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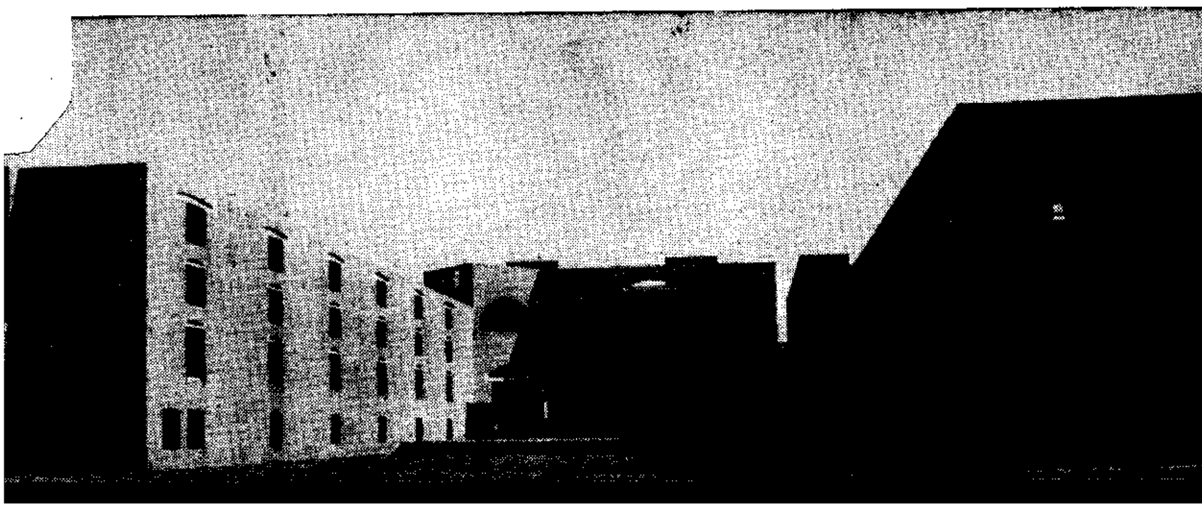

ALLOCATORS' MATURITY AS AN EXPLANATION FOR INCONSISTENCY IN COGNITIVE ALGEBRA OF REWARD DISTRIBUTION

By

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Allocators' Maturity as an Explanation for Inconsistency in Cognitive Algebra of Reward Distribution

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Footnote

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Abstract

According to equity theory, reward for a person should be proportional to his input or deservingness. Experimental tests of this ratio rule with information integration theory have not yielded consistent results. The same unidimensional tasks sometimes yielded the theoretical pattern of a slanted barrel, but sometimes a pattern of parallelism as though a subtracting rule were operative. In a series of five experiments performed on college students and professional managers, reasons for the inconsistency in cognitive algebra of unidimensional tasks were examined. The hypotheses of task simplication, order of presentation of unidimensional and multidimensional tasks, and design complexity were considered and rejected. The hypothesis of allocators' maturity which attributes inconsistency in cognitive algebra to the incomplete conception of equitable exchange in student population received good support. All tests with managers confirmed the ratio rule but infirmed the subtracting rule of reward allocation. Implications of these findings were discussed for developmental study of cognitive algebra of equity and for study of social behavior in nonstudent population.

Allocators' Maturity as an Explanation for Inconsistency in Cognitive Algebra of Reward Distribution

Suppose you are given a fixed sum of money and asked to distribute fairly between two claimants, Workers A and B, of a group, how would you divide the money? According to information integration theory (Anderson & Farkas, 1975), equity in social exchange exists if

$$O_B \, / \, (O_A + O_B) = I_B \, / \, (I_A + I_B), \qquad (1)$$

where O_A and I_A are the outcome and input of Worker A and O_B and I_B are those of Worker B. If this model of equity is correct, then reward for Worker B would be

$$R_B = [\, I_B \, / \, (I_A + I_B) \,] \, T, \qquad (2)$$

where R_B is reward for Worker B and $T = R_A + R_B$. This ratio model of reward allocation makes a simple, testable prediction: The graphic plot of the $I_A \times I_B$ data should yield a pattern of slanted barrel, wider in the middle than at either end (Anderson, 1976; Anderson & Butzin, 1978; Farkas & Anderson, 1979).

Experimental tests of the barrel shape prediction have not yielded consistent results. The same allocation task sometimes yielded the theoretical pattern of a slanted barrel, but sometimes a pattern of approximate parallelism. For example, Anderson (1976) obtained support for barrel shape, so did Farkas and Anderson (1979). In all theses cases in which the prediction was upheld, the task was presented to the subjects after they had already worked on a relatively more complex tasks requiring ratio rule (see Anderson, 1976, pp. 292-293; Farkas & Anderson, 1979, pp. 881, 887-888).

However, when the very task was presented first to the subjects, the data conformed to a pattern of near-parallelism, as though the allocators followed a subtracting rule. This happened with A's Performance x B's Performance design as well as with A's Effort x B's Effort design (Farkas & Anderson, 1979). On the basis of these results, it may be said that rule of reward distribution for unidimensional task depends upon the order in which the task is presented with multidimensional task. This interpretation was complicated by the results from a developmental study (Anderson & Butzin, 1978). Even though the task was presented first, the barrel shape was evident in two instances where inputs were performance. With need input, the data were closer to parallelism than barrel shape pattern. Therefore, Farkas and Anderson (1979) noted that "cognitive algebra of equity (inequity) is in an uncertain state" (p. 896).

Two possible reasons for the uncertainty have been suggested. First, the real model for reward allocation is the ratio rule, but subjects simplify the task by using a subtracting rule. This tendency has been noted in other judgmental tasks which required multiplying and dividing rule (Anderson & Butzin, 1974; Graesser & Anderson, 1974;

Shanteau & Anderson, 1972). But the problem with the task-simplification explanation is that it cannot account for the rather consistent evidence for ratio rule for reward apportioned on the basis of multidimension inputs (Anderson & Butzin, 1978; Farkas & Anderson, 1979; Singh, Note 1, Note 2). At the intuitive level, task simplification would be expected to apply to complex tasks, and not to simple ones. However, the available literature presents an opposite picture. The task-simplification explanation may not thus reduce the uncertainty around cognitive algebra of reward allocation.

Another reason suggested by Farkas and Anderson (1979) is the order of presentation of unidimensional and multidimensional tasks. According to this interpretation, unidimensional tasks are handled by simpler adding-type strategy. But the extended practice at the multidimensional tasks which invariably yield evidence for ratio model as already noted produces a tendency to use a ratio model. This interpretation requires that evidence for a ratio rule for the unidimensional tasks be obtained only when they are presented after the multidimensional ones. This does not seem to be always true (Anderson & Butzin, 1978). However, no one has examined this possibility by varying order of presentation of tasks as a factor in design.

The present article reports findings from five experiments performed on college students and professional managers. These experiments were intended to reduce uncertainty around the cognitive algebra of reward allocation.

