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PERFORMANCE OF TASK-ORIENTED AND RELATION-ORIENTED PERSONS ON A REWARD ALLOCATION TASK

By

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Running Head: Reward Allocation

Footnote

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Abstract

Subjects who scored low and high on Fiedler's least preferred coworker scale were provided with information about behavior and performance of two workers of several groups, and were asked to distribute a fixed sum of money between the two workers of each group. The principal point of interest centered around the performance of the two groups of allocators on the equity integration model. Results from four experiments showed that high scorers (relation-oriented) allocate reward according to the precise prescriptions of the equity integration model, whereas low scorers (task-oriented) vary in their performance on the task. This difference between the task- and relation-oriented persons disappeared when the allocation task consisted of task-relevant inputs such as effort and performance. This result shows that performance of the two groups of subjects is contingent upon the nature of inputs entering into the allocation task. Task-oriented persons also had a tendency to reject claim of workers with both negative inputs. Implications of these results were discussed for interpretation of Fiedler's measure and contingency theory as well as for information integration theory.

Performance of Task-Oriented and Relation-Oriented Persons on a Reward Allocation Task

Evidence has been accumulating that distribution of rewards and resources between members of a group obeys cognitive algebra (Anderson, 1974, 1976). When the allocation task consists of multi-dimensional inputs, for example, effort and performance (Farkas & Anderson, 1979; Singh, Note 1), need and deed (Anderson & Butzin, 1978), or behavior and performance (Singh, Note 1), allocators process information about each input separately. More specifically, they calculate equity ratio for each input and then average the various equity ratios. According to this equity integration model, reward for Person 2 of a two-person group would be

$$R_2 = w_B \left[B_2/(B_1 + B_2) \right] T + w_P \left[P_2/(P_1 + P_2) \right] T, \quad (1)$$

where R_2 is reward for Person 2, B_1 and P_1 are behavior and performance of Person 1 and B_2 and P_2 are those of Person 2, T is the total amount to be distributed between Persons 1 and 2, and w_B and w_P are relative weights for the two equity ratios.

Test of the equity integration model is fairly straightforward. When behavior and performance of the two claimants are varied in a factorial design, then graphic plots of the six two-way interactions should have specific patterns. The factorial plots of A's Behavior x B's Behavior and A's Performance x B's Performance effects should be of barrel-shape, wider in the middle than at either end, whereas the

remaining four two-way graphs should be parallel. Considerable support for the equity integration model has been obtained in the three papers cited above.

The central purpose of the present research was to seek generality of the equity integration model to persons of task- and relation-orientation. Subjects who score low and high on the Fiedler (1967) least preferred coworker (LPC) scale are believed to be task- and relation-oriented (Rice, 1978), respectively. They were, therefore, provided with information about behavior toward administration, a relation variable, and performance, a task variable, of two workers of several groups, and were asked to distribute a fixed sum of money between the two claimants of each group. Because the allocation task consisted of heterogeneous inputs, the equity integration model was expected to apply to distribution by both task- and relation-oriented subjects. This expectation was also based on the previous finding (Singh, Note 1) that students, managers of production and service organizations, and union leaders follow the equity integration model.

It is, however, likely that the equity integration model may not hold true with persons of task- and relation-orientation. If the subjects do not treat the input information which is inconsistent with their orientation, then the allocation task becomes unidimensional and so specifications of the model cannot be satisfied. Further-

more, task-oriented subjects are believed to be cognitively less complex than the relation-oriented ones (Foa, Mitchell, & Fiedler, 1971; Hill, 1969; Sashkin, Taylor, & Tripathi, 1974). They have also been seen to make greater use of extremes on the semantic-differential scale than relation-oriented persons (Bass, Fiedler, & Krueger, Note 2). Because of these differences between task- and relation-oriented persons, their allocation judgments may not be the same and the equity integration model may not hold for both groups.

Much of the research directed to establish validity of the LPC scale has relied upon correlational approach, and the meaning of responses to the LPC scale has been difficult to interpret. As Fiedler and Chemers (1974) themselves note,

> Understanding LPC has been a maddening and frustrating odyssey. For nearly 20 years, we have been attempting to correlate it with every conceivable personality trait and every conceivable behavior score. By and large these analyses have been uniformly fruitless (p. 74).

Schriesheim and Kerr (1977) also express serious doubt about the LPC scale:

> ... the evidence concerning the LPC instrument does not support its continued usage. LPC lacks sufficient evidence of construct, content, predictive and concurrent validity, and test-retest reliability (p. 27).

The present research examined performance of the task- and relation-oriented persons on an experimental task. Because leader is essentially on information processor (Green & Mitchell, 1979) and his allocation decision helps him to claim his power as well as to maintain productivity and satisfaction of subordinates, the present experimental task provided great power to detect difference (or lack of it) between the low and high scorers on the LPC scale.

Experiment 1

The main purpose of Experiment 1 was to seek generality of the equity integration model across the low and high scorers on the LPC scale. As this model was successful with a group of professional managers (Singh, Note 1), it served as the base for comparison between the subjects of task- and relation-orientation.

Method

Stimuli and design. Two hundred and twenty-five two-person groups were formed from a 3 x 3 x 5 x 5 (A's Behavior x B's Behavior x A's Performance x B's Performance) factorial design. The three levels of behavior toward administration were *opposed*, *neutral*, and *supportive*; the five levels of performance were *very much below average*, *below average*, *average*, *above average*, and *very much above average*. The input information about the two persons of each group was typed on an index card.

There were nine practice examples. They contained information about the two inputs from a longer scale. For example, behavioral input scale had *very hostile* and *very supportive* as the beginning and end labels. The performance scale started with *extremely poor* and ended with *excellent*. Four practice examples were based on just the extreme levels of the two input scales; the remaining five were taken from the regular set of 225 groups. These practice examples were intended to serve as end anchors and also to orient the subjects toward the use of the entire response scale.

Subjects and LPC scale. Fifty-three engineering students enrolled in an introduction to psychology course at the Indian Institute of Technology, Kanpur, India completed the 16-item LPC scale (Fiedler, 1967). Six persons from the upper 10 percent and six persons from the lower 10 percent of the distribution were selected to serve as subjects. Participation in the study fulfilled a course requirement.

The internal consistency reliability of the LPC scale was very high, .83 for odd-even as well as for upper-lower splits. Retest measures taken after 2 months and 14 days with 47 of the 53 respondents yielded even higher internal consistency reliability, .92 for odd-even and .90 for upper-lower splits. The temporal stability of the scores was also very high, r (46) = .66, $p < .01$. Accordingly, the LPC scale was adjudged as usable with the present group of subjects.

Procedure. Between 6-11 days after the completion of the first measure of the LPC, two subjects, one low-scorer and one high scorer, reported for experiment. Upon arrival, they received a typed sheet of instructions which described the nature of the task and their role as allocators. The task was presented as one dealing with distribution of money between two workers of several groups, and the money available to each group came from a new incentive plan which the industry has just introduced. It was emphasized that distribution would be done on the basis of behavior toward administration and the work actually done, and the groups to be judged were a random sample from a large population of two-person groups in a big industry.

The subjects read the instruction sheet twice, and worked on nine practice examples. Based upon information about behavior and performance of the two members of each group, the subjects divided Rupees twenty-four between Workers A and B. For simplicity in recording, the subjects always indicated how much they would pay to Worker B. It was clearly told that the remainder would go automatically to Worker A, for the money available to each group had to be apportioned between the two members. 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.

After practice session, the main points of the instructions were summarized to the subjects by the experimenter. All queries about the

task were also answered. To familiarize themselves with the nature of the groups, the subjects read descriptions of some groups randomly drawn from the set of 225 cards. Finally, the subjects shuffled the cards thoroughly and decided on the appropriate reward for Worker B of each of the 225 groups one by one.

The experiment was conducted over two successive evenings. On each evening, all the 225 groups were judged in shuffled orders. The data from both replications were coded and analyzed.

Results

Figure 1 presents six two-way graphs. The six graphs in the upper part are for the relation-oriented (RO) subjects and those in the lower part are for the task-oriented (TO) subjects.

