Discussion of: Learning and transfer of learning with no feedback: An experimental test across games

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January 1, 2004

What is learning without feedback?

Learning with feedback: you play a game; you observe the outcome; you play again, adjusting your behavior based on the outcome

Learning without feedback: you play a game; you do NOT observe the outcome; you play again, adjusting your behavior based on ???

Should Learning withou Feedback Exist?

So it isn't immediately obvious that there should/could be learning without feedback; and there is a great deal of research based on the implicit assumption that such a thing isn't possible – e.g. experimental research in which sessions in which no feedback are given are treated as independent of one another even though the same subject played the same game

Examples of learning without feedback: learning how to solve a game buy dominance; more generally learning through introspection

Theoretical models have generally assumed introspection takes place before the game is played the first time; but it could take place between sessions [interesting question: why?]

Does Learning without Feedback Exist?

Roberto is one of the experimental pioneers here

"Weber (in press) demonstrates that learning can occur in the absence of feedback. In experiments in which subjects play Nagel s (1995) competitive guessing game 10 times without any feedback between rounds, actions converge towards the unique Nash equilibrium prediction."

Theories:

➢ *consensus reasoning:* "dynamic" working out of best response – play a strategy in a symmetric game, next period imagine everyone else did the same, etc.

➢ *aha learning*: discovery of principles; focus on dominance solvability

➢ *virtual feedback*: can guess what other people did after you play (this theory seems pretty far fetched – strawman?)

The games

A: 2x2 symmetric staghunt

➢ consensus learning

➢ virtual

B: 2x2 dominance solvable

➢ aha learning

➢ virtual

C: 3x3 symmetric dominance solvable

➢ consensus learning

➢ aha learning

➢ virtual

D: 3x3 dominance solvable

➢ aha learning

➢ virtual

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Games played 20 times without feedback summary of results:

1. convergence towards equilibrium in all cases

2. I don't understand the data from game A (did they always manage to coordinate as the table seems to indicate?)

3. effects are modest, for example in the most dramatic case (D) the frequency of equilibrium goes from .168 to .216

Virtual feedback and consensus learning bite the dust

"The virtual feedback learning theory is not supported by the data. Subjects choices change in Game A, where this theory predicts that they should. However, based on the distribution of choices in the 1st period (where 82 percent of subjects chose Top/Left), virtual feedback predicts that the frequency of this choice should increase, since this is what would happen if actions were observable. In fact, the opposite occurs. Therefore, the trend in Game A clearly goes against that predicted by virtual feedback.

Similarly, consensus learning predicts that the frequency of Top/Left choices should increase in Game A (subjects who choose Top/Left initially   or who do so with probability greater than 0.55   should increase the frequency with which they make this choice subsequently). Moreover, consensus learning predicts that learning should not occur in the non-symmetric games, which is not supported by the data."

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Learning Dominance

looking at what would happen if players are learning to unravel the game using dominance seems to provide quite a bit of explanation of the details of what is going on

[but what about game A? vague assertion that they are learning some "other principle"]

dominance learning does transfer between games