Experiments 1-3

Experiments 1-3 had two major goals. The first was to test the subtracting model for unidimensional input. Since the subjects were of quite different cultural backround, it was felt necessary to check that the difficulty noted by Farkas and Anderson (1979) with American college students is true with Indian students also. The second was to study the effect of different types of instructions on the rule of reward distribution. While Leventhal, Michaels, and Sanford (1972) advocate that motivations behind allocation affect rule of reward distribution, Singh (Note 1) argues that motivations affect perception of inputs and not rule of reward allocation. Accordingly, the same unidimensional tasks was employed under different instruction conditions. This yielded greater generality of the subtracting model of reward allocation.

Method

Experiments 1 through 3 were similar in design and purpose. They differed in just one aspect. Whereas Experiment 1 asked allocators to distribute money with the instructions that their decision would be made public or would be kept strictly confidential, Experiments 2 and 3 asked subjects to distribute money fairly as well as in a way they thought would prevent conflict between claimants.

Subjects. There were 16, 8, and 12 subjects in Experiments 1, 2, and 3, respectively. They all were second-year engineering students enrolled in an introduction to psychology course at the Indian Institute of Technology, Kanpur, India. Participation fulfilled their course requirement.

Stimuli and design. A 5 x 5 (Worker A x Worker B) factorial design was employed to construct 25 two-person groups. The five levels of the input of each member were very much below average, below average, average, above average, and very much above average. Both workers were described with respect to their annual performance in the previous year.

Five practice examples were also constructed, using stimuli more extreme than the regular levels of the input. These practice examples were intended to serve as end anchors and to orient the subjects to use the entire scale (Anderson, 1974). Description of the input of the two workers of each group was typed on an index card.

Procedure. Two subjects were run at a time in the psychology laboratory. Upon arrival, the subjects received a typed sheet of instructions that described the nature of task and their role as subjects. The task was introduced as one dealing with distribution of money between two workers of several groups. It was emphasized that the money available came from a recent incentive scheme, that the reward would be distributed on the basis of the annual performance of the two workers of each group, and that the groups to be judged were a random sample from a large population of two-worker groups in an industry.

After reading the instruction sheet twice, each subject worked on five practice examples. He read the information about the annual performance of the two workers of each group, and decided how much he would pay to Worker B out of Rupees twenty-four available to the group. He was clearly told that the remainder would go automatically to Worker A, for the reward available to the group had to be distributed between the two workers. To facilitate allocation, a 25-point graphic scale labeled 0 (Nothing to B) and 24 (All to B) at the ends was placed in front of each subject.

Just after the practice period, the main points of the instructions were summarized to the subjects by the experimenter. All queries about the task were answered. To familiarize themselves with the composition of groups, the subjects also read the entire set of 25 cards. After shuffling the cards, they decided on the appropriate reward for Worker B of each of the 25 groups. The subjects entered the code number of the group and their decision on reward on the response sheet supplied for the purpose.

In Experiment 1, subjects received two instructions. In one condition, they were asked to divide money in any way they thought best, but their decision was to be made public on the foundation day of the industry where they would be the chief guest. In the other condition, their decision was to be kept strictly confidential. The 25 groups were presented three times in different shuffled orders in both conditions. The orders of presentation of two instructions were balanced over half of the subjects of the group.

Experiment 2 was identical to Experiment 1 in all respects except that different motivating instructions were used. In one condition, subjects were asked to distribute money in a way they thought it to be fair; in the other condition, they distributed money in a way which they thought would minimize interpersonal hostility and conflict between members of the groups.

Experiment 3 employed the same stimuli and instructions. However, it required subjects to complete the task over two successive evenings. The orders of presentation of the two instructions were balanced over half of the subjects in each evening. Thus, the two instruction conditions were separated by a day. In each condition, subjects rated the groups four times in different shuffled orders.

Results

Graphic analyses. For Experiment 1, Figure 1 plots mean reward for Worker B as a function of his own input (horizontal axis) and of input of Coworker A (curve parameter). It is clear that Worker B was rewarded as a direct function of his performance and as an inverse function of the performance of his coworker. Also, the five curves exhibit parallelism under the conditions of both public and confidential decision. Both instruction conditions show a pattern of near-parallelism, which implies that subjects distributed reward according to a subtracting rule.

Figure 1 here

A quite similar picture appears in the two instruction conditions of Experiment 2 shown in Figure 2. The curves are nearly parallel, as if allocators followed a subtracting rule. It seems that differences between reward curves are smaller in the condition of minimize conflict than in the condition of divide fairly.

Figure 2 here

Figure 3 presents results from Experiment 3 which had more allocators and replications than Experiment 2. The curves show virtual parallelism under the condition of divide fairly as well as minimize conflict. As in Figure 2, the curves have greater separation when reward was divided fairly than when it was divided to prevent conflict and interpersonal hostility.

Figure 3 here

Considered together, Figures 1 through 3 provide strong support for the subtracting model of reward allocation. They also suggest that the different motivating instructions do not alter the rule of reward distribution in any noticeable way.

Statistical analyses. Graphic parallelism is equivalent to statistically nonsignificant interaction term in analysis of variance. Therefore, data shown in Figures 1,2, and 3 were subjected to four-way (Subjects x Replications x A's Performance x B's Performance) analyses of variance with repeated measurements on the last three factors. The A's Performance x B's Performance effect had F (16, 240) = 1.77 and 0.85 in Experiment 1, F (16, 112) = 1.17 and 1.36 in Experiment 2, and F (16, 176) = 1.16 and 1.05 in Experiment 3. Of the six F ratios, only the one for the public decision condition of Experiment 1 is statistically significant. It is marginal, however, and no sign of barrel shape appears in the graph. Overall, then, all six tests of interaction provide strong quantitative support for the subtracting model.

Data of the three experiments were also analyzed with instructions as an additional repeated measurement factor. The factor of motivating instructions did not produce any effect in Experiment 1 or 2. However, it interacted with A's Performance, F (4,44) = 2.79, $p <$ .05, as well as with B's Performance, F (4, 44) = 2.99, $p <$ .05, in Experiment 3. These interactions were attributable to differential valuation of performance in the two instruction conditions. The input scale was wider in the divide fairly condition than in the minimize conflict condition just as the two graphs of Figure 3 had suggested. Interpretation of this result will be taken up in the section of general discussion.

Discussion

The chief finding of the present set of three experiments is that subjects follow a subtracting rule in distribution of rewards when the two claimants are described by just one input. Identical results for different motivating instruction conditions of the three experiments indicate that the parallelism pattern is robust across experimental conditions. In addition, Indian college students handle unidimensional tasks according to a subtracting rule just as their American counterparts do (Farkas & Anderson, 1979). Thus, the results verify the previous findings, and generalize the subtracting rule to allocators of nonwestern foundation.

