

## MODULE 1

# Dynamics of Competition and Cooperation

## OVERVIEW

In *The Evolution of Cooperation*, Robert Axelrod challenges us to think carefully about the dynamic between competition and cooperation:

Under what conditions will cooperation emerge in a world of egoists without central authority? The question has intrigued people for a long time. And for good reason. We all know that people are not angels, and that they tend to look after themselves and their own first. Yet we also know that cooperation does occur and that our civilization is based on it. But, in situations where each individual has the incentive to be self-ish, how can cooperation ever develop? [p. 3].

This question is central to conflict resolution, and we begin our course by plunging participants into an experiential point-scoring game called “The Prisoner’s Dilemma,” which asks them to consider their fundamental feelings about cooperation and competition, and encourages them to consider conflict and conflict resolution in a way they may never have before.

Please read through these detailed instructions for conducting the “Prisoner’s Dilemma” exercise *before* you begin training with this module. Also before you begin, ask if anyone has played this game before. If anyone answers yes, ask him or her if he or she would be willing to act as an observer—it is important to the outcome that participants do not already understand how the game works.

### Objectives

- To illustrate the challenges of building trust and cooperating
- To experience the forces that lead us toward competition and cooperation, the benefits of each approach, and the principles that can help guide us toward cooperation in a competitive atmosphere
- To provide the group with an opportunity to understand the dynamics of in-team decision making and their effect on external problem solving
- To explore the concept of “shadow of the future”
- To help the group see that it is possible to work for one’s own benefit without damaging relationships or disadvantaging others, even in a competitive environment



### Time

1 hour and 50 minutes (50 minutes for the exercise and 1 hour for the debrief)



### Supplies

- Green and blue felt-tip markers
- 3" × 5" cards



## Participant Materials

- Instructions for the “Prisoner’s Dilemma” exercise, including a scoring table for participants and observer’s instructions



## Flip Charts

- Prisoner’s Dilemma Scoring Chart (trainer materials only)
- Steps for Building Trust
- Analysis of Prisoner’s Dilemma (Scoring Matrix)
- Principles Derived from Prisoner’s Dilemma Exercise

## Description

The group is divided into equal pairs of teams, Blue Teams and Green Teams (three to five people per team), and placed in separate rooms or areas of the classroom. Each pair of teams exchanges written messages (carried by you, acting as the messenger) consisting of the symbols XX, YY, or XY. After receiving a message from the other team, each team calculates the score it earns from that round, which is based on the combination of the messages sent by both teams in the pairing.

Messages are exchanged seven times, and the teams in each pair also have the opportunity to meet twice during the exercise, before rounds four and seven. After the meetings of representatives are held (if they are held), the groups exchange messages in the usual manner. However, the point values of these two transactions is increased. As the scoring table in the participants’ instructions indicates, the points earned by each team are multiplied five times in round four and ten times in round seven. This will happen whether or not a meeting between representatives has occurred.

At the end of the exercise, the pairs of teams may be debriefed together, if needed, before the final debriefing of the whole group.

## EXERCISE

### Introducing the Exercise

Introduce the exercise with your own version of the following instructions:

"We are going to do an exercise called 'The Prisoner's Dilemma.' If any of you have done this before, please let me know before we begin. You can observe the exercise.

"I will divide you up into pairs of teams. One team will be the Blue Team and one team will be the Green Team. Each team will exchange messages with the other team through a messenger. The messages that you exchange will result in a score. The written instructions I give you will explain the scoring method. You will exchange seven messages. Your goal is to gain maximum benefit for your group. Benefit is defined by points.

"You will each have a set of instructions. Please read the directions carefully. You will have about ten minutes within your teams to read the instructions, talk about your strategy, and decide on the first message to send. If you are an observer, you will also have a set of instructions."

### Setup

1. *Choose teams.* Count the group off so that there are an even number of teams of three to five people each. Put the odd-numbered groups at separate tables in the main room, and the even-numbered groups at tables in breakout rooms. Give the odd groups green markers; give the even groups blue markers. Structure this so that each team is not sure which team is their counterpart.

