Abstract

This study investigated the effects of having the opportunity to commit oneself irrevocably to going forward during a two-person game of "chicken." Three basic conditions were studied: one in which neither player could make such a commitment; a second, in which one player but not the other could make such a commitment; and a third in which both players could. These three conditions were studied in a one-trial and also a twenty-trial game. Several other variants on the basic bilateral condition were also investigated. We conclude that adolescent boys are sufficiently prudent to resist the temptation to "lock themselves in" to positions from which they cannot reverse if they know that they are going to have repeated encounters with someone who has a similar capacity. However, when they are prompted to be competitive some of their prudence, and also some of their money, is lost. A one-sided possession of a commitment device gives its possessor a relative advantage in a contest of will-power but it frequently leads to a contest which is mutually destructive.
THE EFFECTS OF "LOCKING ONESelf IN" DURING A GAME OF "CHICKEN"  

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Such terms as "brinkmanship," "the rationality of irrationality," and "the doctrine of the last clear chance" have been much in vogue among intellectuals (e.g., Schelling, 1960) who are concerned with formulating a rationale to guide strategic choices in a situation of international conflict. The basic notion underlying these different terms is that a bargainer will gain an advantage if he can commit himself irrevocably so that the last clear chance of avoiding mutual disaster rests with his opponent. A child who works himself up to the point that he will have a temper tantrum if his parents refuse to let him sit where he wants in the restaurant is using this bargaining tactic. So is the driver who cuts in front of you on a highway as he appears to be deaf to the insistent blasts of your horn. And so is a nation that says to another nation, that its honor as a nation and the sacrifices of its soldiers would not permit withdrawal or defeat.

It is evident that this type of bargaining maneuver can sometimes be very effective. Yet we wondered, would one expect this type of bargaining tactic to be effective when both sides could resort to it? And also we wondered whether it is a ploy that is as suitable for a continuing relationship as it might be for a single, unrepeated encounter? To investigate these questions, we employed a modified

This bargaining game in its standard form involves two players, each of whom operates a trucking firm ("Acme" or "Bolt"); each gets paid a constant sum of money minus a variable cost for carrying a load of merchandise from his starting point to his destination. The cost is a function of how much time the trip takes. Each player has two routes to his destination: a short main route and a long alternate route. The routes are displayed in Figure 1. Let us note

Insert Figure 1 about here

several characteristics of the routes: If a player takes his alternate route, he will lose at least ten cents on the trip; if both players take the main route they will meet on the one-lane section of this route and will be deadlocked unless one of them backs down. The players are posed a very simple conflict. It is to each player's interest to go through the one-lane section first, doing so he earns more; if he backs down or waits he earns less. It is also to their mutual interest to work out some agreement for using the main route since otherwise they may both end up with a loss.

Two basic modifications of the usual Acme-Bolt game were made. It was altered so as to resemble more closely the adolescent game of "chicken" by instructing the subjects that if their two trucks met at any point along the one-way section of the main path, the encounter would be defined as a "collision." If there were a collision, the trial would be terminated; both subjects would then be penalized the
amount of time taken from the start of the trial to the time of the collision at the cost of one cent per second. (A collision would cost each player at least 20 cents.) The second modification entailed introducing a commitment device as a replacement for the gates. The commitment device (called "the lock") enabled the subject to lock his truck into forward gear so that his truck had to move forward. Once locked, the position of the gear could not be altered during the trial; and, hence, the truck was committed irreversibly to moving forward. When a subject used the lock, the other player was informed of this action by a clear, unambiguous signal.

The subjects in all of the experiments described below were adolescent males attending high schools in New York City. They were recruited by advertisements offering them the opportunity to earn up to $4.00 per hour. Ten pairs of subjects were used in each of the experimental conditions in each of the experiments. Subjects were selected from schools so that the members of a bargaining pair did not know one another; on arrival, they waited together in a common reception room.

During the experiment, subjects were seated at separate tables in such a way that they did not see one another; they were instructed not to speak to the other at any time. Each subject was given $2.00 as his "initial stake" in the game. On each table was an electronic panel, labeled "Acme Express Company" or "Bolt Express Company." A pre-recorded tape instructed subjects to imagine that they were in charge of a trucking company carrying merchandise from a starting point to a destination. Money was to be earned by moving their trucks from
Start to Destination in the shortest possible time. For each trip, each Company would be paid a fee of sixty cents; operating expenses would be deducted from this fee at the rate of one cent per second. It was emphasized that the money was real and that they would be allowed to keep whatever they earned in the task.