Why do unidimensional tasks obey the simpler subtracting rule instead of the complex ratio rule predicted by equity model (Anderson & Farkas, 1975)? As already mentioned in introduction, the cases where ratio rule for unidimensional tasks was supported had required college students to work first on multidimensional tasks (Anderson, 1976; Farkas & Anderson, 1979). It was, therefore, reasonable to propose a hypothesis of order of presentation of unidimensional and multidimensional tasks for the inconsistent results in the literature and the subtracting rule obtained in Experiments 1 through 3.

But unidimensional tasks are not the only domain where ratio rule has had problems. Allocation tasks which consisted of two pieces of similar performance information about each claimant had also yielded equivocal results (Anderson, 1976; Farkas & Anderson, 1979). For the very same task, however, Singh (Note 1) obtained clear support for ratio rule with Indian managers and leaders of trade unions. The order of presentation of tasks may account for the failure of ratio rule with unidimensional tasks. But how can it account for the failure of ratio model with qualitatively similar inputs?

Perhaps maturity of allocators is much more important than order of presentation of tasks or any other variable. There can hardly be any doubt that professional managers are more matured by virtue of their age and experience than first or second-year college students. Because the complex ratio model was successful with managers (Singh, Note 1) but not with college students (Anderson, 1976; Farkas & Anderson, 1979), it is reasonable to hypothesize that the difficulty with unidimensional tasks is restricted to college students and that professional managers obey the barrel shape prediction no matter how the unidimensional tasks are presented.

Experiment 4

This experiment was conducted to test two hypotheses about the cause of the parallelism pattern in Experiments 1 through 3 and inconsistency in the extant literature on unidimensional tasks. The hypothesis of order of presentation of tasks states that the unidimensional tasks invoke a subtracting rule when they are presented before the multidimensional tasks but a ratio rule when they are presented after the multidimensional tasks. However, the hypothesis of allocators' maturity does not attach so much importance to order of presentation of tasks. It states that matured allocators such as managers would follow the ratio rule irrespective of the order in which tasks are presented. But immatured allocators such as second year college students engender inconsistent results due to their incomplete conception of equitable social exchange. To test these two hypotheses, the same unidimensional task was presented to college students as well as to professional managers before and after the presentation of one of the three types of multidimensional tasks.

Method

Stimuli and designs. Nine test groups were formed according to a 3 x 3 (A's Performance x B's Performance) factorial design. The three levels of each claimant's performance were very much below average, average, and very much above average. In addition, 5 filler and 6 practice groups were also constructed. These groups had levels from a longer scale of performance. All these 21 groups constituted the unidimensional task.

There were three multidimensional tasks. The first task had effort and performance of the two claimants as inputs, whereas the second and third tasks had two similar pieces of performance information about each claimant. Task 2 specified performance of the two workers in 1979 and 1980; Task 3 gave the same information without any clue to the relationship between year and performance.

All these three tasks had groups constructed according to a 2 x 2 x 2 x 2 factorial design. Each factor had very much below average and very much above average as levels. Each task had 9 filler groups and 9 practice groups prepared from the complete scale of performance used in Experiments 1, 2, and 3.

Subjects. The subjects were 48 students and 48 professional managers. All the students were enrolled in an introduction to psychology course at the Indian Institute of Technology, Kanpur, India. The professional managers were from three different management development programs conducted by the Indian Institute of Management, Ahmedabad, India. The subjects were assigned to Tasks 1, 2, and 3 according to their availability and each task was used with 16 students and 16 managers. Each student received Rupees five for his service.

Procedure. Eight subjects were run at a time. After introducing the task and giving practice just as in the previous three experiments, subjects rated the set of groups three times in different shuffled orders. In each task condition, half of the subjects first worked on unidimensional task and then on multidimensional task, the other half did just the opposite. This balancing of order of presentation of tasks over half of the subjects of each group was intended to provide a test for the hypothesis of order of presentation.

In Multidimensional Task 1, subjects were told that reward was to be apportioned on the basis of both effort and performance of each claimant. In Task 2, they were asked to allocate reward based on performance in 1979 and 1980. In Task 3, however, no clue as to year was given. Subjects were told that performance over 1979 and 1980 are randomized and so equal important should be given to each year input.

Results

Since the multidimensional tasks employed only two levels of each input, they lack power to discriminate a subtracting rule from an equity integration rule. If the very much below average and very much above average levels of an input are not equi-distant from its average level, the two multidimensional models, equity integration and input integration (Anderson & Butzin, 1978; Farkas & Anderson, 1979; Singh, Note 1, Note 2), cannot be diagnosed either. The main issue in this experiment is the inconsistency in cognitive algebra of unidimensional tasks; only results related to the issue will, therefore, be presented.

For students, Figure 4 presents six two-way graphs for two orders of presentation under each of the three multidimensional task conditions. The first two graphs have virtual parallelism, as though students employed a subtracting rule. This result is essentially the same as in Experiments 1 through 3. The remaining four graphs show the pattern of slanted barrel which implies that subjects followed a ratio rule. These graphs thus present no definite picture on the rule that students obey with unidimensional tasks. This picture is identical to the one presented by the existing literature (Farkas & Anderson, 1979).

Figure 4 here

According to the hypothesis of order of presentation of tasks, the first, third, and fifth graphs should yield a pattern of slanted barrel, for they are based on judgments rendered after exposure to the multidimensional tasks. In contrast, the second, fourth, and sixth graphs should be parallel because they are based on judgments without any exposure to the multidimensional tasks. These graphs are not in accord with the requirements of the hypothesis. The first two graphs are parallel; the remaining four graphs are of barrel shape. There is no sign of any order effect on rule of reward allocation. Thus, the hypothesis of order of presentation of tasks cannot account for the obtained results.

Figure 5 exhibits six graphs for professional managers. All the six graphs have clear pattern of slanted barrel. This indicates that managers used the ratio rule irrespective of the orders in which unidimensional tasks were presented. Clear evidence for ratio rule across the six graphs infirms the hypothesis of order of presentation of tasks. On the contrary, it confirms the hypothesis of allocators' maturity.

Figure 5 here

Analyses of variance performed on the data of students and managers under each of the three task conditions with order of presentation as a between-subject factor basically corroborated the picture portrayed by the graphs. The *F* ratios for A's Performance x B's Performance effect were statistically significant at .01 level in five of the six cases. The one which did not reach the standard level of significance, $F(4,56) = 1.65$, was for students of Task 1 shown in the first two graphs on the left of Figure 4. More importantly, the factor of order of presentation of tasks did not alter any of the six two-way interactions. The six *F* ratios for the Order of Presentation x A's Performance x B's Performance effect for the six sets of graphs shown in Figures 4 and 5 are 0.59, 1.21, 0.72, 1.34, 1.17, and 0.29 with degrees of freedom of 4 and 56. Nonsignificance of these three-way interactions rejects the hypothesis of order of presentation of tasks as the cause of uncertainty about cognitive algebra of unidimensional tasks.