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*Note:* As mentioned earlier, if anyone has already played this (or a similar game), give them the option of serving as an observer.

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2. *Read instructions.* After you have separated the teams, ask participants to turn to the instructions in their workbook. Give each group seven 3" × 5" cards on which to mark their messages. (Have extra 3" × 5" cards available, because some groups will make an error, try to write messages, or draw happy faces on the card. If this happens, give them a new card and remind them to restrict their message to XX, XY, or YY only.) If there are any observers, ask them to read their instructions in the workbook. Tell them to observe one pair of teams and look for
  - Whether the teams want to cooperate or compete
  - How the teams interpret the messages sent to them
  - How the teams define themselves
  - The teams' internal decision-making process

It is also helpful for the observers to write down quotes—what they hear people saying, which give insight into how people approach the game. (Examples include “Can we trust them?” “Let’s lull them to sleep and then hit them on the last round.” “No matter what they do, we should stick to our principles and take the high road,” and so on.)

## **Playing the Game**

1. *Begin the game.* Explain that you will be the messenger. The game begins when each team in the pair has a message to exchange with the other team. You will take the messages back and forth. Do not deliver a message to a team until you have received their message from the other team for that round. The teams need to exchange messages simultaneously, not in reaction to one another (they should be reacting to the message sent by the other team in the previous round). When you exchange messages, you will also record them on the Prisoner’s Dilemma Scoring Chart, which is a master chart you create that contains the XX, XY, or YY messages from all of the

groups, organized so that the messages from each Blue/Green team pairing are next to each other. You should keep the master scoring flip chart hidden from view because it contains the messages from all of the paired groups. You do not need to worry about recording each of the groups' numerical scores on this flip chart because each team can also record its messages and resulting scores on its own scoring table, which is included in their instructions for the exercise. They may also decide to record the other team's messages and resulting scores, although you should not explicitly encourage or discourage the teams from doing so.

2. *Send a spokesperson.* At the beginning of rounds four and seven, before you exchange messages, ask each team if they want to send a spokesperson to meet with a spokesperson from the other team. Do not tell them whether the other team wants to send a spokesperson; each team must make an independent decision about whether to meet. If both teams want to meet, have them select a spokesperson, and have the two spokespeople meet in the hall. If either team does not want to meet, announce to both teams that there will be no meeting. If the spokespeople do meet, observers can stand at a discreet distance to watch the meeting. Although the spokespeople can discuss whatever they wish during this meeting, they may not exchange actual XX, XY, or YY messages. You will exchange messages, as you have done, after the meetings have concluded. Remember that the point values for rounds four and seven are increased. The game ends after round seven when both teams have exchanged their final messages.

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### **Optional Activity**

*(and useful if one set of teams finishes significantly in advance of the other pairs):*

After round seven, have each team meet with their counterparts and discuss the team-to-team dynamics.

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3. *Debrief.* Bring everyone back together and conduct a whole-group debrief, as described in the next section.

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*Note:* This exercise often provokes strong emotions. Sometimes people need time to talk about how they are feeling and why they are feeling that way. When there has been significant conflict or high levels of competition, even if covered with humor, it is especially important to allow people to explain the presumptions that were guiding their behavior and to try to help people understand that differing presumptions can guide people in a way that may lead to conflict.

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## **Debrief**

### **□ Preparing for the Debrief**

Being able to think on your feet is key to debriefing the “Prisoner’s Dilemma,” because this exercise is one of the more volatile points in the course. Participants may be feeling angry, triumphant, betrayed, self-righteous, frustrated, or pleased. This may be particularly true when the debrief begins, when participants are fresh out of the exercise.