Figure 1 here

Figure 1 shows that reward for Worker B is a positive function of his behavior and performance and an inverse function of the behavior and performance of his Coworker A. Also, information about performance seems to have produced much stronger effect than the information about behavior. This point emerges clearly from the slope and separation of curves across the twelve sets of graphs. This suggests that both task- and relation-oriented subjects treated behavior and performance as inputs for reward, and that they followed a similar approach to the valuation of inputs.

The principal point of interest centers around the shape of the six graphs, for they help determine whether the task- and relation-oriented subjects obeyed the equity integration model in distribution of money. According to the model of equity integration, the two graphs from the left should exhibit slanted barrel-shape but the other four graphs should all be parallel. These requirements of the equity integration model are clearly fulfilled by the data of the relation-oriented subjects. In the upper part, the two graphs on the left have the slanted barrel-shape; other four graphs are nearly parallel. It can, therefore, be said that relation-oriented subjects obeyed the equity integration model rather well.

The six graphs of the lower part of Figure 1 are essentially parallel. The first two graphs do not have barrel-shape as required by the equity integration model. Accordingly, the allocation decisions of the task-oriented subjects are not consistent with the equity integration model. The prevailing pattern of parallelism, however, suggests that task-oriented subjects perhaps employed a subtracting rule (Farkas & Anderson, 1979).

Analysis of variance provides direct statistical tests of the equity integration model and the subtracting model. According to the equity integration model, the two-way interaction for the two graphs on the left of Figure 1 should be statistically significant, but for the other four groups the interaction term should be all nonsignificant.

Also, the higher-order interactions should be nonsignificant under the condition of constant weighting of the two inputs. With differential weighting, however, the higher-order interactions may be significant and they will have specified pattern (Farkas & Anderson, 1979, Singh, Note 1). If the subtracting model holds, then all the interaction terms should be statistically nonsignificant.

Table 1 presents F ratios from analyses of variance performed on the data of the task- and relation-oriented subjects. It is evident that the task-oriented subjects followed the subtracting rule. The one two-way interaction, B's Behavior x B's Performance, $F(8, 40) = 2.87$, $p < .05$, is different from the prediction, but it seems to have been caused by the tendency to reject Worker B when both of his inputs were negative. Closer examination of the sixth graph suggests that the task-oriented subjects gave Worker B slightly less than what he should get when his two inputs were negative. The four-way interaction, $F(64, 320) = 1.37$, $p < .05$, is also statistically significant. However, it seems to be a statistical artifact, for the degrees of freedom are unusually large. The overall picture that emerges from the analysis of variance test is thus one of strong support for the subtracting model.

Table 1 here

Results from the analysis of variance for the relation-oriented subjects are consistent with the equity integration model. The first

and second graphs yield statistically significant departures from parallelism. This means that the barrel-shape present in the two graphs is indeed reliable. Of the remaining four two-way interactions, only B's Behavior x B's Performance, F (8, 40) = 2.36, $p < .05$, is statistically significant. Closer examination of the sixth graph, however, does not disclose any consistent trend. Therefore, it does not require any qualification on the equity integration model for the relation-oriented subjects.

Two of the four three-way interactions are also significant. Their profiles indicated that the relation-oriented subjects had employed configural-weight equity integration (Farkas & Anderson, 1979; Singh, Note 1). A dimension of difference had influenced the equity calculation more than a dimension of no difference. In any case, the relation-oriented subjects followed the equity integration model.

Discussion

The most striking result of Experiment 1 is the difference in the rule of reward distribution by task- and relation-oriented subjects. While the task-oriented subjects followed the subtracting rule, the relation-oriented ones followed the ratio rule. This suggests that difference in the LPC score is not non-event as Schriesheim and Kerr (1977) believe.

The equity integration model which received good support from the data of the relation-oriented subjects assumes that equity ratios are

calculated for each input dimension separately and then they are averaged. The subtracting model which has been employed by the task-oriented subjects does not specify the flow of information, for parallelism patterns in the six graphs can be produced in at least two ways: $R_2 = T/2 + (B_2 - B_1) + (P_2 - P_1)$ and $R_2 = T/2 + (B_2 + P_2) - (B_1 + P_1)$. The first model has flow of information just as in the equity integration model, whereas the second model has flow of information identical to one implicit in an alternative model of input integration (Farkas & Anderson, 1979). However, both are based on adding-type operations contrary to what most theorists advocate (Adams, 1965; Anderson, 1976; Walster & Walster, 1975). One question that stands out immediately is whether a subtracting model is the real model for the task-oriented subjects or it reflects a conscious attempt by the subjects to simplify the complex task (Farkas & Anderson, 1979; Shanteau & Anderson, 1972; Singh, 1981).

Asking subjects to distribute money between two claimants of 225 groups is undoubtedly complex. It is, therefore, likely that the subjects might have tried to treat it as a simple task. But this did not happen with the relation-oriented subjects. Perhaps task- and relation-oriented subjects differ in their cognitive complexity: The relation-oriented persons are more cognitively complex than the task-oriented ones (Foa et al., 1971; Hill, 1969; Sashkin et al., 1974). So they obeyed the equity integration model and the subtracting model in accord with their cognitive complexity.

Experiment 2

The difference in the rule of reward allocation of the task- and relation-oriented subjects raises a question about the validity of the basic ratio rule which has received rather unambiguous support in earlier work (Singh, Note 1). This experiment was, therefore, conducted as a reliability check on the finding of Experiment 1. The experimental task was simplified considerably by using three instead of five levels of performance.

Method

Stimuli and design. Eighty-one two-person groups were constructed from a 3 x 3 x 3 x 3 (A's Behavior x B's Behavior x A's Performance x B's Performance) design. The levels of behavior toward administration were the same as in Experiment 1. The three levels of performance were very much below average, average, and very much above average. The practice examples were the same as in Experiment 1.

Subjects. Seven task-oriented and seven relation-oriented subjects were selected from a group of 67 students who had filled up the LPC scale. The task-oriented subjects were from the lower 25 percent of the distribution; the relation-oriented ones were from the upper 25 percent. These subjects were from the same population as in Experiment 1. The internal consistency reliability of the scale was again very high, .88 for odd-even and .76 for upper-lower splits.

Procedure. The general procedure was the same as in the previous experiment. Two months after the completion of the LPC scale, subjects participated in the experiment over two successive evenings, and they rated the entire set of 81 groups two times in different shuffled orders on each evening. Data from all the four replications were coded and analyzed.

Results

Figure 2 shows six two-way graphs for the relation-oriented and the task-oriented subjects. In the upper part, the first two graphs from the left have the pattern of slanted barrel as they should in fact have been. As predicted, the remaining four graphs are parallel. Thus, the results for the relation-oriented subjects are similar to those in the previous experiment.

Figure 2 here

The six graphs of the lower part of Figure 2 also exhibit similar patterns. Although the barrel shape in the first two graphs are not as strong as they should have been, they conform to the predicted pattern. On this basis, therefore, the data may be interpreted as supportive of the equity integration model.

Analyses of variance of the data for the relation-oriented and task-oriented subjects are presented on right side of Table 1. As predicted, only the two two-way interactions, A's Behavior x B's Beha-

vior, F (4, 24) = 6.34, $p < .01$, and A's Performance x B's Performance, F (4, 24) = 5.60, $p < .01$, are statistically reliable for the relation-oriented subjects. The remaining two-way and higher-order interactions are all statistically nonsignificant. These results from statistical tests provide strong support for the constant-weight equity integration model.

The results from the analysis of variance of the data of task-oriented subjects are not so clear. While the first graph has statistically significant deviations from parallelism, the second graph does not, F (4, 24) = 1.46. In addition, two of the four three-way interactions are statistically significant. Examination of these three-way interactions suggested a tendency to use configural weighting in combination of equity ratios similar to what was present in Experiment 1 and previous research (Singh, Note 1). This result shows that task-oriented subjects also follow ratio model.

Discussion

Results of Experiment 2 show that reward are indeed apportioned according to the ratio rule envisaged by Adams (1965), Anderson (1976), and Aristotle (see Walster & Walster, 1975, p. 25). Furthermore, both task- and relation-oriented subjects performed on the task consistent with the equity integration model. Although the data of the task-oriented subjects did not quite satisfy the requirements of the equity integration model, they appeared to be closer. Experiment 2, therefore,

replicated only portion of the results of Experiment 1. Nevertheless, it is clear that the judgments by the relation-oriented subjects display more regularity and clarity than those by the task-oriented ones.