Subjects were shown that it was possible to reach their destination by either one of two routes, (See Figure 1) and the characteristics of these routes were described. Subjects were always aware of the other's choice of route and location on that route; they were told that if their two trucks should meet head-on at any point, the encounter would be defined as a "collision." If there were a collision, the trial would immediately end, and each subject would be penalized the amount of time taken from "start" to "collision" at one cent per second.

Following instructions on the actual operation of the apparatus (selecting a route, moving the trucks, etc.), subjects were led through a series of five practice trials which illustrated the various possible actions in the game, and the scoring was re-explained. The actual game was then begun, time and pay for each player being announced to both players at the end of each one of the twenty trips. Subjects completed a short post-experimental questionnaire, were paid and debriefed.

All subjects, unless otherwise noted as in the third experiment were given instructions which stressed an individualistic orientation. They were told:

There are two of you who are going to play a game in
which you can either win or lose money. I want you to feel that it is important for you to earn as much money as you can or to lose as little as possible in this game. In playing the game, your only motivation should be to earn as much money as you can for yourself; you should have no interest in whether the other person makes or loses money, or how much he makes or loses. In this game, it is possible for both of you to profit, for both of you to lose, or for one of you to profit and the other to lose. This all depends upon how you play the game. You are not out to help the other and you are not out to beat him. You simply want to earn as much money as you can and he wants to earn as much money as he can.

Several different experiments were conducted: an experiment involving a one-trial game; a second one with a twenty-trial game; a third, which compared the effects of "chicken" versus "social problem-solving" orientations; a fourth, which investigated the effects of the timing of the commitment decision.

An Experiment with the One-Trial Game

In this experiment the subjects were led to believe it was a one-trial game; however, following completion of the initial trial they played an additional trial. In the second trial, the "no lock" pairs became the "bilateral lock" pairs and the "bilateral lock" became the "no lock" pairs; "Bolt" got the lock from "Acme" in the second "unilateral lock" condition. They played under instructions to make as much money as they could for themselves regardless of how the other player did. The subjects played in one of three experimental
conditions: Bilateral Lock, both possessed locks; Unilateral Lock, only Acme possessed the lock; and No Lock, neither player possessed the lock.

The results (see Table 1) indicated no statistically significant differences among the three experimental conditions on the first trial although there was a tendency for a lower level of joint outcomes as one moved from the "no lock" to the "unilateral lock" to the "bilateral lock" conditions. In the "unilateral lock" condition, Acme who possessed the commitment device had significantly better payoffs than did Bolt who possessed no such device (p < .05).

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Insert Table 1 about here
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In the second one-trial game, there was significant improvement (p < .05) in the joint outcomes of the pairs in the "unilateral lock" condition, with a reduction in the relative advantage for the player possessing the commitment device. The pairs who were in the "bilateral lock" condition during the first one-trial game and in the "no lock" condition during the second game improved their joint outcomes considerably while the pairs who shifted to the "bilateral lock" from the "no lock" condition worsened their joint outcomes (p < .10); there was no effect due to the sequence of experiencing the lock.

These results indicated that a one-sided possession of a commitment device provided a relative advantage to the player, comparing him with the one with whom he was paired. There was no evidence that he had any advantage compared with players in the "no lock" condition, where neither player had such a device. There was, however, evidence to indicate that
when both players were able publicly to commit themselves irreversibly to "going through first" they did worse than when neither could do so.

An Experiment with a Twenty-Trial Game

These were the results for the single encounter for a one-trial game. What would happen if the players expect the encounters to be repeated? To investigate this question, we conducted another experiment which completely paralleled the one just described except that the pairs played the game for twenty trials. At the outset they knew that there would be more than one trial but they did not know how many until they finished.

If we compare the results (see Table 1) for the first trial of the twenty-trial game with those of the first one-trial game, it is evident that the bargaining pairs did better when they were anticipating a longer game; the difference being most marked for the "bilateral lock" condition. Again, there was no advantage for Acme, who possessed the lock, in the "unilateral lock" condition as compared to Acme in the "no lock" condition; however, he did better than Bolt with whom he was paired in the one-sided condition.

The over-all results were not surprising since the one-trial game is clearly more competitive in structure than the longer game which permits an equitable solution of alternation. Although the differences among conditions in the first trial of the twenty-trial game were not statistically significant, we were surprised by the relatively favorable outcomes in the "bilateral lock" condition.