The hypothesis of allocators' maturity, in contrast, has received strong support. Managers followed the basic ratio model as was hypothesized. But students did not follow just one rule. One group of students employed the subtracting rule, whereas two groups of students employed the ratio rule. Evidence for the presence of two rules suggests that the ratio conception may not be fully developed in first-year college students. These findings confirm the hypothesis of allocators' maturity rather unambiguously.

Discussion

Findings of Experiment 4 clearly show that the hypothesis of order of presentation of tasks suggested by Farkas and Anderson (1979) to account for the inconsistent evidence on ratio rule for unidimensional tasks can no longer be tenated. Order of presentation did not alter rule of reward distribution in any of the six cases. Thus, the cause of the uncertainty about the cognitive algebra of unidimensional tasks lies somewhere else.

The hypothesis of allocators' maturity was confirmed in rather clear way. All the three tasks invoked ratio rule in allocations by managers. But students did not follow just one rule; evidence for both the subtracting and ratio rules were present. This implies that all students have not developed the conception of equity defined by integration theory (Anderson & Farkas, 1975) for unidimensional tasks.

These results thus suggest that reason of uncertainty lies in the cognitive maturity and social conceptions of the allocators.

Whereas Experiments 1 through 3 yielded evidence for the subtractive rule, two of the three student groups of Experiment 4 yielded evidence for the ratio rule. What could be the possible reason? One source of this difference may be the complexity of the design. Experiments 1, 2, and 3 used a 5 x 5 design, but the present experiment used a 3 x 3 design. Review of literature indicates that most of the cases where the ratio model failed had 5 x 5 design (Farkas & Anderson, 1979; Singh Note 2, Experiment 1). If the complex design poses the real threat to the ratio rule, it would create problem in allocations by managers also. It was, therefore, felt necessary to use the 5 x 5 design with managers in order to put the hypothesis of allocators' maturity on firm ground.

Experiment 5

The main purpose of this experiment was to obtain evidence for barrel shape prediction in a design with five levels of performance of each claimant and managers as allocators.

Method

Subjects. Twelve participants of a management development program organized by the Public System Group of the Indian Institute of Management, Ahmedabad, India served as subjects. In general, they were comparable in age and seniority with the participants of the three programs from where subjects were drawn in Experiment 4.

Stimuli, design, and procedure. The stimuli, design, and general procedure of this experiment were the same as in the divide fairly condition of Experiment 2. Four subjects were run at a time. They came for just one session, and rated the groups three times in different shuffled orders.

Results and Discussion

Figure 6 presents mean reward for Worker B as a function of his own performance (horizontal axis) and of performance of Coworker A (curve parameter). According to the hypothesis of allocators' maturity, the curves should display a pattern of slanted barrel. This requirement is clearly satisfied. The curves show divergence upto the third point on the horizontal axis and then convergence toward the last point. This barrel shape seems to be reliable, for analysis of variance yielded a statistically significant A's Performance x B's Performance effect, $F(16,176) = 2.51$, $p < .01$.

Figure 6 here

Success of the ratio rule for this 5 x 5 design rules out the explanation of the difference in results between Experiments 1 through 3 and Experiment 4 in terms of design complexity. It further infirms the hypothesis of order of presentation of tasks tested in Experiment

4. It is not the order of presentation of tasks or design complexity that causes fluctuation from ratio rule. The present experiment demonstrates that managers invariably follow the ratio rule. Thus, the difficulty noted with unidimensional tasks is completely absent at the level of managerial population.

General Discussion

Ratio versus Subtracting Rule

What stands out most clearly in the present series of five experiments is that rewards based on single input of claimants are apportioned according to the subtracting or ratio rule contingent upon the maturity of the allocators. In general, students allocate money by considering just the difference between the claims of the two members of the group. Therefore, their judgments obey the subtracting rule,

$$R_B = T/2 + (I_B - I_A). \tag{3}$$

Of the six tests with students, four yielded results which clearly favored the subtracting rule. Only two supported the ratio rule. Obviously, all college students do not share a common definition of equitable social exchange.

With the managerial population, however, the situation is different. All the four tests obtained rather univocal support for the barrel shape prediction of the ratio rule. This result was generalizable across order of presentation of tasks as well as design complexity.

Accordingly, it may be said that ratio rule indeed underlies allocation of rewards based on unidimensional tasks as equity theory posits (Adams, 1965; Anderson & Farkas, 1975; Walster & Walster, 1975). Furthermore, the inconsistency in cognitive algebra of unidimensional tasks noted in literature and shown by results of Experiments 1 through 4 performed on college students appears to be attributable to the incomplete conception of equity in student population.

Why did the unidimensional tasks sometimes yielded parallelism but sometimes barrel shape pattern with students? The hypothesis of task-simplification (Anderson & Butzin, 1974; Graesser & Anderson, 1974; Farkas & Anderson, 1979; Shanteau & Anderson, 1972) was considered and eliminated in the introduction itself. The hypothesis of order of presentation of tasks as well as of design complexity was tested experimentally and rejected by the results of Experiments 4 and 5.

The one possible reason for the inconsistency seems to be the prevalence of both subtracting and ratio rules for unidimensional tasks in student population. Perhaps most students define equity by taking the difference between the claims of two persons and only a few define equity by taking ratio. As the sampling of subjects is usually <u>incidental</u> instead of <u>random</u> which guarantees representativeness, subtracting or ratio rule is supported depending upon who serve as subjects in a particular experiment.

Developmental and Methodological Implications

The interpretation made above raises the possibility of developmental trends in cognitive algebra of unidimensional tasks. Perhaps the ratio rule develops out of the subtracting rule. This possibility can be checked by using allocators of different age groups, ranging from younger children to adults.

To this it may be added that the integration-theoretical analysis allows test of model at the level of individual subject (Anderson, 1980; Shanteau & Anderson, 1972; Shanteau & Nagy, 1979; Singh, Gupta, & Dalal, 1979). For cross-age comparison with respect to number of persons following a rule, therefore, it will be desirable to design the experiment so as to allow analyses for each subject. Such analyses would also be useful for the study of integrational capacity as illustrated by Anderson and Butzin (1978) and by Gupta and Singh (1981).

Much of the research in personality and social psychology relies on college students as subjects. This is because of the common assumption that experimental manipulations invoke comparable process in student and nonstudent populations. The present finding of difference in the rule of reward distribution by students and by managers questions such an assumption. A truly science of social behavior cannot be built by just studying a restricted, incidental sample of college students.

Effects of Motivating Instructions

Leventhal et al. (1972) asked subjects to distribute rewards between two claimants under the conditions of divide fairly and minimize conflict. They found that the magnitude of difference in reward given to the best and the worst performers was smaller in the condition of minimize conflict than in the condition of divide fairly. Leventhal (1976, p. 114) interpreted this decrease in reward for the best and the worst performers as reflecting the equality or parity rule.