The shortening of the experimental task affected performance of both the relation- and task-oriented subjects. While the former changed from configural to constant weighting strategy, the latter shifted from the subtracting rule to the ratio rule. The magnitude of change in the performance of the task-oriented subjects was thus striking.

Experiment 3

The present experiment had two goals. The first was to check the reliability of the results obtained from Experiment 2. Since the results of Experiments 1 and 2 differed, it was felt necessary to have an independent replication of the findings of Experiment 2. The second goal was to examine performance of a group of subjects having middle LPC scores. Schriesheim and Kerr (1977) have expressed serious doubt as to the acceptibility of classification of subjects into task- and relation-orientation categories on the basis of median split. Schiflett(1973) has also noted difficulty in the interpretation of the medium LPC-scores. This experiment thus compared the performance of medium LPC-scores with that of low and high LPC-scores.

Method

Subjects. Forty-two students enrolled in an introduction to psychology course at the Indian Institute of Technology, Kanpur, India completed the LPC scale. The internal consistency reliability was again very high, .89 for odd-even and .83 for upper-lower split-halves.

The 42 subjects were classified into upper 25 percent, middle 25 percent, and lower 25 percent scorer groups on the basis of the distribution of LPC scores of the 120 students of Experiments 1 and 2. Eight subjects were selected randomly from each of the three categories.

Stimuli, design, and procedure. The stimuli, design, and general procedure were the same as in Experiment 2. One month after the date of completing the LPC scale, the experiment began. All subjects completed the allocation task before the end of the second month. In general, three subjects, one from each group, were run at a time. The subjects rated the 81 groups two times in different shuffled orders. Both replications were coded and analyzed.

Results

Figure 3 presents six two-way graphs for the relation-oriented (RO), ambivalence-oriented (AO), and task-oriented (TO) subjects. The graphs of the top and bottom layers have similar patterns. The first

two graphs from the left have clear barrel-shape; the remaining four graphs have neat parallelism. Therefore, they conform rather well to the requirements of the equity integration model.

Figure 3 here

The six graphs of the middle layer are for the medium LPC scores. These graphs appear to be consistent with the equity integration model. Although the first graph does not display clear barrel-shape, the middle curve has the steepest slope. Accordingly, it may be said that subjects from all the three groups obeyed the very equity integration model.

Table 2 lists F ratios from the separate analyses of variance performed on the data of subjects from the three groups. The results for the relation-oriented subjects are exactly the same as in the second experiment. This indicates that relation-oriented subjects indeed follow the constant-weight equity integration model in reward distribution.

Table 2 here

Results for the task-oriented subjects are also in accord with the equity integration model. Although the A's Behavior x A's Performance interaction, $F(4, 28) = 3.02$, $p < .05$, is statistically reliable, it reflects a tendency to reject the claim based on the negative

behavior and very much below average performance. This trend was also evident in Experiment 1. One three-way interaction is also significant. Examination of this interaction disclosed that the task-oriented subjects had employed configural-weighting at one level of A's behavior.

Performance of the medium LPC scorers on the present allocation task is similar to that of the task-oriented subjects. There are two statistically significant sources of variance which should have been nonsignificant. They suggest that allocations by this group of subjects are closer to those by task-oriented than by relation-oriented subjects. However, it is obvious that only relation-oriented subjects fully satisfied the requirements of the equity integration model.

Discussion

Findings of Experiment 3 are important in several respects. First, they show that relation-oriented persons follow the constant-weight equity integration model as the findimgs of Experiment 2 had shown. Second, they indicate that allocations by the task-oriented persons remain variable across experiments. They followed a subtracting rule in Experiment 1, a compound ratio-subtracting rule in Experiment 2, and a ratio-ratio rule in Experiment 3. This indicates that they do not lack the capability to follow the ratio model as findings of Experiment 1 had suggested. Instead, they do not have a

well-developed notion of how rewards and resources be apportioned on the basis of task and relation variables. Third, persons who score in the middle of the LPC scale display similarity with task-oriented subjects. This means that relation-orientation is dominant feature of only high LPC scorers. Thus, classification of subjects into task- and relation-oriented categories based on median splits as is usually done is not appropriate. The present results bear upon the concern expressed by Schriesheim and Kerr (1977). Finally, there is a tendency in the task-oriented subjects to give lower reward to a claimant with both negative inputs than what he should get. This tendency to use greater extreme ratings confirms the results yielded from the semantic differential scale (Bass et al., Note 2). Furthermore, it suggests that personality of allocators affects the weighting of equity ratios and not the rule of reward allocation itself.

Considered together, findings of the three experiments suggest that the task- and relation-oriented persons differ in their performance on the present allocation task in two important ways. First, the relation-oriented persons consistently obey the equity integration model; the task-oriented persons do not obey any fixed model. In fact, allocations by the task-oriented persons never conformed to the prescriptions of the equity integration model at the quantitative level, and they supported the subtracting rule in Experi-

ment 1. Does it mean that task-oriented persons are flexible in their model of reward allocation? Second, the task-oriented person have a tendency to reject the claim of a person with both negative inputs. This trend was present in both Experiment 1 and 3.

It is likely that the differences between the task- and relation-oriented persons are task-specific and not general. Because of the use of a relation input and a task input, the allocation task may appear more sensible to the relation-oriented persons than to the task-oriented ones. It has been seen that the high-LPC persons make sharper distinctions in their judgments of social stimuli such as roles, customers, and other members of the organization (Sashkin et al., 1974). It is thus possible that a reward allocation task consisting of only task-relevant inputs may put the task-oriented persons on par with the relation-oriented persons. The next experiment explored this possibility.

Experiment 4

This experiment has four purposes. The first was to replicate the two differences between the task- and relation-oriented persons noted above. The second was to compare the performance of the two groups of subjects on an allocation task based on just task-relevant inputs such as effort and performance (Farkas & Anderson, 1979; Singh Note 1). The third was to include two end-anchor groups in the main stimulus groups to eliminate end-effects in the decisions by task-

oriented subjects. As Experiments 1-3 did not include such end-anchors, doubt may be expressed that extreme responses by the task-oriented do not reflect upon their response style. The fourth was to check on the amount of shift in LPC scores of the subjects from the time of first measurement to experimentation. Stinson and Tracy (1974) report that respondents change from one category to another category after a period of eight weeks. If temporal stability of the LPC is poor, no consistent result should have been obtained in the previous experiments. In addition, the test-retest correlation was .66 after a period of 2 months and 14 days in Experiment 1. In spite of these clear evidence for the reliability of the LPC scale, amount of change in the two LPC groups was measured to check whether variability in the performance of the task-oriented persons may be accounted for by greater changes in their LPC score itself.

Method

Stimuli and design. The stimuli and design for the behavior-performance task were the same as in Experiments 2 and 3. The 81 two-person groups for the effort-performance task were formed from a 3 x 3 x 3 x 3 (A's Effort x B's Effort x A's Performance x B's Performance) factorial design. The three levels of each factor were very much below average, average, and very much above average. The 9 practice examples were constructed in the same way as in the previous three experiments. Two end-

anchors based on more extreme information than that used in the main stimuli were included in the set of 81 cards of both tasks.

Subjects. Sixty-two first-year students from the two-year post-graduate program in management of the Indian Institute of Management, Ahmedabad, India completed the LPC scale. Twelve task-oriented and twelve relation-oriented subjects were selected from the lower 25 percent and upper 25 percent of the distribution. These subjects were older than those in Experiments 1 through 3 by approximately five years. Each subject received Rupees ten for his service. The internal consistency reliability of the LPC scale for this group of 62 respondents was extremely high, .86 for odd-even and .81 for upper-lower splits.

Procedure. Two months and 15-17 days after the completion of the LPC scale, subjects participated in the experiment. The general procedure was the same as in Experiment 3. However, there were two notable changes. First, each subject came over two evenings, and two allocation tasks were presented to the subjects of each group in a balanced order. Second, the subjects filled up the LPC scale for the second time after completing the task of the second day.