If we examine the over-all results for the twenty trials (see Table 2), we find much the same findings as for the first trial: no significant differences in mean joint payoffs among the conditions, but the
"bilateral lock" condition tended to do best; the possessor of the commitment device did significantly better than the other player with whom he was paired in the one-sided condition but had no reliable advantage over the players in the other conditions; there was some improve-

 Insert Table 2 about here

 ment in outcomes from the initial to the final block of trials for all conditions but it was most marked in the "no lock" condition (see Figure 2). A dominance-submission pattern occurred in only four of the ten pairs in the "unilateral lock" condition (rarely in the other conditions), the other six pairs were characterized by frequent collisions before settling down to an alternation pattern which gave them low but essentially equal outcomes.

 Insert Figure 2 about here

 It was evident that many of the pairs in the "bilateral lock" condition used their locks as a device for coordination rather than as a means of committing themselves to obtaining a favored outcome. To test our hunch that the use of the locks as coordination devices occurred because of the relatively cooperative context of the experiment, we checked the post-experiment questionnaire data and also ran a further experiment. (Let us note that we believe the context was more cooperative than in our previous experiments with threat because, in our present experiment, the subjects saw each other, knew the other was also from a local high school, and waited together in the same room before they took part in the experiment and they could expect that they would leave
together after the experiment. In our earlier experiment we had been able to eliminate any prior social contact before the bargaining game.) The post-experiment questionnaire data indicated that the subjects in all three conditions when describing their motivations during the game ranked the desire to "cooperate with the other player" and the desire to "maximize own outcome" as equally important and as being considerably and significantly (p < .05) more important than the desire to "do better than the other person."

"Chicken" versus "Problem-Solving" Instructions

The third experiment involved two additional "bilateral lock" conditions: a cooperative and a competitive one. Our assumption was that the results for the cooperative condition would parallel our prior results with the "bilateral lock" (i.e., the use of the lock for coordination purposes) but this would not be so for the competitive condition. We created the cooperative condition by using "social problem solving" instructions and the competitive condition by using "chicken" instructions. The instructions follow:

"Chicken" Instructions: "There are two of you who are going to play a game of "Chicken." This experiment has been designed to separate people into two groups: those who give in under pressure, and those who do not. We are interested in observing, when two people are under pressure, who will "chicken out" or back down first. In this game it is possible to win or lose money. It is possible for both of you to profit, or for both of you to lose, or for one of you to profit and the other to lose; this all depends on how you play the game. I want you to feel that it is important for you to
earn as much money as you can or lose as little as possible in this game.”

"Social Problem-Solving" Instructions: "There are two of you who are going to engage in a social problem-solving game. This experiment has been designed to separate people into two groups: those who can arrive at a solution to a problem which will bring maximum benefits to both of the players, and those who cannot work out this solution. We are interested in observing what types of people can arrive at this solution. In this game it is possible to win or lose money. It is possible for both of you to profit, or for both of you to lose, or for one of you to profit and the other to lose; this all depends on how you play the game. I want you to feel that it is important for you to earn as much money as you can or to lose as little as possible in this game."

Table 2 presents the major results. From a comparison of columns (5) and (4), it is obvious that the original "bilateral lock" condition had effects that were rather similar to the cooperative "social problem-solving bilateral lock" condition. Our explanation of the findings for the bilateral condition seems reasonably well-supported. It is also evident that the competitive motivations induced by the "chicken" instructions lead the subjects in this condition to significantly more collisions (p < .005) and to significantly poorer outcomes (p < .025). The Ss in the chicken condition rated their own motivations as significantly (p < .001) more competitive than did the Ss in the other conditions. As Figure 3 reveals, under "chicken" instructions the losses occurred throughout the entire series of trials.

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Insert Figure 3 about here
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The timing of the commitment decision

In a fourth experiment, we allowed the subjects to have a period of five seconds before each trial in which they could lock their trucks into forward gear without the other subject knowing that this had occurred until the trial had actually started. In addition, as in the other bilateral lock condition, they could employ the lock after a trial had begun. Thus, in the pre-trial period each subject would not know what the other had done as he himself had to make his decision whether or not to use the lock. We speculated that this uncertainty about the other's action during the pre-trial period might lead the subjects to be more suspicious of one another and that their mutual suspicions might increase their readiness to use the lock. If our speculation were correct, then the pairs in this condition would do worse than those in the bilateral lock condition without the pre-trial period for decision.