Experiment 3 of the present research also demonstrated a decrease in separation of curves in the minimize conflict condition. This verifies the finding of Leventhal et al (1972), and extends its generality to allocators of nonwestern foundation. However, the result argues against the interpretation of reduced difference as denoting a rule other than one underlying the allocations in the condition of divide fairly.

Information integration theory (Anderson; 1974, 1980) basically deals with the rule that governs human decision and judgments, and rules such as adding, subtracting, multiplying, dividing and their combinations are detected by the pattern in responses (Gupta & Singh, 1981; Singh, 1981; Singh et al, 1979). Because the pattern in allocations made along equal-interval scale remained the same under the two motivating conditions, no difference in rule of reward distribution can be claimed (Singh, Note 1, Note 2). The same subtracting rule would very well account for the parallelism pattern evident in the two conditions.

According to Singh (Note 1), motivating conditions perhaps affect the perception of input of the two claimants. One way to reduce conflict between claimants is to process their input along a shorter scale. Thus, the reduced difference in the condition of minimize conflict is attributable to differential valuation of input and not to a different rule of reward distribution as Leventhal (1976) interprets. Strong evidence for this input valuation interpretation has been presented elsewhere (Singh, Note 1).

Conclusion

To conclude, it may be said that inconsistency in cognitive algebra of unidimensional tasks arises chiefly due to the use of college students as allocators. Most of the college students define equity by taking difference between two claimants of the social exchange and only a few define it by ratio rule. Evidence for a subtracting or ratio rule thus depends upon who constitute the incidental sample of a particular experiment.

The basic rule of reward allocation is indeed the ratio one, and all managers seem to have acquired this conception of equitable social exchange. The results of the present research thus reduce the uncertainty about the cognitive algebra of unidimensional tasks considerably, suggesting that a truly science of social behavior cannot be developed by just studying the incidental sample of college students.

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Figure Captions

Figure 1. Mean reward for Worker B as a function of his own performance and of performance of Coworker A. Data from Experiment 1. (VBA = Very much below average, BA = Below average, A = Average, AA = Above average, VAA = Very much above average.)

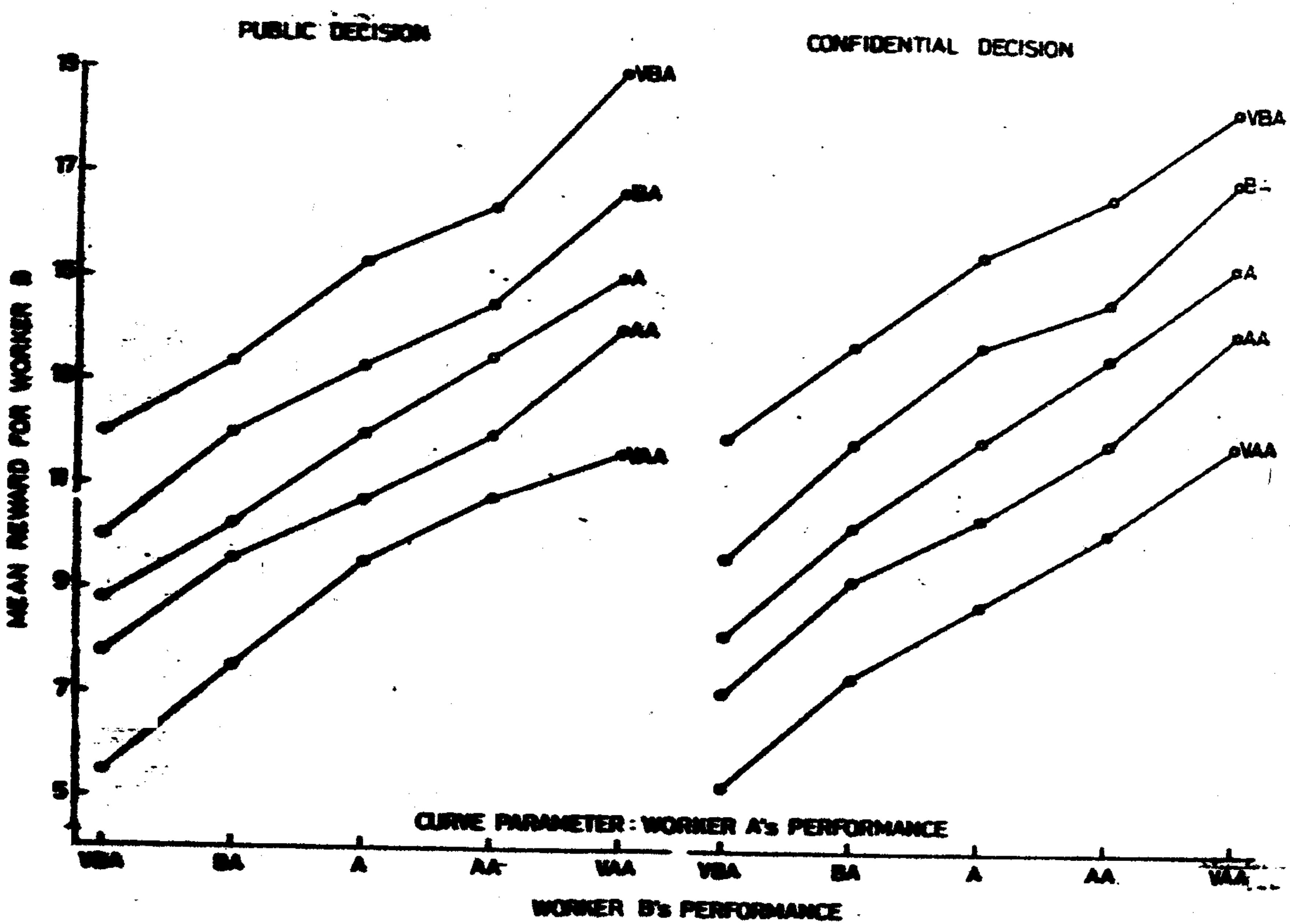
Figure 2. Mean reward for Worker B as a function of his own performance and of performance of Coworker A. Data from Experiment 2.