Because of the strong emotions the exercise can produce, the debrief is an excellent opportunity for you to model empathetic listening skills. Participants may feel betrayed by the team they were paired with or double-crossed by their own team members. They may also try to target you as the scapegoat and confront you. If this happens, be careful of your own response. Do not criticize or challenge their decisions, but help them to understand and express their own assumptions and thinking. Model active listening. Point out that some groups approach this as a fun, competitive game, while others see it as a test of whether group members can cooperate and seek win-win outcomes.

Before you begin the debrief, study the Scoring Chart and talk briefly with the observers. Discuss the team dynamics and trust factors that they saw. Much of how you structure the discussion will depend on participants’ experience with the game itself.

## □ Conducting the Debrief

You may not have time to cover all of the following points. Focus the debrief on your group's experience. You might have extensive discussion in one area only.



1. Show the Scoring Chart from the exercise. Again, it displays the XX, YY, and XY messages for each round from all of the Blue and Green team pairings. You can also ask each team for their total points, which participants can calculate using the table in their instructions.
2. Ask each team to describe their strategy. This should include the thought process they went through as they made decisions about what messages to send and whether or not to meet before rounds four and seven.
3. After each team has described their approach, ask the whole group to tell you what they think the game is about. You might get responses such as
  - Trust
  - Competition
  - Communication
  - Goals
  - Winning and losing
  - Cooperation
  - Making assumptions about the other side

To prompt discussion, you may ask some of the following questions:

- “How did you define your group? As just your immediate team? As the Blue and Green Team?”
- “Did you see this as a competitive effort (you against the other team) or a cooperative effort (both teams working together for maximum benefit)?”

- “What was your team’s strategy?”
  - “How did you decide what message to send to the other team?”
  - “Did you have disagreements within your team? How did that affect what happened in the game?”
  - “How did you build trust in the game?”
  - “How did you determine whether the other team was trustworthy or not?”
  - “What if the other team had ‘double crossed’ you?”
  - “For those of you who were XX’ed on the seventh round, what impact did this have on you and how will it affect what you do in the future?”
4. Use their responses to organize the rest of your debrief and be sure to discuss the “Steps for Building Trust,” *The Evolution of Cooperation*, and the principles derived from playing the “Prisoner’s Dilemma,” as follows.

## Discussion



### □ Steps for Building Trust

Show the flip chart “Steps for Building Trust.” This list is included in the participants’ materials.

Quickly talk about each point, relating each one to the things you observed in the game.

### *Communicate*

- “Meet—even if things are going well.”
- “Meeting with the other group is an opportunity to check out assumptions.”
- “Meeting with the other group is the only chance you have to create a shared goal and a shared strategy.”

### *Take Chances*

- “YY is a risky response.”
- “Take risk in the right increments—enough of a risk to show that you are genuinely willing to cooperate, but not so much that you can too readily be taken advantage of.”

### *Be Consistent*

- “It is hard to build trust and easy to destroy it.”
- “Even one XX can destroy the trust that you have built up.”

### *Clarify Your Goals*

- “Should you be competitive or cooperative?”
- “Should you be maximizing your points or getting more points than others?”
- “Sending an XX or a YY or an XY should always be assessed as to whether it will produce the result you want. It requires maturity not to shoot from the hip.”

### *Define the Team in Broad Terms*

- “If you see yourselves as being on the same team (in the bigger picture), it makes sense to try to build trust.”

### *Pay Attention to In-Team Conflict*

- “It is harder to build trust with the other team if you do not have trust within your own team. For example, if you are sending inconsistent messages because there are different strategies being advocated within your group, then the other group likely will interpret your messages as not reliable, consistent, or trustworthy.”
- “In-team conflict often leads to external conflict.”

### *Keep Your Word*

- “This is especially important after you meet with the other team.”
- “What would it take to rebuild trust?”
- “What happened to the team that did not uphold your agreement?”

Define and discuss the concept “shadow of the future,” as follows: “Rarely is anything in this world resolved in just one round. Decisions that we make and actions that we take in one instance will affect how people treat us in later rounds.” Talk about how this principle influenced each team’s decision making (or how the other team demonstrated the consequence of their counterpart team’s actions).