The results do not support our speculation. Columns 6 and 3 of
The timing of the commitment decision

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The results do not support our speculation. Columns 6 and 3 of Table 2 reveal essentially no differences between these two bilateral lock conditions. The locks were employed on the average of 8.1 trials in the bilateral lock condition without the pre-trial decision period and in 8.8 trials in the other condition (of which, 5.5 were initiated in the pre-trial period and 3.3 during the trials). Overall, there was as much cooperativeness in the latter experimental condition as in the former one.

Discussion

Sermat (1962, 1967) has studied the effects of commitment using a mixed-motive matrix game which, like our "chicken" game, is characterized by the quality that joint defection from mutual cooperation is more costly
to both participants than dominating or being dominated by the other. In his study, the subjects were playing against a pre-programmed stooge that chose a dominating strategy on each of the first fifty trials in all conditions. In one condition, the subjects were led to believe that they were playing with another player who was making his choice trial by trial. In a second condition, they were led to believe that the other player was present but had committed himself to a strategy for the entire series of trials so that all of his choices were already fixed. The third condition was similar to the second except that the subjects were told that the other player was no longer present. In the fourth condition, they were informed that they would be playing against a fixed program and that there was no other subject involved. Sermat's results indicated that the subjects were least likely to make a yielding ("cooperative") response in the first condition and most likely to make it in the fourth condition; the subjects in the other two conditions showed intermediary reactions, yielding more than the subjects in the first condition but less than those in the fourth.

These results, on the one hand, suggest that subjects are more likely to yield to another's dominating strategy the less the possibility of influencing it by resistance. Yet, on the other hand, the less frequent yielding to the fixed program when the subject perceives the fixed other to be human rather than merely mechanical, suggests that subjects are willing to experience lower outcomes even when so doing has no other utility than to express resistance to and to harm another who seeks more than a fair share.

A comparison of our results with Sermat's has many inherent difficul-
ties because of the differences in experimental tasks and conditions. Nevertheless, it is apparent that, on the average, our subjects playing against other real subjects, each being "unprogrammed," played more cooperatively than did his subjects when they thought they were playing against other humans who were not already committed to a given program of behavior. Sermat's subjects were, of course, playing against a very competitive pre-programmed stooge while our subjects were playing with other people who, like themselves, were inclined to be cooperative under the general circumstances of our experiment.

Except when they were prompted to be competitive by the "chicken" instructions, by the competitive structure of the single trial game or by the one-sided possession of the lock, our subjects, generally, did not seek to obtain an advantage over the other player. As a consequence, they usually did not employ their locks as a commitment tactic to influence the other to yield disproportionately. The lock was more customarily used as a coordination device (i.e., it was used by the subject when it was his turn to go first). Evidence for these assertions are presented

Insert Table 3 about here

in Table 3. It can be seen that except in the "chicken" and "unilateral lock" conditions, the subjects rarely employed their locks on two or more successive trials (i.e., they did not seek to prevent the other from alternating with them in priority on the one lane path). The lock was used most frequently for this purpose in the "unilateral lock" condition.

It is interesting to examine the results for the 20-trial "unilateral
lock" condition in detail (see Table 4). Several different types of interactions occurred. In three of the ten pairs in this condition, the possessor of the lock never employed it; in two of these pairs, the lock possessor allowed the other player to have an advantage. Collisions occurred infrequently and all the subjects in these pairs had moderately good outcomes. In a fourth pair, the lock possessor attempted to use his lock exploratively in the first several trials but met resistance from the other player. The pair then settled on an uneasy alternation pattern which was periodically disrupted by collisions; they had low positive outcomes. In a fifth pair, the lock possessor was somewhat more persistent in his initial attempts to dominate but he met with prolonged resistance. It was not until the 14th trial that this pair worked out a persisting pattern of alternation; the result was that both players suffered a moderately high loss.

In the remaining five pairs, the lock possessor persistently used his lock on a minimum of 85 percent of the trials. The resulting outcomes were very much a function of the amount of resistance displayed by the other player. In one case, the lock user met with no resistance whatsoever with the result that this subject had the highest individual outcome for any of the subjects participating in the experiment. (His outcome pulls up the average outcome of "Acme" in the unilateral lock condition in such a way as to give a distorted view of Acme's modal outcome in this condition.)

