Measures in iterated prisoner's dilemma

According to Dawkins [R. Dawkins, *The Selfish Gene*, 2nd ed. New York: Oxford Univ. Press,

1989], a more useful measure of a strategy in the context of IPD is how close it comes to the *benchmark score*, which is the score a player will have if both the players always cooperate.

**benchmark score IPD(16) = 16\*3 = 48$;** mutual cooperation for 16 rounds

express subject score as percent of benchmark. Independent of payoff matrix used.

**Defection Equilibrium = 16\*1 = 16$**

**Horizon = 16 rounds**

**Dal B´o & Fr´echette (2011). -** Measuring the size of the basin of attraction **(sizeBAD)** of always defect. "Increasing the horizing, while keepign the stagegame parameters constant, also increases the value of join cooperation without changing the risks associated with it.

**Mean Cooperation Rate**

**Mean Round of First Defection**

**Frequency of Outcomes**

**First Round Choice**

**Unravelling -** experience leading to increased levels of defection by the end

**Cooperation in First Round**

**Cooperation in Last Round -** Subject knows horizon?

**Number of RRR, PPP, runs**

First 3

Last 3

**Collapse of RRR = unraveling**

**Long-Run Behavior**

**Conditional Probabilities**

**Prob ( C(1) | Penalty(0)**

**Prob ( D(1) | Reward(0)**

**FMRI contrasts**

**Reward vs Others -** cc > others

**Sucker vs Others -** cd > others

**Temptation vs Others -** dc > others

**Penalty vs Others -** dd > others

**Reciprocated > Unreciprocated -** CC > CD

**Partner C vs Partner D** - XC > XD

**Choice C vs Choice D -** CX > DX

**CX(1) | XC(0) > (CX(1) | XD(0) + DX(1) | XC(0) + DX(1) | XD(0)) --** reinforcing cooperation (Neuron, Vol. 35, 395–405, July 18, 2002, Copyright ©2002 Rilling et al)

look ups: Selten & Stoecker (1986) study behavior in a finitely repeated PD with an horizon of 10 round

Dál Bo and Fréchette (2011)