6/4/03

Violations o f the Intuitive Criteria in Team Play

by

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The following provides a brief outline of violations of the intuitive criteria reported for team play in our paper "Are two heads better than one?:Team versus individual play in signaling games." We plan a more complete writeup in the near future.

Session 4/11: Ms payoffs remain the same across treatments. Es payoffs change from 2a to 2b following the cross-over. Only pure strategy equilibria are separating in both cases.

Table 2a: Efficient separating equilibrium (satisfying intuitive criteria) is for A1 to choose 3 and for A2 to choose 7.

Table 2b: Efficient separating equilibrium (satisfying intuitive criteria) is for A2 to choose 5 and for A1 to choose 2. Inefficient separating equilibrium with A2 choosing 5 and A1 choosing 1 violates the intuitive criteria (iterated deletion of dominated strategies since 5 dominates 2 for A2 types).

20 Subjects participated for a total of 10 teams. Four games per cycle (as in other experienced treatments). One and a half cycles prior to the cross-over (Table 2a) followed by six and a half cycles after the cross-over (Table 2b).[1]

Session 4/30: Ms payoffs remain the same across treatments. Es payoffs change from 2a to 2b following the cross-over. Payoff tables are essentially the same as in the text with the exception of A1s [MHs] payoffs for 6 and 7 (which are still dominated by 2 as in the payoff table employed in the text) and A2s [MLs] payoffs for choosing 7 which are a little higher than the payoff table in the text. Moving from Table 2a to 2b is essentially the same as in the cross-over treatment in the text.

Table 2a: There exist both pure strategy pooling and separating equilibria.

Table 2b: Only pure strategy equilibria are separating. In both equilibria A1's [MHs] choose 2 and A2's [MLs] choose either 6 or 7. Choice of 7 violates the intuitive criteria since 6 is dominated by 2 for A1's which rules out (according to the intuitive criteria) out-of-equilibrium beliefs that an A1 would choose 6.

16 Subjects participated for a total of 8 teams. Four games per cycle (as in other experienced

[1]The cycle prior to the cross-over in the figure excludes the first half cycle.

treatments). One cycle prior to the cross-over (Table 2a) followed by 3 cycles after the cross-over (Table 2b).

In both session subjects were experienced players. However, some were experienced form 1x1 sessions as well as from team sessions. 4/30 session all had experience from games with high cost Es. 4/11 session all were twice experienced but experience was mixed.

Payoff Tables for 4/11:

CKE3(T9&10)/Teams

Table 1
A Player's Payoffs as a Function of B Player's Choice

	A1 B' s Choice			A2 B's Choice		
A's choice	x	y		x	y	A's choice
1	118	429		-250	-150	1
2	138	449		120	350	2
3	158	469		230	501	3
4	138	448		340	611	4
5	118	428		365	676	5
6	32	174		345	655	6
7	-243	-74		325	635	7
8	-360	-173		209	516	8
9	-477	-272		193	497	9

Table 2a
B's Payoffs
A's Type

B's Choice	A2	A1
y	281	281
x	219	594

Table 2b

B's Payoffs

A's Type

B's Choice	A2	A1
y	281	281
x	594	219

Payoff tables for 4/30:

Version Q/ P/Teams/T6

Table 1

A Player's Payoffs as a Function of B Player's Choice

	A1			A2		
	B' s Choice			B's Choice		
A's choice	x	y		x	y	A's choice
1	150	426		250	542	1
2	168	444		276	568	2
3	150	426		330	606	3
4	132	408		352	628	4
5	56	182		334	610	5
6	38	162		316	592	6
7	NO	CHOICE		298	574	7