As the resistance of Bolt increased, with a resulting increase in the number of collisions, both Acme's and Bolt's outcomes decreased. However, Acme consistently did better than Bolt when he used his lock
persistently, even when both players ended up with negative outcomes. None of the players without a lock were ready to have a collision on every trial in order to force the player with the lock to yield. It is apparent that possession of the lock increased the risk-taking resolve of Acme and this, in turn, gave him a relative advantage over Bolt. Yet it also must be evident that the relative advantages over Bolt did not commonly result in a good outcome for Acme. If we look at the six players who used their lock aggressively in this condition, three had positive and three had negative outcomes (see Rows 5 through 10 in Table 4). The mean outcome for these 6 players was .64; while this was considerably better than the -1.18 mean outcome of their paired Bolts, it was

still a low outcome. It was not half as good as the average outcome of the four unaggressive Acmes in this condition (see Rows 1 - 4); their mean outcome was 1.34. Not only did the nonaggressive Acmes do better for themselves but their paired Bolts did much better than the Bolts with aggressive partners. They had a mean outcome of 1.68.

The tendency for aggressive use of the lock by one player to induce resistance in the other player, with lowered outcomes for the pair, was general across conditions. Lumping all the "bilateral lock" conditions, one finds a significant association in numbers of aggressive usages of the lock between paired players (see Table 5A). Also, if one compares the mean outcomes for pairs with 3 or more aggressive lock usages with those having 2 or less, the paired outcomes are significantly higher for the latter (see Table 5B).

Insert Table 4 about here

Insert Table 5A & B about here
Conclusion

Let us summarize the conclusions we draw from our initial work on the effect of commitment on bargaining. First, there are many interesting questions which warrant further research in this area; our study is a first step rather than a concluding or conclusive one. It would, for example, be useful to study the effects of introducing uncertainty about the irrevocability of the commitment. This could be done in any number of ways - e.g., the subjects are allowed to buy a key to their lock but the cost of the key increases with time from the initiation of the trial. Second, adolescent boys may be more sensible than they are given credit for and possibly less collision-prone than American statesman and some of their social science advisors. They are sufficiently prudent to resist the temptation to "lock themselves in" to positions from which they cannot reverse if they know they are going to have repeated encounters with someone who has a similar capacity. However, when they are prompted to be competitive by the game of chicken or by a single encounter or by their own dispositions, some of their prudence and, also some of their money, are lost. Third, having a commitment device gives the player a relative advantage over the person with whom he is bargaining but, at least as often, it leads to a preliminary hassle over the attempt to dominate with neither player ending up in a superior position. In any case, there is no evidence to suggest that the bargainer with a commitment device does better than the bargainer without such a device when each is facing a player who does not have one. Perhaps all of this can be summed up by saying that "locking oneself in" to an irreversible position in order to gain an advantage is rarely more beneficial than cooper-
ating with the other for mutual gain and it has the prospect of leading to be a mutually destructive contest of will-power.
References


Sermat, V. Behavior in a mixed-motive game as related to the possibility of influencing the other's behavior. Paper read at the meetings of the American Psychological Association in St. Louis, 1962. (mimeo)

Footnotes

(1) This research was supported by a NSF grant, GS-302 whose principal investigator is Morton Deutsch.

(2) Now at Yale University.
TABLE 1

Mean Payoffs in Cents and Mean Number of Collisions in the One-Trial Games and the First Trial of the Twenty-Trial Game*

<table>
<thead>
<tr>
<th>First One-Trial Game</th>
<th>No Lock</th>
<th>Unilateral Lock</th>
<th>Bilateral Lock</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acme Payoff</td>
<td>-9.0</td>
<td>-.5</td>
<td>-3.8</td>
</tr>
<tr>
<td>Bolt Payoff</td>
<td>5.5</td>
<td>-12.1</td>
<td>-12.5</td>
</tr>
<tr>
<td>Acme + Bolt</td>
<td>-3.5</td>
<td>-12.6</td>
<td>-16.3</td>
</tr>
<tr>
<td>Acme - Bolt</td>
<td>-14.5</td>
<td>11.6</td>
<td>8.7</td>
</tr>
<tr>
<td>No. of Collisions</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

Second One-Trial Game

| Acme Payoff          | -7.0    | 2.7             | -7.5          |
| Bolt Payoff          | 4.6     | 8.1             | -8.8          |
| Acme + Bolt          | -2.4    | 10.8            | -16.3         |
| Acme - Bolt          | -11.6   | -5.4            | -1.3          |
| No. of Collisions    | 3       | 2               | 6             |

First Trial of Twenty-Trial Game

| Acme Payoff          | 6.6     | 4.8             | 2.0           |
| Bolt Payoff          | -1.6    | -2.9            | 9.8           |
| Acme + Bolt          | 5.0     | 1.9             | 11.8          |
| Acme - Bolt          | 8.2     | 7.7             | -7.8          |
| No. of Collisions    | 2       | 2               | 1             |