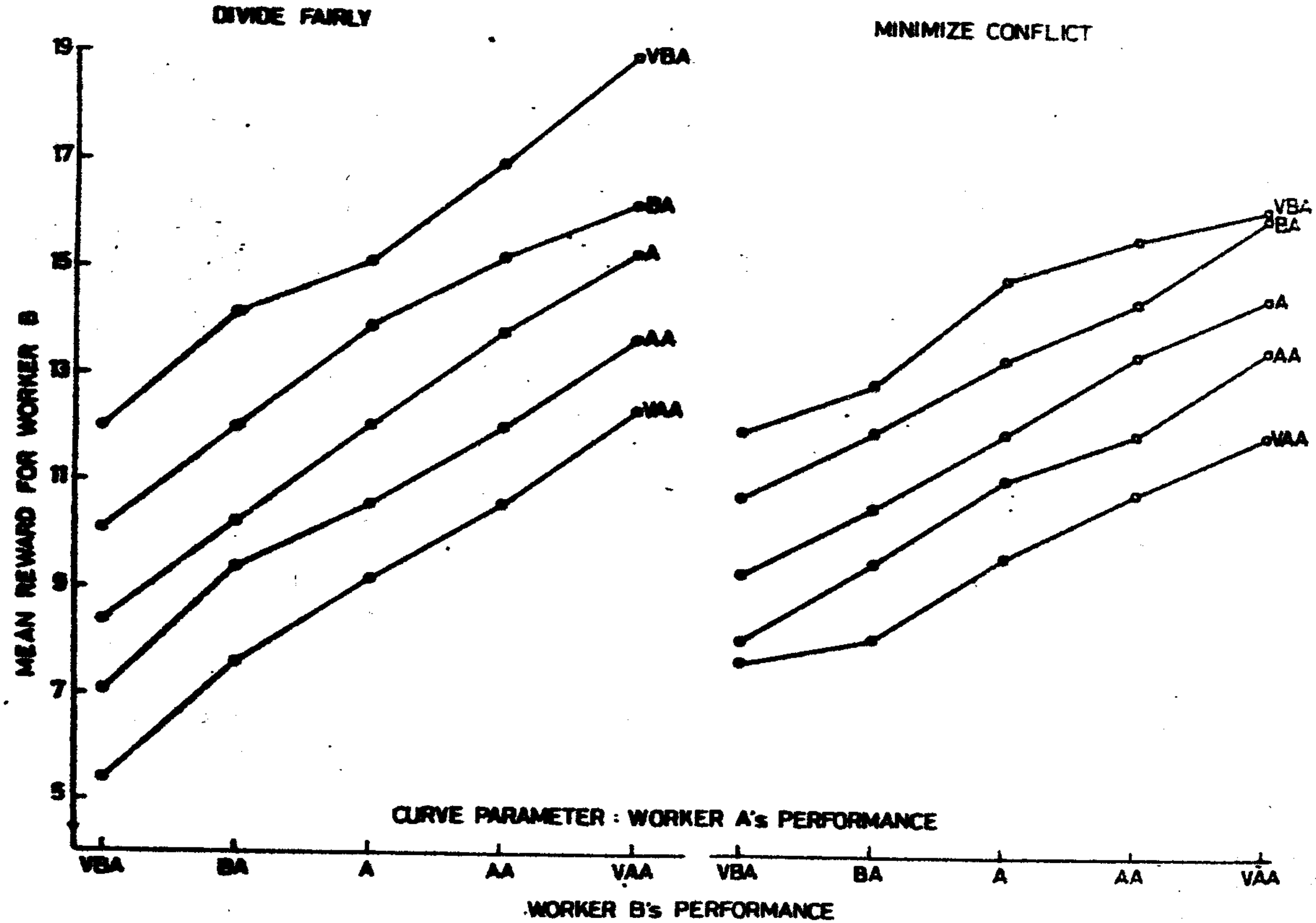
Figure 3. Mean reward for Worker B as a function of hiw own performance and of performance of Coworker A. Data from Experiment 3.

Figure 4. Profiles of A's Performance x B's Performance effect as a function of order of presentation under three multidimensional task conditions. Data from students of Experiment 4.

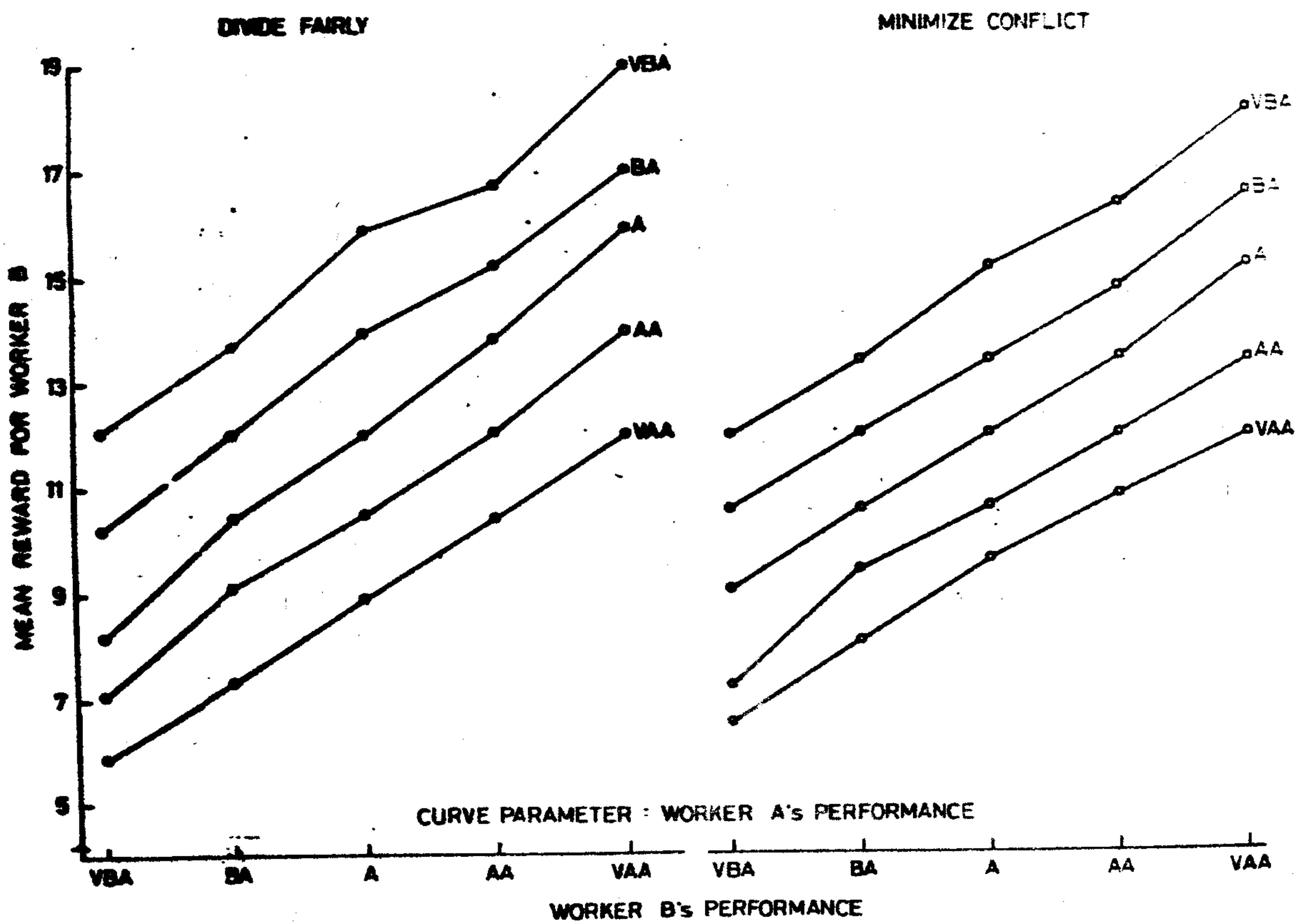
Figure 5. Profiles of A's Performance x B's Performance effect as a function of order of presentation under three multidimensional task conditions. Data from managers of Experiment 4.