Table 2a

B's Payoffs

A's Type

B's Choice	A2	A1
y	250	250
x	200	300

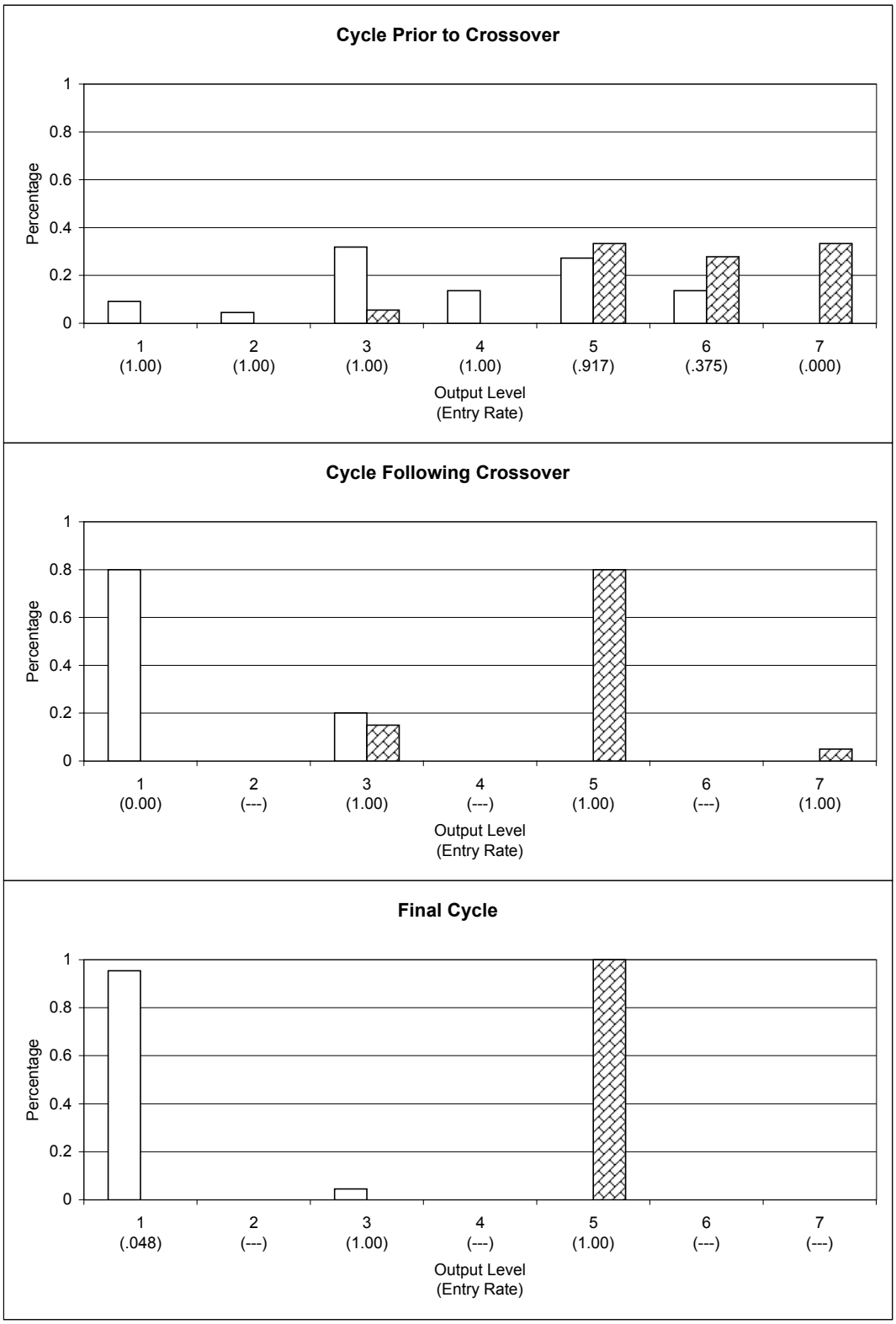
Table 2b

B's Payoffs

A's Type

B's Choice	A2	A1
y	250	250
x	200	500

Data from 4/11 Session



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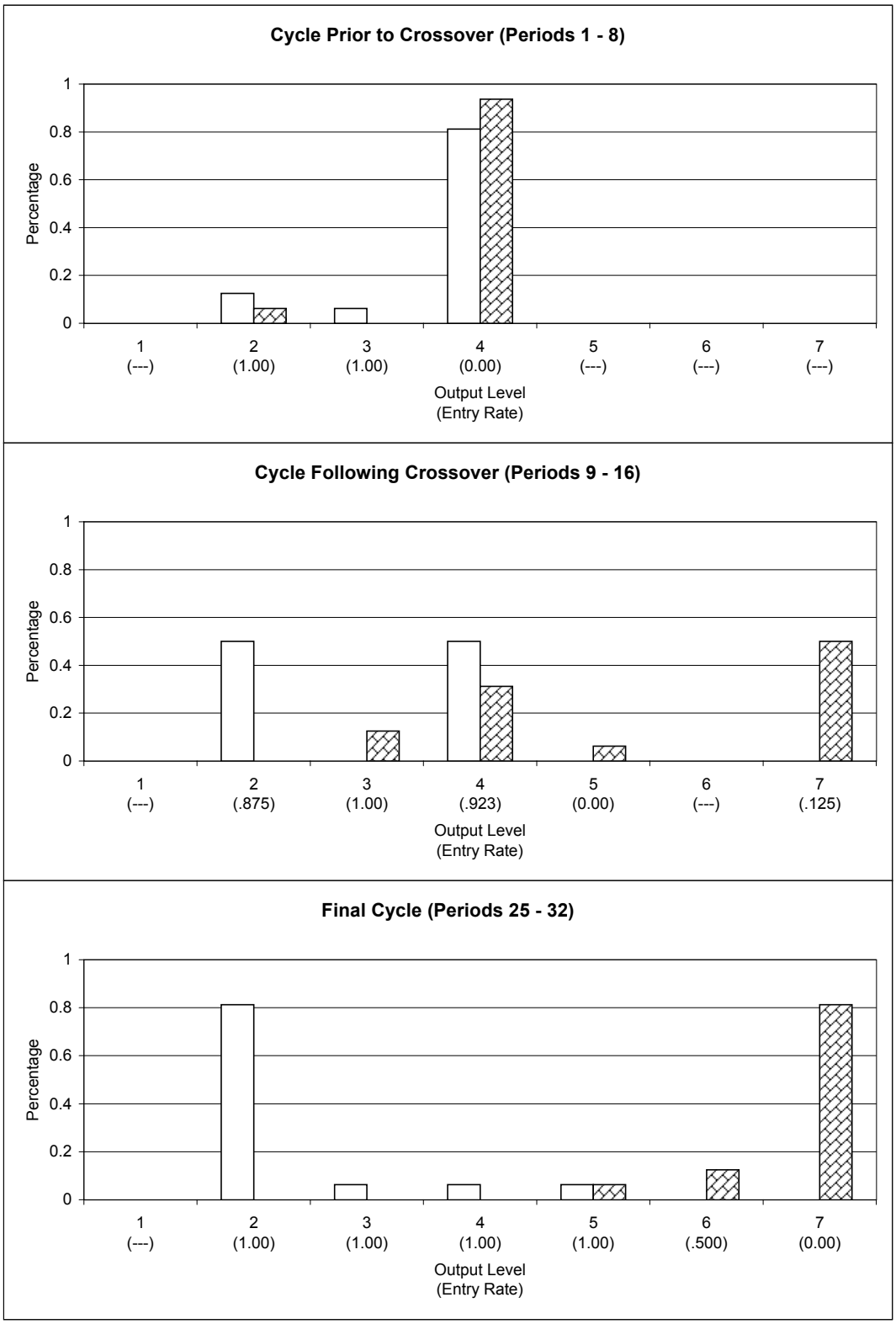

Post experimental questionnaires from 4/30 yields some insight into choices (I had asked people to briefly explain what their strategy was on their record sheets.):
"I think that everyone was picking "X" regardless. So as an A2 player I tried playing it safe and picking #7. As an A1, no matter what I picked, I seemed to get nailed with an "X." But as a B, I tried to always pick "X," unless they picked "7."