An example of this is helpful—such as what happens when we aggressively grab the one available parking place in a lot so we can go to a meeting and then we find ourselves sitting next to the person we prevented from getting the spot.

### □ **The Evolution of Cooperation**

Continue the debrief, gradually directing the discussion away from participants’ experiences with the exercise to the strategy and theory behind it.



Tell the group, “Here are two different ways to think about this game.” Show the flip chart “Analysis of Prisoner’s Dilemma” (Scoring Matrix). This chart is included in the participants’ materials.

Explain as follows: “If I am the Blue Team, and my goal is to get points in one round, let us look at what I might *send* and the points I will get:

- If I send YY, I get  $-40$ ,  $-20$ , or  $+20$  in this round.
- If I send XY, I get  $-20$ ,  $0$ , or  $+20$  in this round.
- If I send XX, I get  $-20$ ,  $+20$ , or  $+40$  in this round.

“My strategy seems clear. If I am only concerned with what to send in this one round, I send XX.

“If I am the Blue Team, and I think not about what I *send*, but what I will *receive*, the game looks different:

- If I do something that leads the Green Team to send me an XX, I cannot win. I get  $-20$ ,  $-20$ , or  $-40$ .
- If I behave in ways that lead the Green Team to send me XY, I get a mixed result,  $-20$ ,  $0$ , or  $+20$ .

“If I develop a strategy that leads the Green Team to send YY, I cannot lose:  $+20$ ,  $+20$ , or  $+40$ !

“Now, I have to ask myself, ‘How do I get the Green Team to cooperate with me?’

“That is exactly the question that Robert Axelrod asked in his book *The Evolution of Cooperation*. This exercise was used as an experiment at the University of Michigan to study cooperation. Why do we cooperate with one another, particularly when we can gain some advantage through competition? How can we get points when locked in a prisoners’ dilemma? Axelrod published the rules, and asked political scientists, mathematicians, conflict specialists, and others to create a strategy and write it into a computer program. He paired every strategy with every other strategy, including itself. (So it was different from the one-pair game that you played.) He added up the scores and published the results, including the winning strategy.

“Everyone knew the winning strategy. Then he created a second game to see if any strategy could do better. This time, he got strategies from an even wider group—but the same strategy got the most points again. The strategy, which was called ‘tit for tat,’ was as follows: start with a YY in

Round 1, then send exactly what you got in the previous round. Start with Y. Get an X, send an X. Get a Y, send a Y.

“On the basis of the two games he conducted, he concluded that building cooperation requires six things.”



**□ The Six Principles of Building Cooperation (from Prisoner’s Dilemma)**

Show the flip chart “Principles Derived from Prisoner’s Dilemma Exercise.” This list is included in the participants’ materials.

Focus this part of the discussion on the broader lessons the game illustrates.

- *Start cooperatively.* “Give a positive message to the other team. Do not be the first to shoot or to become competitive. The strategy that won in Axelrod’s experiment, and the vast majority of the other strategies that got high scores, started with a YY message. We trust our first impressions. If you start cooperatively, others will believe that you want to continue to cooperate, and so they are more likely to cooperate with you.”
- *Be provokable.* “Demonstrate that there will be consequences for negative behavior. If the other team fires off an XX, send back a message that does not escalate the situation but lets them know you will not allow yourself to be a doormat. (They already know that you can be cooperative if you started out cooperatively.) If you have to send an XX, you can make a choice about how strong an XX you need to send. Not all XXs are created equal! Think about what result you want. What are your interests? Will the strategy you select be likely to get you the result you want?”
- *Be forgiving.* “If the other side shows any sign of being conciliatory or cooperative, immediately shift to a cooperative

response. This requires a lot of flexibility. Let go of the baggage from the past.”