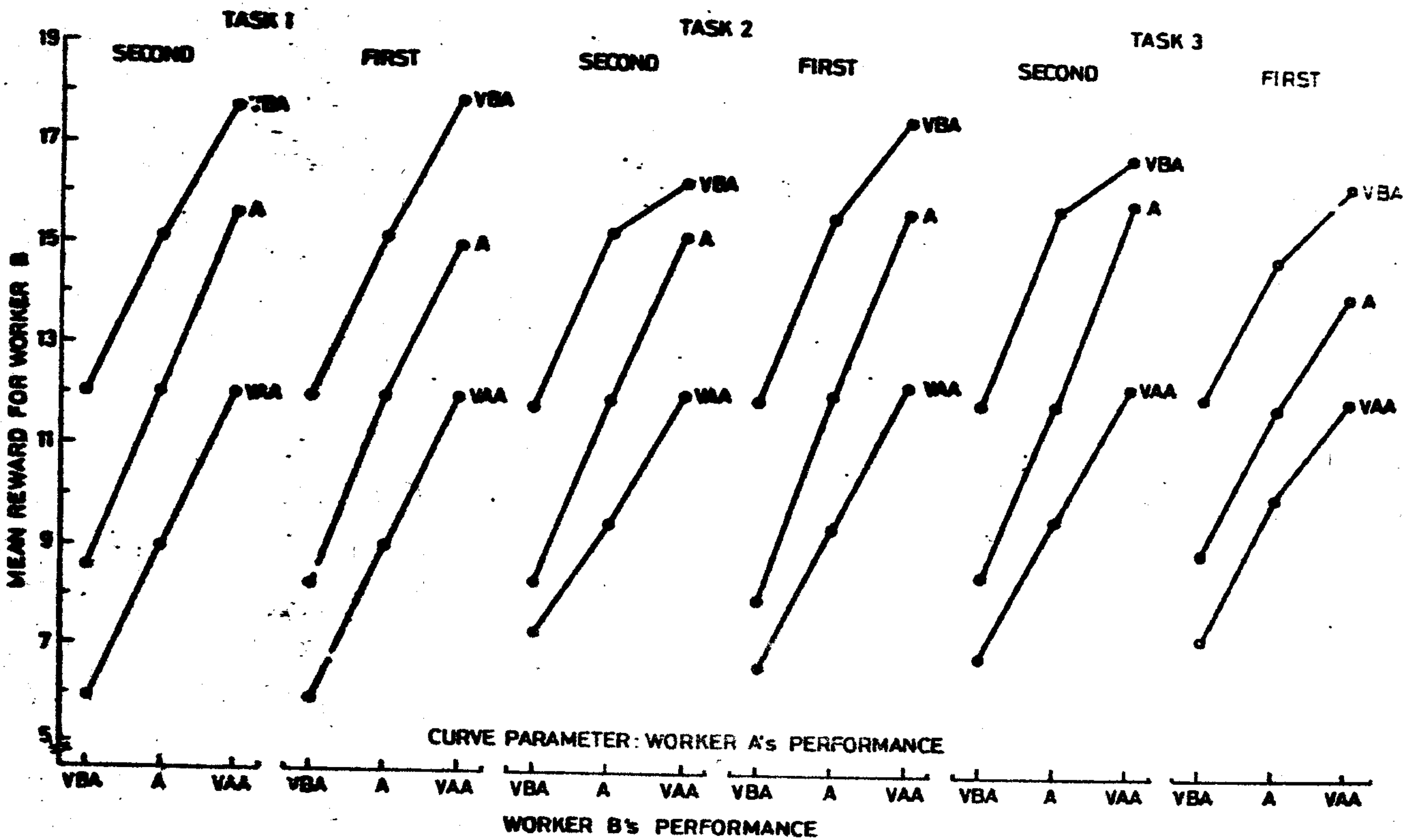
Figure 6. Mean reward for Worker B as a function of his own performance and of performance of Coworker A. Data from Experiment 5.


PUBLIC DECISION
CONFIDENTIAL DECISION
MEAN REWARD FOR WORKER B
5
7
17
VBA
BA
A
AA
VAA
B-
CURVE PARAMETER : WORKER A's PERFORMANCE
WORKER B's PERFORMANCE