* N = 10 pairs of subjects in each condition in each game.
<table>
<thead>
<tr>
<th></th>
<th>N = 10 pairs of subjects in each condition.</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nome + Pelt</td>
<td>Nome - Pelt</td>
</tr>
<tr>
<td></td>
<td>1.49</td>
<td>1.69</td>
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<tr>
<td></td>
<td>3.92</td>
<td>3.92</td>
</tr>
</tbody>
</table>

*In the Twenty-Trail Game*

Mean Peyer's Per Trial in Cents and Mean Number of Collisions

**TABLE 2**
TABLE 3

Mean Number of Times Lock Was Used on Two Adjacent Trials and Mean Number of Times Lock Was Used Per Pair in The Twenty-Trial Game

<table>
<thead>
<tr>
<th>Experimental Conditions</th>
<th>No. Times Lock Used on Adjacent Trials **</th>
<th>No. Times Lock Used</th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unilateral Lock*</td>
<td>8.9</td>
<td>11.0</td>
<td>.81</td>
<td></td>
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<tr>
<td>Bilateral Lock</td>
<td>5.1</td>
<td>16.2</td>
<td>.31</td>
<td></td>
</tr>
<tr>
<td>&quot;Chicken&quot; Bilateral Lock</td>
<td>7.4</td>
<td>15.3</td>
<td>.48</td>
<td></td>
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<tr>
<td>&quot;Social Problem Solving&quot; Bilateral Lock</td>
<td>3.4</td>
<td>11.4</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>&quot;Pre-period&quot; Bilateral Lock</td>
<td>4.9</td>
<td>17.9</td>
<td>.27</td>
<td></td>
</tr>
</tbody>
</table>

* Since only one player in each of the 10 pairs had a lock in the Unilateral Lock Condition, the maximum number of lock uses was 200 and the maximum number of times a lock could have been used in two adjacent trials was 190; the corresponding maximum for the bilateral lock conditions was 400 and 380 since both players in each of the 10 pairs per condition could employ their locks.

** If a player employed his lock on adjacent trials but only after the other player had passed through the one-lane section of the road, this was not counted here. Some players used their lock this way even though they cooperated in an alternating pattern. The measure in Column (1) provides an indication of an attempt to obtain more through the use of the lock than an alternating pattern would offer.
In one trial, Amos and Holt both took the alternate route.

<table>
<thead>
<tr>
<th>Age (yr)</th>
<th>Total Trials</th>
<th>No. of Trials in which Outcome Was Higher for Amos</th>
<th>No. of Trials in which Outcome Was Higher for Holt</th>
<th>No. of Trials in which neither Outcome Was Higher</th>
<th>No. of Trials in which both Outcomes Were Equal</th>
</tr>
</thead>
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<td>10</td>
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<td>10</td>
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<td>2</td>
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<td>13</td>
<td>1</td>
<td>0</td>
<td>2</td>
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<td>1</td>
<td>0</td>
<td>2</td>
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<tr>
<td>1.80</td>
<td>15</td>
<td>15</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>1.86</td>
<td>16</td>
<td>16</td>
<td>1</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

Statistics for ten pairs in the unilateral look condition.

TABLE 4
TABLE 5A

Association in the Number of Aggressive Lock Uses
Between Acme and Bolt in Same Pair for all Bilateral
Lock Conditions Combined

BOLT

<table>
<thead>
<tr>
<th></th>
<th>2 or less</th>
<th>3 or more</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 or less</td>
<td>22</td>
<td>4</td>
</tr>
<tr>
<td>3 or more</td>
<td>4</td>
<td>10</td>
</tr>
</tbody>
</table>

$x^2 = 12.5637$

$p < .001$

TABLE 5B

Mean Joint Outcomes For Pairs With 3 or More Aggressive Lock Usages
Compared With Those With 2 or Less

<table>
<thead>
<tr>
<th></th>
<th>2 or less (n = 22)</th>
<th>3 or more (n = 18)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.82</td>
<td>-1.37</td>
</tr>
</tbody>
</table>

$t = 3.04$, d.f. = 38

$p < .01$
FIGURE 1
Subject's Road Map
FIGURE 2

Mean Joint Payoff/ 4 Trial Blocks
FIGURE 3

Mean Joint Payoff/ Trial Block

For The Three Bilateral Lock Conditions