The is a quote from a subject who was an A2 all 4 times in the last cycle as an A team and chose 7 in 3 out of 4 of these trials. The one time he chose 6 he got IN, the 7s always got OUT.
"As an A2 player I was trying to make the B player choose Y. This meant I should have been able to choose 6 or 7 without any problem. However it seems that some people didn't understand this and chose X even when 6 or 7 were selected."

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Looking at team transcripts:
4/11. Virtually everyone locks onto A1 = 1 and A2 = 5 very quickly and with very little discussion. I think this results from people viewing it as the reverse of the earlier game where the efficient separating equilib involves negative numbers for the low quality type. (Note, at least two teams make a direct mapping from the earlier game to the new game.)[1] That is, the A1 with its negative values poses an obvious focal point that people lock into without much thought, especially given the previous payoff values. Only one team seems to be motivated by a weak link principle toying with the idea of choosing 2 as an A1:
"if we are a1 we should choose 1" "looks that way" "maybe 2..." "2 would be better initially"[2] "perhaps, but 1 is always safe."

When they get a chance to play as A1s following this the team chooses 7: "ok so now should we play safe and pick one or should we get greedy and go for 2. No ones really picked 2 yet." "safe" "ok"

4/30 No one looks for dominated strategies in the same way as the intuitive criteria suggests they will. Dominated strategies must be pretty obvious (like negative payoffs) to be identified as such for our subjects. A number of teams argue that 5 should be sufficient to indicate that they are an A2 (low cost) type but do not choose it because 7 is "safe."
At least one team nailed the weak link directly:

"if were A2 we should go with 7" "why 7?" "Its pretty obvious then for them to pick y. they will know we are not an A1 and get more for y with A2's" "ok, i see your point" "5 might work though too, that's pretty bad for A1's too" "yea, but I'm thinking the way people play, they won't care ... and they'll pick x [IN] anyway...but we can try"

In a later trial: "we might want to go with 5 or 6 next time were an A2" "I personally

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[1]One team: "it's the same game, just reversed." Another team: "should we reverse the answers from the previous sheet" "??" "Before we might answer y, should that y now become x" i think so"

[2]This could refer to the fact that choosing 5 in the standard game works at least initially until other type imitates.

would think an A1 would never go so low...right" "especially 6" This team then chooses 6 the next two opportunities to play as an A2 and get an OUT both times. But they are concerned: "yeah, 6 might work they should realize that were an A2" "hopefully they'll think right" "i hope so"

In the next cycle they are an A2 right away and go with 7: "6 or 7? cause an A1 group just picked a 6 i don't know why" "yeah, i think we might want to play it safe and go with 7" "ok"" In the next trial they revert to 6 and get IN and play 7 for the remaining 2 trials: "i guess we should go with 7 since everyone is clueless" "ok"[3]

So lets treat those discussing 5 as being pretty obvious that they are an A2 but turn away from it because 7 is "safe," or the other guys will not have figured it out as a team, as expressing weak link concerns guiding their choices. We treat others as taking 7 as an obvious focal point (or expressing no concerns for safety or weak link issues). Doing a count by teams I get 4 teams concerned with weak link issues (one of which tried 5 as an A1 type, several times!) and 4 as being strictly focal point.

Example of weak link team in terms of the above: As a B team they respond with Y [OUT] to 5: "Look at the pay for a # 5 its only good for A2" Then in their role as an A2 team they pick 5 and get IN. "Lets stick with 7, cause people are stupid" This team then proceeds to play 7 as an A2 type throughout the remainder of the session.

Note, there is a clear basis for weak link concerns: For example a B team on seeing 6 states: "Im pretty sure they're a a2 but we might as well risk it" This team then chooses IN.

[3]This is the same guy I quoted from the end of exp questionnaires.