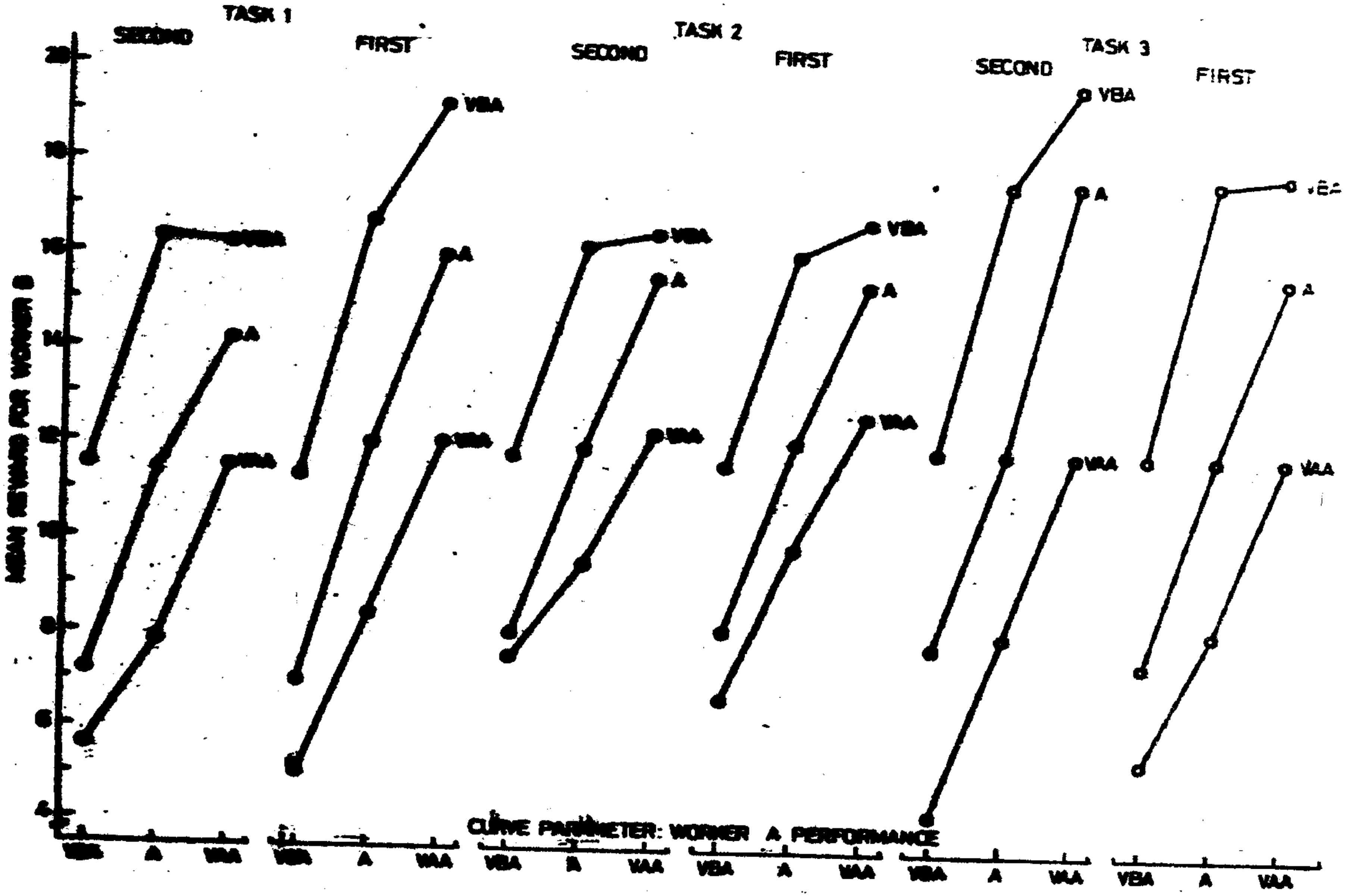


DIVIDE FAIRLY
MINIMIZE CONFLICT
MEAN REWARD FOR WORKER B
19
17
15
13
11
9
7
5
VBA
BA
A
AA
VAA
CURVE PARAMETER : WORKER A's PERFORMANCE
WORKER B's PERFORMANCE

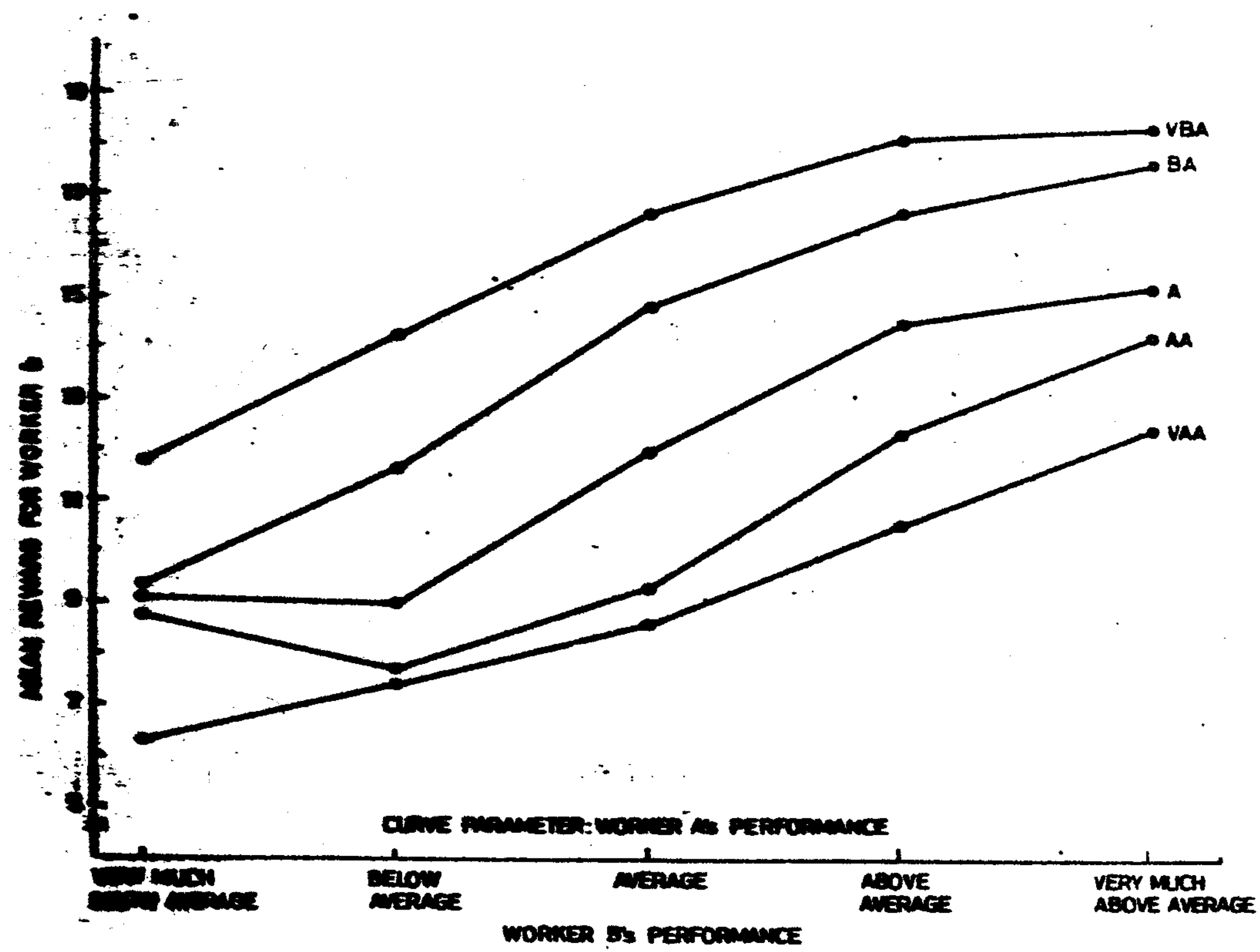

DIVIDE FAIRLY
MINIMIZE CONFLICT
MEAN REWARD FOR WORKER B
19
17
15
13
11
9
7
5
VBA
BA
A
AA
VAA
CURVE PARAMETER : WORKER A's PERFORMANCE
WORKER B's PERFORMANCE



TASK 1
SECOND
FIRST
TASK 2
SECOND
FIRST
TASK 3
SECOND
FIRST
MEAN REWARD FOR WORKER B
19
17
15
13
11
9
7
5
VBA
A
VAA
CURVE PARAMETER: WORKER A's PERFORMANCE
WORKER B's PERFORMANCE



TASK 1
SECOND
FIRST
TASK 2
SECOND
FIRST
TASK 3
SECOND
FIRST
MEAN REWARD FOR WORKER B
VBA
A
VAA
CURVE PARAMETER: WORKER A PERFORMANCE


MEAN REWARD FOR WORKER B
VBA
BA
A
AA
VAA
CURVE PARAMETER: WORKER A's PERFORMANCE
VERY MUCH BELOW AVERAGE
BELOW AVERAGE
AVERAGE
ABOVE AVERAGE
VERY MUCH ABOVE AVERAGE
WORKER B's PERFORMANCE