the conflicting incentives of the prisoner dilemma and also get to know the personal preference levels of the class regarding cooperation.

In this demonstration each student is given two cards, one red and one black. Black cards indicate that students will cooperate/contribute to the collective good. Red cards indicate that students will not contribute.

Write bold on board: **Playing a black card gives 3 points to your partner** (ie contributing to the public good), **playing a red card gives yourself 2 points** and 0 for your partner (not contributing but keeping resources for yourself).

The best solution is if both cooperate, but some will be tempted to “free ride” and get 5 points for themselves. Students will simultaneously select one card and hold it to their chest (so we know they decided, but we don’t know what they chose). Then we will pair students up and have them reveal their cards. Students can keep track of their own points.

Payoffs look like this:

		Player 1	
		Black	Red
Player 2	Black	(3,3)	(0,5)
	Red	(5,0)	(2,2)

The game has several rounds and the repetition is key. (You can create new learning opportunities by having students reconsider their individual choices part way based on others previous actions, or having students discuss their actions with each other, or changing the payoff structure.)

1. Round 1: As described above, have students decide at the same time and secretly. Have them reveal two at a time.
2. Round 2: Everyone plays again. Depending on time you can repeat the first round giving everyone a chance to learn from the previous round.
 - a. As we went through the second round I would act as an MC and introduce the pair, remind them what they did last time and then have them reveal their cards. If something interesting did/didn’t happen I would ask them “What was your thought process?” or “How did you make this decision?” “Why did you change your card?”
 - b. ALTERNATIVES: pause halfway and give the remaining pairs the option to reconsider their card choices. Pause part way and allow students to discuss their actions with their partners. Giving people the chance to discuss increases cooperation. It’s important to let them experiment with this for Part 2.
3. Round 3: change the payoff structure. Now cooperating gives 8 to your partner and free riding earns yourself 10 points.
 - a. Increasing these payoffs generally increases cooperation

		Player 1	
		Black	Red
Player 2	Black	(8,8)	(0,10)
	Red	(10,0)	(2,2)

4. FINAL ROUND: Now instead of points you win CANDY

		Player 1	
		Black	Red
Player 2	Black	(1 piece,1 piece)	(0,2 pieces)
	Red	(2 pieces,0)	(0,0)

Part 2: Providing a Public Good

The goal of this section is to get the class to work together to overcome collective action problems and provide a public good (candy) to everyone.

In this game students each have 4 cards. Two black and two red. (NOTE if you have more than 13 students you will need multiple decks or to hand write extra cards.) To play students will select two cards to “contribute” to the group and two to keep for themselves. Keeping black cards earns them 4 points per card and contributing a black card to the group gives everyone 1 point such that:

$$\text{Earnings} = 4 \times (\text{black cards in your hand}) + 1 \times (\text{black cards contributed by group})$$

So if 5 students contribute black cards to the group everyone will add 5 points to the total in their hand.

1. Round 1: Have students play just for points and see the class’s natural predisposition for cooperation vs competition
2. Round 2: Introduce the public good incentive. If students reach a certain threshold of black cards contributed (I usually added 4-5 points to their round 1 score) everyone would get a piece of candy AND/OR the person with the most points at the end will get 5 pieces of candy. Cooperation generally goes down in this round
 - a. Pause for Discussion: What were your motives? Did you change the cards you contributed when you saw how everyone else acted? What can we do to provide the public good? Have students brainstorm ways to force cooperation. People often suggest adding accountability, like making votes public or making one of the two cards you keep public. With discussion students can also try to convince each other to contribute by expressing their desire for candy.
3. Round 3: Lower the “cooperation threshold” 2-3 points. Introduce whatever new rules the students decide on (I often have them vote to approve/reject the new rules) and ask everyone to select their contributions. With the discussion and introduction of new rules students can generally provide the public good and win candy for everyone.

Post-Activity

Goal of understanding individual incentives make it difficult to provide public goods. ***How can we solve these collective action problems?***

- What happened? What reasoning did you have for your choices?
- Did a change in incentives change your choices? Which payoff did you care most about?
- Did repeating rounds influence your decisions? Did seeing others choices change your decision?
- Did discussing with your partner increase cooperation?
- What can we do to increase cooperation?
- In the real world what can the government or interest groups do to increase cooperation? (govt can **create institutions**/rules/laws to alter individual incentives, interest groups can provide selective benefits for participation) (Write institutions/rules next to the collective action problem definition on board)
- How did having the ability to change your answer based on partner influence your decisions?
- Did your partner's previous actions influence your decisions?
- Did you make different decisions when you had to decide before knowing who your partner was?
- How did discussion influence your decisions?
- And other relevant questions that link collective action problems to your course material.

(At the end of class everyone can get candy)

Formative Assessment

Students will write up a 1-2 page description of what happened in class. What their personal motives were, what they did/didn't know about their partner and how that influenced their choices. Give a handout with some of the questions from the post-activity section. How can we solve collective action problems?

Sources

Holt, C., & Capra, M. (2000). Classroom Games: A Prisoner's Dilemma. *The Journal of Economic Education*, 31(3), 229-236. doi:10.2307/1183093

Holt, C. A., and S. K. Laury. (1997). "Voluntary provision of a public good." *Journal of Economic Perspectives* 11(Fall): 209-15.