Results

Behavior-performance task. Figure 4 displays six two-way graphs for the relation-oriented and the task-oriented subjects in the upper and lower parts, respectively. The graphs of the upper part are all con-

sistent with the predictions of the equity integration model. The first two graphs from the left are of barrel-shape; the remaining four graphs are parallel. This confirms the results from the previous three experiments, and shows clearly that relation-oriented persons indeed obey the constant-weight equity integration model.

Figure 4 here

In the lower part of Figure 4, only the second graph from left has the pattern of slanted-barrel. The other five graphs are nearly parallel. This means that the task-oriented subjects followed the compound subtracting-ratio rule similar to what was noted in Experiment 2. However, the ratio rule applies to the performance input, whereas it applied to behavioral input in Experiment 2. The present trend is thus different from those in the previous three experiments. Accordingly, the hypothesis of flexibility in performance of the task-oriented subjects on the behavior-performance task appears to have been confirmed.

In the sixth graph of the lower part, there is a clear tendency to give lower reward to Worker B when he had both negative inputs. This tendency to weigh negative inputs higher than the positive ones has thus reappeared. This tendency appears to be a characteristic of the task-oriented persons, for inclusion of end-anchors did not eliminate it and the relation-oriented subjects do not have such a tendency.

Table 3 presents F ratios from analyses of variance done on the data of the task- and relation-oriented subjects. Results for the relation-oriented subjects are quite in keeping with the expectation. The two predicted two-way interactions are highly significant. Of the 9 interaction terms which are required to be nonsignificant, just one is significant. This does not require any serious qualification on the constant-weight equity integration model for the data of the relation-oriented subjects.

Table 3 here

For the task-oriented subjects, the results from the analysis of variance are not so clear. The first two graphs yield significant F ratios, but the first graph does not have the predicted barrel-shape; it shows near-parallelism. On this basis, it may be said that the task-oriented subjects followed the compound subtracting-ratio model. But the two three-way interactions indicated prevalence of the configural-weighting strategy. Therefore, it seems safer to conclude that task-oriented subjects did not perform well on the behavior-performance allocation task as has been noted in the previous three experiments.

The sixth graph of the lower part yields statistically significant F ratio. As already noted, the source of this interaction is the lower rating of Worker B when he had opposed behavior and very much below average performance.

Effort-performance task. The six two-way graphs for the effort-performance task are shown in Figure 5. All the graphs for the relation-oriented subjects, shown in the upper part, are as expected. The first two graphs have nice barrel-shape, whereas the other four graphs have neat parallelism. These graphs thus indicate that relation-oriented subjects followed the equity integration model.

Figure 5 here

The six graphs for the task-oriented subjects are also consistent with the equity integration model. The first two graphs are of barrel-shape; the other four graphs have the prevailing pattern of parallelism. At the surface, therefore, it appears that the task-oriented subjects obeyed the same equity integration rule as did the relation-oriented ones.

The highest point of the fourth graph and the lowest point of the sixth graph are, however, too high and too low, respectively. This implies that the task-oriented subjects indeed have a tendency to reject the person with extremely low inputs. Similar results across the two allocation tasks suggest that this characteristic is robust.

Table 3 lists F ratios from analyses of variance for the two groups of subjects. For task-oriented subjects, the first two graphs have statistically significant departures from parallelism which sup-

port the barrel-shape interpretations made earlier. The fourth and the sixth graphs also show reliable deviations from parallelism which confirm the lower ratings for persons with two negative inputs. The A's Effort x B's Effort x A's Performance effect is also significant. Examination of the profile disclosed the same tendency as in the fourth and sixth graphs. Thus, it may be said that the task-oriented subjects basically obeyed the constant-weight equity integration model.

Table 3 here

Results for the relation-oriented subjects are again as neat as in other experiments. All the six two-way interactions have the required statistical support. The *F* ratios for the first and second graphs are highly significant as they should in fact be, whereas the *F* ratios for the other four graphs are nonsignificant. Significance of the three higher-order interactions, however, suggests that the present task invoked configural-weight equity integration in the relation-oriented subjects. Examination of the profiles of these interactions confirmed such a configural-weighting (Anderson & Butzin, 1978; Farkas & Anderson, 1979; Singh, Note 1).

Stability of LPC measure. Table 4 presents mean LPC scores of the task-oriented and relation-oriented subjects over the two measurement periods. It is clear that there is a significant change in the scores

of both groups. In fact, the task-oriented subjects changed by 5 points but the relation-oriented ones changed by 10 points. This change was statistically significant, as the Orientation x Measurement effect yielded an F (1, 22) = 6.56, $p < .01$. Even with this change, the difference in mean LPC for the two groups of subjects was very high and they remained well within the upper and lower quartiles of the first distribution. This result does not confirm the unreliability finding of Stinson and Tracy (1974). More importantly, it rules out the test unreliability explanation for the highly variable performance of the task-oriented persons on the behavior-performance task across the present set of four experiments.

Table 4 here

Discussion

The results of Experiment 4 confirm those obtained in Experiments 1 through 3. The relation-oriented subjects obey the constant-weight equity model; the task-oriented subjects never perform according to the precise specifications of the model. This result is restricted to the behavior-performance task, and it is not attributable to the unreliability of the LPC scale. For the effort-performance task, both the task-oriented and relation-oriented persons follow the equity integration model. However, they differ in weighting style: The task-oriented persons use constant-weighting; the relation-oriented

ones employ configural weighting.

Both tasks disclosed a tendency in the task-oriented persons to weight negative inputs more than positive ones. This tendency was most marked when both inputs were relevant for task dimension.

General Discussion

Implications for Contingency Theory

The principal finding of the present set of four experiments is that the equity integration model holds for both the task-oriented and relation-oriented persons. The extent to which they conform to the prescriptions of the equity integration model, however, depends upon the nature of inputs entering into the allocation task. When the allocation task consists of a relation variable and a task variable, the relation-oriented do much better than the task-oriented persons in the model-based decisions. Such difference completely disappears when the reward allocation is made on inputs relevant to task. This trend in the performance of the task- and relation-oriented persons on the two allocation tasks, namely, behavior-behavior and effort-performance, provides support for the contingency model of leadership effectiveness (Fiedler, 1967, 1971; Singh, Bohra, & Dalal, 1979).

According to Fiedler and Chemers (1974), the LPC scale measures a very important personality variable since the correlations between

LPC and group performance are usually high. What is that important variable? Rice's (1978) exhaustive review of the literature indicates that LPC score has been interpreted in three ways. Findings of the present research bear upon the plausibility of the three prevalent interpretations.

Foa et al. (1971), Hill (1969), and Sashkin et al. (1974) regard LPC as a measure of cognitive complexity: High LPC persons are more cognitively complex than low LPC persons. This interpretation could account for the excellent performance of the high LPC subjects as well as for the variable performance of the low LPC subjects on the behavior-performance task. But it will have difficulty with the excellent performance of the low LPC subjects on the effort-performance task. Also, performance of the low LPC subjects varied from a subtracting to a complex ratio rule. This implies that low LPC subjects do not lack cognitive capacity. Accordingly, the cognitive complexity interpretation cannot provide a parsimonious account of the findings reported in this paper.

Fiedler (1972) believes that LPC scale measures a hierarchy of motives. He states that the primary goal of low LPC persons is task success, and their secondary goal is interpersonal success. In contrast, the primary goal of the high LPC persons is interpersonal success, and their secondary goal is task success. This interpretation implies that a relation variable and a task variable are both

relevant inputs for reward allocation, and that the low and high LPC scores would simply differ in their valuation of the two inputs. This did not happen in Experiment 1 through 4. In addition, the effort-performance task enabled the two groups to employ one rule but different weighting strategy. Thus, the motive hierarchy does not find any support from the performance of the two groups of the subjects.