- *Keep your strategy simple.* “Very complex strategies received very low scores in Axelrod’s analysis because they were difficult for the other side to interpret. If I cannot understand what you are doing, I cannot let my guard down. To build cooperation, you have to be clear.”
- *Put forth conciliatory gestures.* “Even if you are locked in a negative pattern, keep offering olive branches. Risk a Y periodically to see if you can get the other team into a more cooperative approach.”
- *Eliminate envy.* “If I have to get more than you to be satisfied, I have to send an XX. Axelrod’s winning strategy, because it always started with YY and always sent what it received, never got more points than the strategy it was paired with. It won the game by building up points in every pairing, never by taking advantage of the other strategy but by encouraging others to cooperate.”

### □ Applications

The final part of the discussion should focus on applying the principles learned through the game to the real-life experiences of participants.

Open the discussion with “Now we want to talk about how this game applies to you. Do you get XX messages? What kind of Xs do you receive in your work?”

The answers may include things such as not returning phone calls, withholding information, unreasonable deadlines, and so on.

Ask them, “How does that make you feel? How, instinctively, do you want to respond?”

Suggest that “We often want to respond in a defensive way. This can lock us into an XX-XX dynamic, a lose-lose, or highly competitive mode.”

Ask, “What kind of Xs do others think you send to them? Do you sometimes intend to send an X? Why would you want to send an X? If you do not mean to send an X, what can you do to soften the impact of your action?”

Explain by saying, “Sometimes a message that we believe to be a YY message is interpreted as an XX message. Why might that happen? Can you think of examples when this has occurred?”

Conclude by asking, “Last, what happens when you find yourself in an XX cycle with someone else? What impact can this have? What can you do to break the cycle? In general, what can you do to get messages back from others that you would like to receive?”

## SUMMARY

Finish with a summary of those points you think had the most impact on this particular group. Remember that each game will be a little different. Also emphasize the “Points to Remember” in your summary.

### Points to Remember

- In a team setting, we have choices about how we respond to one another.
- Returning an XX may get someone else’s attention, but may also escalate the conflict.
- Sending a YY may suggest a willingness to cooperate or may be an invitation to someone else to take advantage of us.

- Sending a mixed message might be a way to demonstrate consequences without escalating the conflict or may simply be confusing.
- If the goal is to gain the cooperation of the other side, it is important to think carefully about your actions and the response you hope to receive from them. It is also important that you communicate clearly about your intentions, particularly when you feel your actions are misinterpreted or misunderstood.
- You should also indicate when you feel that you are being taken advantage of or have been provoked. If this happens, you should be willing to further communicate about your experience, be open to others' perspectives on what happened, and take the appropriate steps to develop the kind of relationship you are seeking.

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*Note:* In case you are asked “Where does the name ‘Prisoner’s Dilemma’ come from?” you can tell the following story: Two partners suspected of committing a crime are placed in separate cells. Each is told that if he informs on the other, he will be treated well, but if he does not “rat” on the other one, the police will throw the book at him. The dilemma is whether to compete or cooperate with the prisoner in the other cell, by informing or keeping quiet.

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## **RECOMMENDED READING**

Axelrod, R. *The Evolution of Cooperation*. New York: Basic Books, 1984.

## PRISONER'S DILEMMA SCORING CHART

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1 Green    2 Blue    3 Green    4 Blue

1

2

3

4

5

6

7

## **STEPS FOR BUILDING TRUST**

- Communicate
- Take chances
- Be consistent
- Clarify your goals
- Define the team in broad terms
- Pay attention to in-team conflict
- Keep your word

## ANALYSIS OF PRISONER'S DILEMMA

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	XX	XY	YY
XX	-20 -20	+20 -20	+40 -40
XY	-20 +20	0 0	+20 -20
YY	-40 +40	-20 +20	+20 +20

## PRINCIPLES DERIVED FROM PRISONER'S DILEMMA EXERCISE

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- Start cooperatively
- Be provokable
- Be forgiving
- Keep your strategy simple
- Put forth conciliatory gestures
- Eliminate envy