Before proposing the motive hierarchy interpretation, Fiedler (1964, 1967) had considered LPC as a measure of orientation and motives. The high LPC persons were thought to be especially strong in need to achieve and maintain successful interpersonal relationships. On the contrary, the low LPC persons were thought to be especially strong in need for success in the realm of task performance. Rice's (1978) review seems to favor this interpretation, so do the findings of present research. The finding that low LPC subjects make extreme negative ratings when task inputs are negative confirms the task-orientation interpretation of the low LPC scorers. Their excellent performance on the effort-performance task further shows that low LPC subjects value task performance. Because the high LPC scores followed the model in its precise form, it appears that they indeed care highly for interpersonal success. Being rational and consistent in one's allocation decisions is certainly key to good interpersonal relationship. Findings of present research thus

bolster the task-relation orientation interpretation of the LPC scores.

Implications for Information Integration Theory

Results clearly show that reward allocations made on the basis of multidimensional inputs obey the equity integration model. This confirms the previous finding (Anderson & Butzin, 1978; Farkas & Anderson, 1979, Singh, Note 1), and illustrates that human judgments follow cognitive algebra.

In an early work on reward allocation (Singh, Note 1), evidence for both the constant-weight and configural-weight equity integration model was obtained. It was, however, not possible to specify when constant-weight or configural-weight version will hold true. The present research also shows that equity integration model may be of two forms. Furthermore, the weighting pattern depends upon personality of the allocators and nature of inputs involved in the allocation task.

Much of the work on the role of personality in information integration has indicated that personality is averaged along with the external information (Kaplan, 1971, 1973, 1975). This means that individual difference variable does not alter the integration rule. Other researchers (Dalal & Singh, Note 3; Lopes, 1976) argue that individual differences reflect on the weighting strategy. Results of

the present work suggests that personality can affect information weighting as well as integration rule contingent upon the nature of the task.

It should be emphasized that between group comparisons with respect to the integration rule has an obvious advantage (Gupta & Singh, 1981; Singh, 1981; Singh, Gupta, & Dalal, 1979). An integration rule deals with pattern of responses, not the numerical value of single responses. This aspect is vital for comparison between groups. No a priori knowledge of value of stimuli or origin and unit of response scale is required. Pattern in responses to stimuli prepared from factorial design serves as the base and frame for meaningful comparison between groups. In addition, integration rule allows comparison along the criteria of information utilization and information valuation. The result that behavior toward administration, trying, and actual performance are treated as inputs for reward reflects the process of information utilization. The tendency in the task-oriented subjects to weigh negative inputs higher than positive ones illustrates the process of input valuation. As the leader's role is one of information processor (Green & Mitchell, 1979) and personality measurement is facilitated by knowing how people organize information in meaningful, hierarchical, rule-guided ways (Mischel, 1977), information integration theory is ideally suited for the study of leader's personality. The present work illustrates the power of this approach.

Conclusions

The present set of four experiments provides evidence for the reliability of the LPC scale and for task-orientation and relation-orientation interpretation for the low and high LPC scorers. More importantly, they suggest that task- and relation-oriented persons follow the equity integration model of reward allocation but their performance on the task depends upon the nature of inputs entering into the allocation task. This supports the contingency model, and suggests that information integration approach has considerable potential for providing a more analytic framework to further work on contingency theory and leadership behavior.

Reference Notes

1. Singh, R. Multidimensional inputs and reward allocation: An integration-theoretical analysis (Working Paper 369). Ahmedabad: Indian Institute of Management, July 1981.

2. Bass, A.R., Fiedler, F.E., & Krueger, S. Personality correlates of assumed similarity (ASO) and related scores (Tech.Rep. 19). Urbana: University of Illinois, Group Effectiveness Research Laboratory, March 1964.

3. Dalal, A.K., & Singh, R. Serial position curve for integration of information about jobs (Working Paper 370). Ahmedabad: Indian Institute of Management, July 1981.

References

Adams, J.S. Inequity in social exchange. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 2). New York: Academic Press, 1965.

Anderson, N.H. Cognitive algebra. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 7). New York: Academic Press, 1974.

Anderson, N.H. Equity judgments as information integration. Journal of Personality and Social Psychology, 1976, 33, 291-299.

Anderson, N.H., & Butzin, C.A. Integration theory applied to children's judgments of equity. Developmental Psychology, 1978, 14, 593-606.

Farkas, A.J., & Anderson, N.H. Multidimensional inputs in equity theory. Journal of Personality and Social Psychology, 1979, 37, 879-896.

Fiedler, F.E. A contingency model of leadership effectiveness. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 1). New York: Academic Press, 1964.

Fiedler, F.E. A theory of leadership effectiveness. New York: McGraw Hill, 1967.

Fiedler, F.E. Validation and extension of the contingency model of leadership effectiveness: A review of empirical findings. Psychological Bulletin, 1971, 76, 128-148.

Fiedler, F.E. Personality, motivational systems, and the behavior of high- and low-LPC persons. Human Relations, 1972, 25, 391-412.

Fiedler, F.E., & Chemers, M.M. Leadership and effective management. Glenview, Ill. : Scott, Foresman, 1974.

Foa, U.G., Mitchell, T.R., & Fiedler, F.E. Differential matching. Behavioral Science, 1971, 16, 130-142.

Green, S.G., & Mitchell, T.R. Attributional processes of leaders in leader-member interactions. Organizational Behavior and Human Performance, 1979, 23, 429-458.

Gupta, M., & Singh, R. An integration-theoretical analysis of cultural and developmental differences in attribution of performance. Developmental Psychology, 1981, 17, in press.

Hill, W.A. The LPC leader: A cognitive twist. 29th Annual Meeting Academy of Management Proceedings, August 1969, pp. 125-130.

Kaplan, M.F. Dispositional effects and weight of information in impression formation. Journal of Personality and Social Psychology, 1971, 18, 279-284.

Kaplan, M.F. Stimulus inconsistency and response dispositions in forming judgments of other persons. Journal of Personality and Social Psychology, 1973, 25, 58-64.

Kaplan, M.F. Information integration in social judgments: Interaction of judge and informational components. In M.F. Kaplan and S. Schwartz (Eds.), Human judgments and decision processes. New York: Academic Press, 1975.

Lopes, L.L. Individual strategies in goal setting. Organizational Behavior and Human Performance, 1976, 15, 268-277.

Mischel, W. On the future of personality measurement. American Psychologist, 1977, 32, 246-254.

Rice, R.W. Construct validity of the least preferred coworker score. Psychological Bulletin, 1978, 85, 1199-1237.

Sashkin, M., Taylor, F.C., & Tripathi, R.C. An analysis of situational moderating effects on the relationships between least preferred coworker and other psychological measures. Journal of Applied Psychology, 1974, 59, 731-740.

Schriesheim, C.A., & Kerr, S. Theories and measures of leadership: A critical appraisal of current and future directions. In J.G. Hunt and L.L. Larson (Eds.), Leadership: The cutting edge. Carbondale: Southern Illinois University Press, 1977.

Shanteau, J.C., & Anderson, N.H. Integration theory applied to judgments of the value of information. Journal of Experimental Psychology, 1972, 92, 266-275.

Shiflett, S. The contingency model: Some implications of the statistical and methodological properties. Behavioral Science, 1973, 18, 429-440.

Singh, R. Prediction of performance from motivation and ability: An appraisal of the cultural difference hypothesis. In J. Pandey (Ed.), Perspectives on experimental social psychology in India. New Delhi: Concept Learning Press, 1981.

Singh, R., Bohra, K.A., & Dalal, A.K. Favorableness of leadership situations studied with information integration theory. European Journal of Social Psychology, 1979, 9, 253-264.

Singh, R., Gupta, M., & Dalal, A.K. Cultural difference in attribution of performance: An integration-theoretical analysis. Journal of Personality and Social Psychology, 1979, 37, 1342-1351.

Stinson, J.C., & Tracy, L. Some disturbing characteristic of the LPC score. Personal Psychology, 1974, 24, 477-485.

Walster, E., & Walster, G.W. Equity and social justice. Journal of Social Issues, 1975, 31, 21-43.

ble 1

Ratios from Four-way Analyses of Variance in Experiments 1 and 2

Sources	Experiment 1 df	TO F	RO F	Experiment 2 df	TO F	RO F
A: A's Behavior	(2,10)	4.20*	4.19*	(2,12)	35.57**	34.25**
B: B's Behavior	(2,10)	3.95	3.86	(2,12)	54.02**	26.16**
C: A's Performance	(4,20)	27.99**	33.63**	(2,12)	31.29**	28.43**
D: B's Performance	(4,20)	30.55**	34.70**	(2,12)	32.54**	37.35**
A x B	(4,20)	0.46	3.73*	(4,24)	2.95*	6.34**
A x C	(8,40)	1.09	1.58	(4,24)	0.91	0.93
A x D	(8,40)	0.84	0.69	(4,24)	0.73	1.52
B x C	(8,40)	1.25	0.67	(4,24)	1.15	1.03
B x D	(8,40)	2.87*	2.36*	(4,24)	0.09	0.96
C x D	(16,80)	1.33	3.73*	(4,24)	1.46	5.60**
A x B x C	(16,80)	1.55	2.01*	(8,48)	1.25	0.99
A x B x D	(16,80)	1.40	1.59	(8,48)	3.35*	1.01
A x C x D	(16,80)	1.22	1.62	(8,48)	1.30	1.50
B x C x D	(32,160)	0.71	1.66*	(8,48)	3.77*	0.93
A x B x C x D	(64,320)	1.37*	1.37*	(16,96)	1.42	1.25

Note: TO = Task-oriented; RO = Relation-oriented.

* $p < .05$

** $p < .01$

ble 2

Ratios from Four-way Analyses of Variance for Task, Ambivalent, nd Relation-oriented Subjects of Experiment 3.

Sources	df	TO F	AO F	RO F
A: A's Behavior	(2,14)	27.90**	24.11**	26.88**
B: B's Behavior	(2,14)	16.03**	27.29**	29.30**
C: A's Performance	(2,14)	63.70**	23.64**	42.49**
D: B's Performance	(2,14)	66.03**	28.78**	50.32**
A x B	(4,28)	8.15**	4.10*	5.64**
A x C	(4,28)	3.02*	1.13	0.86
A x D	(4,28)	1.31	2.89*	0.79
B x C	(4,28)	0.50	1.03	2.49
B x D	(4,28)	0.49	1.23	0.26
C x D	(4,28)	6.24**	6.52**	10.95**
A x B x C	(8,56)	0.57	0.33	1.49
A x B x D	(8,56)	1.33	0.39	0.80
A x C x D	(8,56)	2.36*	2.06*	0.95
B x C x D	(8,56)	1.47	1.93	1.38
A x B x C x D	(16,112)	1.17	0.99	1.15

Note: TO = Task-oriented; AO = Ambivalent-oriented; RO = Relation-oriented.

* $p < .05$

** $p < .01$

le 3

latios from Four-way Analyses of Variance of the Two Types of

sign in Experiment 4.

Sources	df	Behavior x Performance Design		Effort x Performance Design	
		TO F	RO F	TO F	RO F
A: A's Behavior/Effort	(2,22)	50.52**	26.72**	60.06**	45.01**
B: B's Behavior/Effort	(2,22)	47.66**	29.37**	85.44**	45.98**
C: A's Performance	(2,22)	42.63**	226.92**	62.68**	149.45**
D: B's Performance	(2,22)	54.62**	156.45**	61.18**	146.60**
A x B	(4,44)	3.58*	3.76*	5.51**	6.81**
A x C	(4,44)	1.17	0.58	7.18**	0.31
A x D	(4,44)	2.41	0.63	1.88	1.63
B x C	(4,44)	1.24	0.34	1.02	2.36
B x D	(4,44)	7.56**	0.81	4.07**	1.81
C x D	(4,44)	15.32**	23.64**	10.31**	16.64**
A x B x C	(8,88)	1.42	0.46	2.40*	0.95
A x B x D	(8,88)	0.40	1.03	1.38	0.92
A x C x D	(8,88)	3.92**	3.32**	1.96	2.05*
B x C x D	(8,88)	2.42**	0.98	0.98	2.52*
A x B x C x D	(16,176)	1.18	0.84	1.29	2.29*

Note: TO = Task-oriented; RO = Relation-oriented.

* $p < .05$

** $p < .01$

Table 4

Mean LPC Scores as a Function of Orientation and Time of Measurement

Orientation	Time of Measurement	
	First	Second
Task	37.92	43.25
Relation	85.58	75.50

Figure Captions

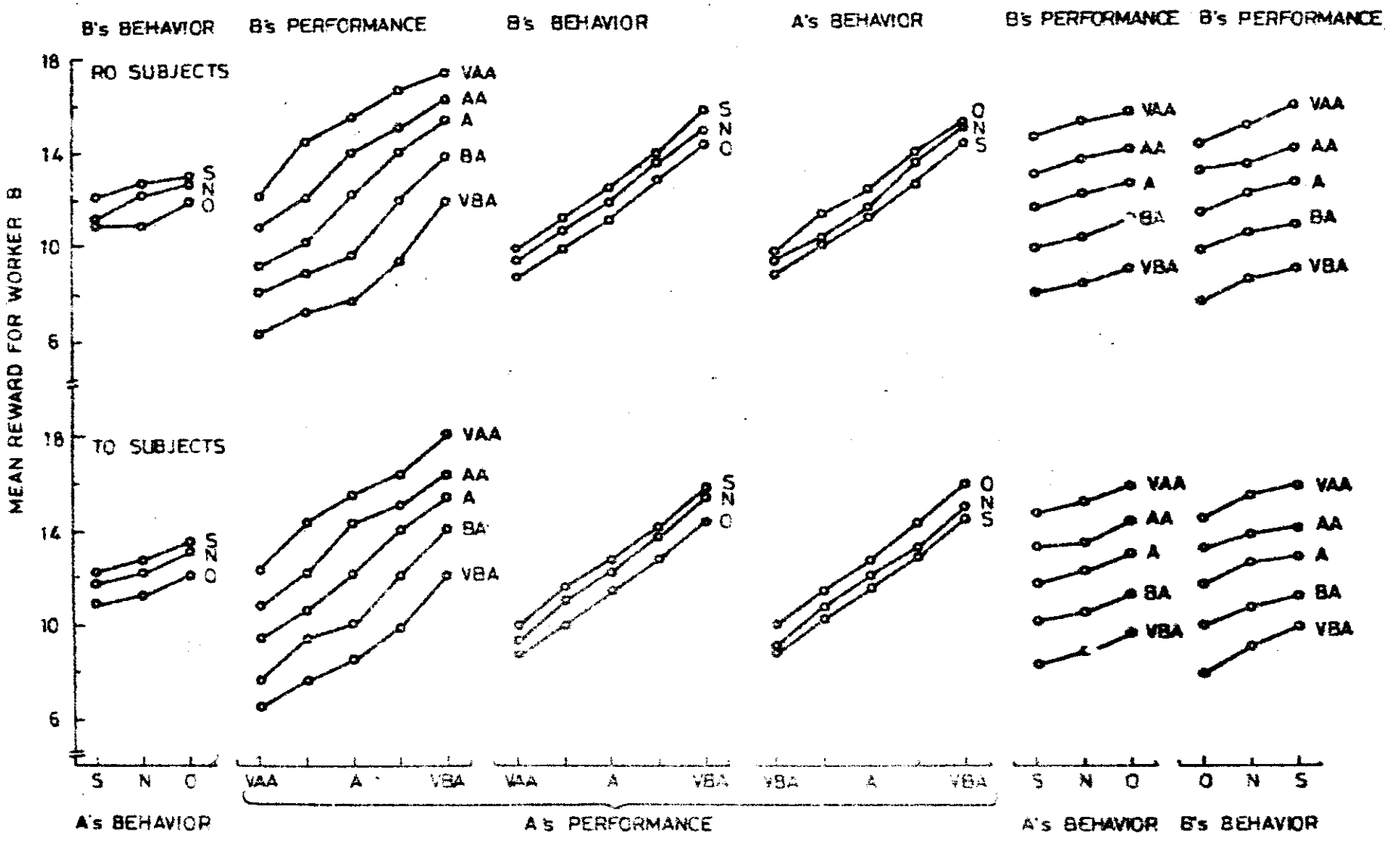
Figure 1. Mean reward for Worker B as a function of his behavior toward administration and performance and those of his Coworker A. Data of Experiment 1. (TO = Task-oriented, RO = Relation-oriented, O = Opposed, N = Neutral, S = Supportive, VBA = Very much below average, BA = Below average, A = Average, AV = Above average, VAA = Very much above average).

Figure 2. Mean reward for Worker B as a function of his behavior toward administration and performance and those of his Coworker A. Data from Experiment 2. (See Figure 1 caption for the definitions of the abbreviations used.)

Figure 3. Mean reward for Worker B as a function of his behavior and performance and those of his Coworker A. Data from Experiment 3. (AO = Ambivalence-oriented. See Figure 1 caption for the definitions of other abbreviations used.)

Figure 4. Mean reward for Worker B as a function of his behavior and performance and those of his Coworker A. Data from Experiment 4, Behavior x Performance Design. (See Figure 1 caption for the definitions of abbreviations used.)

Figure 5. Mean reward for Worker B as a function of his effort and performance and those of his Coworker A. Data from Experiment 4, Effort x Performance Design. (See Figure 1 caption for the definitions of abbreviations used.)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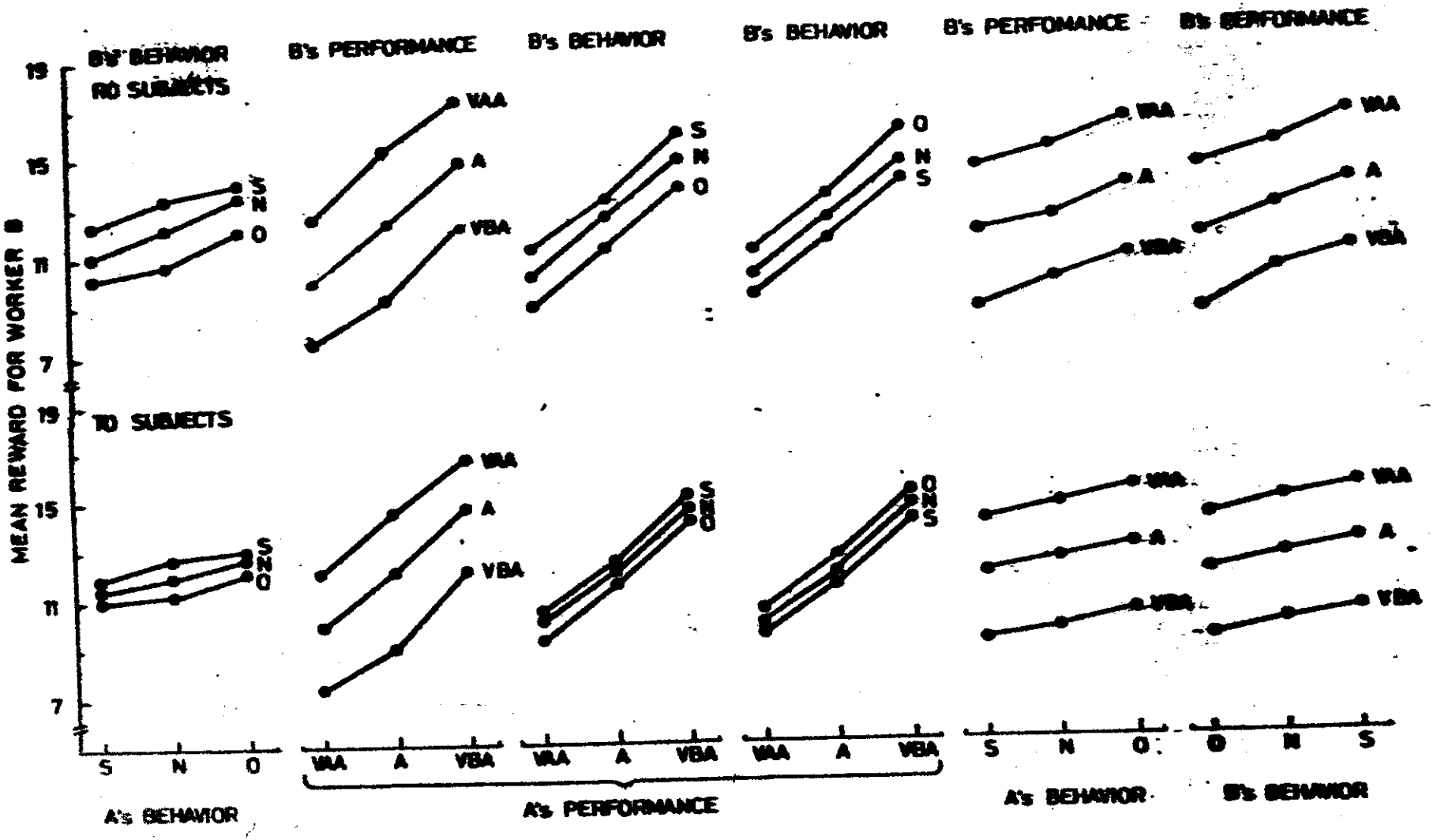
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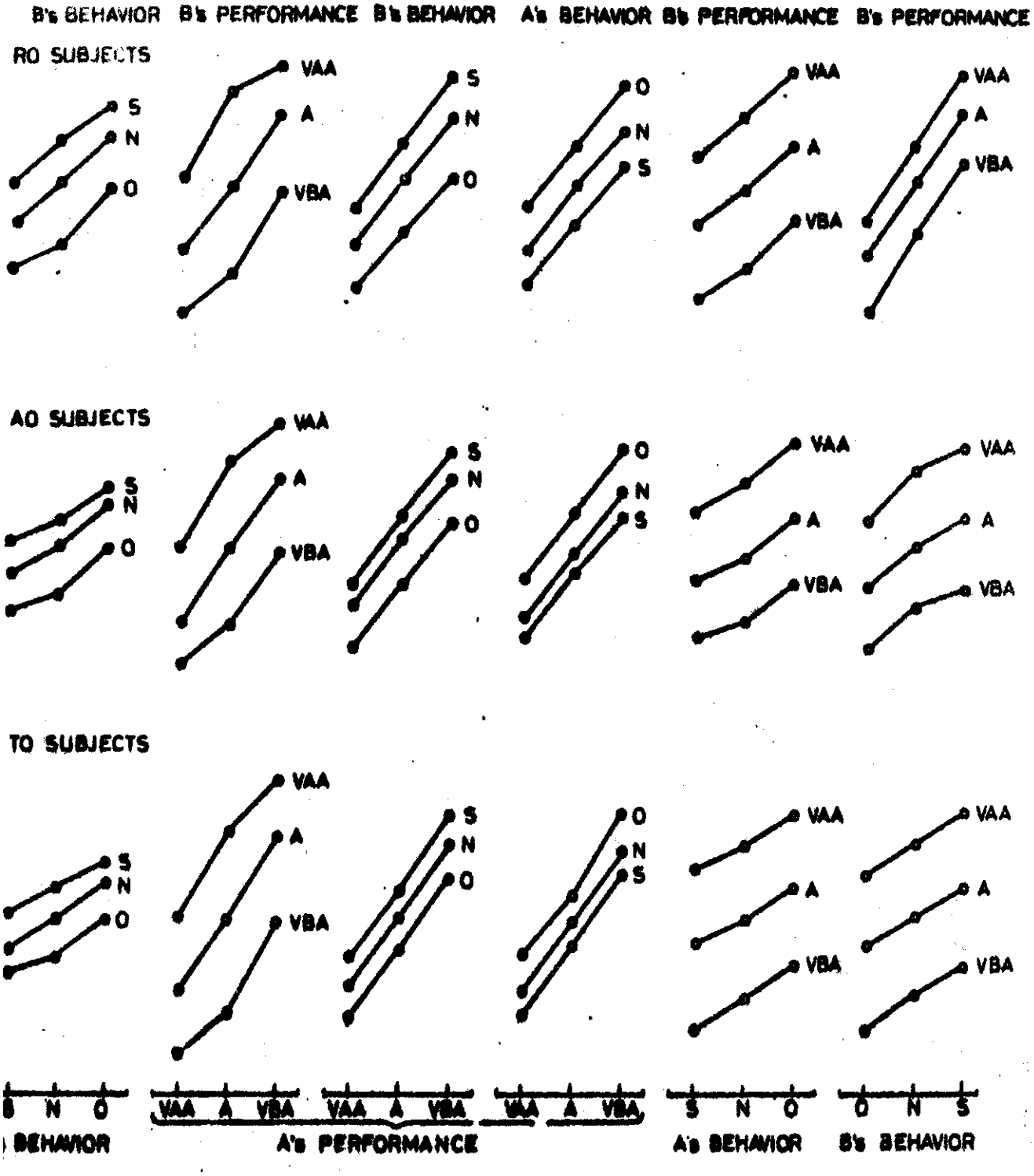
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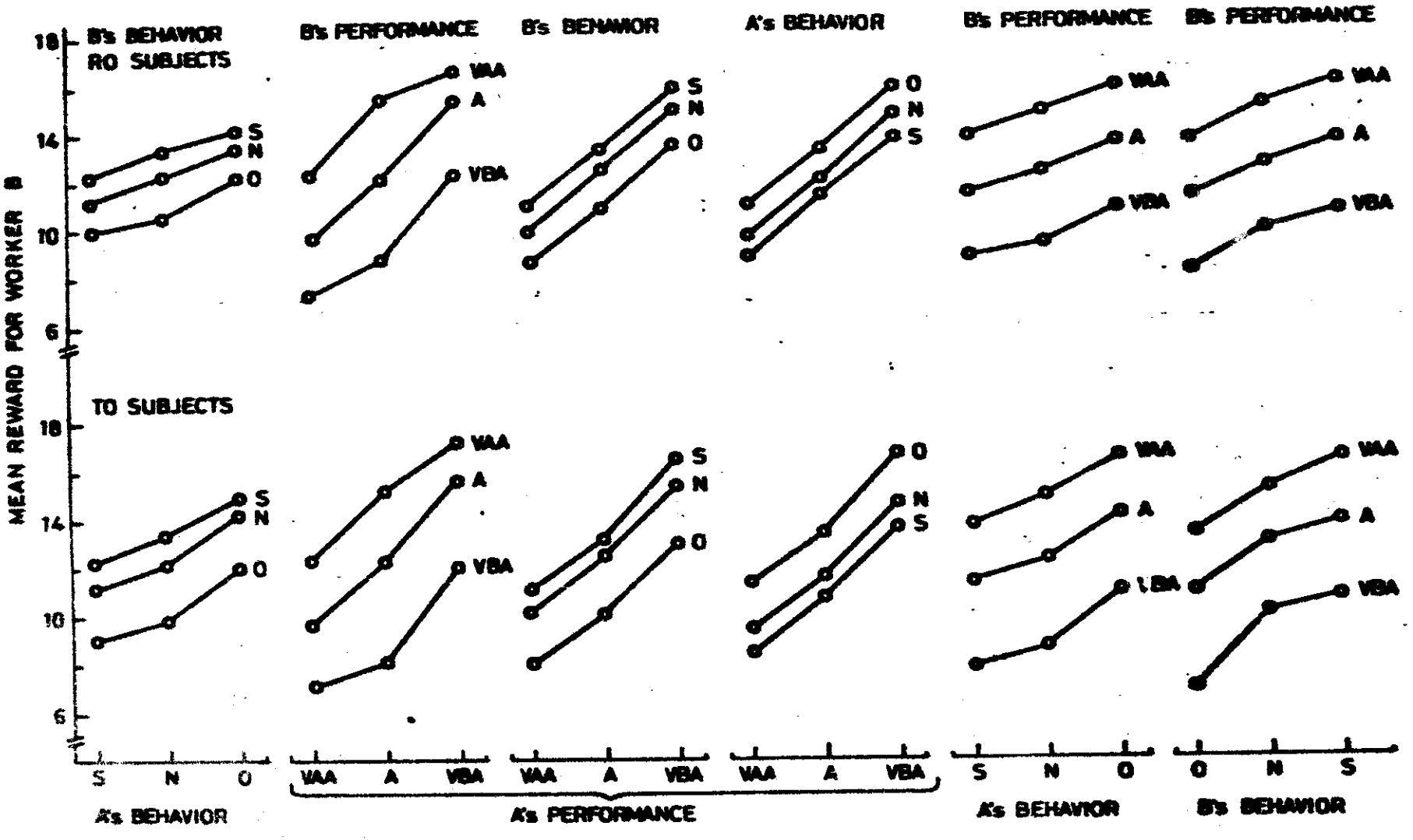
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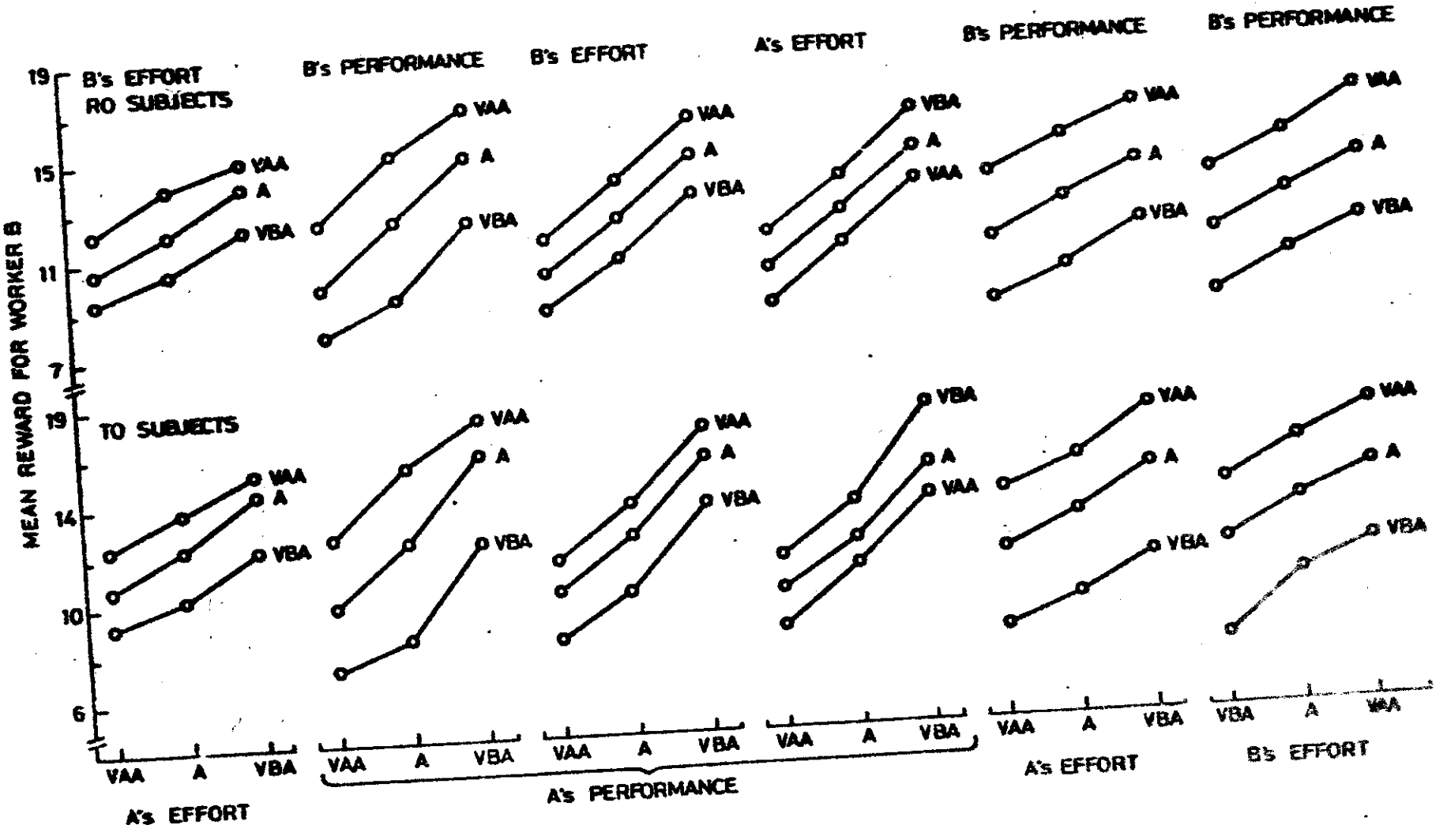
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