CHAPTER 5

GENERAL DISCUSSION

Developmental Differences

Integration Rules

The major purpose of the present research was to trace the developmental changes in prediction of life performance from information about motivation and ability of the stimulus persons. As already mentioned in the introduction, exam performance is predicted by postgraduate students according to an adding rule (Singh & Bhargava, Note 1) but life performance according to a multiplying rule (Singh & Bhargava, Note 2). Since the life performance task yeilded evidence for a multiplying rule, the present research employed subjects from various developmental group to determaine the level at which the multiplying process develops.

Results of Experiment 1 and 2 show that the multiplying process emerges very late in India. In Experiment 1, it was present only at the level of MBA students. Other five groups of subjects did not exhibit any sign of multiplying. Instead, they followed an averaging rule, just as the cultural difference hypothesis predicts (Gupta & Singh, 1981; Singh et al, 1979).

Experiment 2 studied a group of advanced undergraduate students. The results of this experiment suggested that there is a transition period in which an averaging rule is replaced by a multiplying one. That stage seems to be at the level of advanced undergraduate students, that is, around the age of 18-19 years. The present research has thus successfully demonstrated a developmental change in prediction of life performance. The theoretically predicted and often obtained multiplying rule in the United States is present in a group of postgraduate management students in India. This confirms the results reported by Singh and Bhargava (Note 2). Furthermore, subjects of other age groups follow an averaging rule in line with the cultural difference hypothesis.

The present demonstration of the development of multiplying from an averaging rule is novel in one respect. While most of the published literature take the position that multiplying evolves out of an adding rule, the present results as well as those of Surber (1980) suggest that multiplying develops from an averaging rule.

From this angle, the multiplying rule cannot be considered as reflective of a better cognitive development than the averaging rule. As Gupta and Sing (1981)

suggest, "... two data patterns - parallelism and linear fan - denote different causal conceptions and social philosophy and not necessarily the cognitive capacity (p. 823)".

Within Kelley's (1972) framework, the averaging and multiplying rules may be considered as representation of multiple sufficient and multiple necessary causal schemata (Kun & Weiner, 1973). The former implies that even one cause can produce performance and that motivation and ability are compensatory. The later implies that both are necessary to produce performance and absence of any-one would result in zero performance. This is similar to the point raised by Heider (1958). From attributional vantage, therefore, it can be said that school and under-graduate college students follow a multiple sufficient schema, whereas postgraduate students of management follow a multiple necessary causal schema.

Imputations

Much of the research performed within the framework of information integration theory has employed one-cue stimulus persons to make distinction between alternative rules of information integration. Singh (in press) argues that such single-cue tests are valid only when subjects do not infer anything about the missing

information. When they make imputations about the value of missing information, the diagnostic power of such tests becomes doubtful.

In a series of seven experiments on prediction of gift size from information about income and generosity of the stimulus person, Singh has already shown how imputations take place in cognitive algebra, how imputations blurr the distinguishing power of so called the critical tests, and how operations of imputations can be studied. Design of Experiment 1 was exactly patterned after that of Experiment 4 of Singh and Bhargava (Note 2). This design allows clear diagnosis between alternative rules and also determinations of imputations if any.

Results of Experiment 1 indicated developmental differences in imputations about missing information. When information about motivation alone was supplied, the missing ability cue was always assumed to be a single fixed value. This happened at the level of postgraduate students of management. Other groups of subjects did not make any imputation about the missing information. In their case, therefore, the single-cue curve always crossed over the curves based on more than one cue. On this basis of this result as well as those reported by Singh and Bhargava (Note 1), it seems reasonable to

state that imputations are made more at the level of post-graduate students than at the level of school and under-graduate students.

One objection against the present interpretation of the developmental changes in imputations can be made. Instead of interpreting this difference as function of age, one may take the position that imputations are linked with the rules people use. Imputations are restricted to situations where people follow multiplying rule (cf. Singh, in press). If this is so, the developmental differences in imputations could be explained by the rule one follows, and not the age of the subjects.

The available literature on cognitive algebra and imputations helps rule out the interpretation just made. Singh and Bhargava (Note 1) had used the same set of stimuli with first-year undergraduate students as well as postgraduate students of management in a study of prediction of exam performance. For this task, the first-year college students had followed an averaging rule but the postgraduate students had followed an adding rule. Nevertheless, imputations were made by the postgraduate students. This suggests that imputations are age-related and not rule-related.

Summary

In brief, it can be said that the multiplying rule evolves out of an averaging rule in India around the age of 20 years. The period at which such change begins appearing is around 18-19 years, but clear multiplying operation is evinced by the postgraduate students. Also, imputations about missing information develops fairly late in the present task. When information about one of the two causes is missing, school and first-year college students make no inference about the missing information. However, postgraduate students assume a single, fixed value for the missing information. Developmental differences thus occur at the level of both information integration and information processing.

Task Differences

Does Cognitive Algebra Reflect on Cognitive Capacity?

The position taken above is that it is not. A particular rule is used consistent with a particular causal schema. If the schema varies as a function of task, then people would be expected to exhibit adding, averaging, multiplying, and their combination depending upon which schema is prevalent in the group of respondents.

Singh and Bhargava (Note 1, Note 2) found that post-graduate students of management predict exam performance from information about motivation and ability by an adding rule but life performance by a multiplying rule. They, therefore, suggested that people have different causal schema for different tasks. So the same group of subjects may be expected to employ different rules.

Experiment 3 of the present research followed this logic further. Management students who had shown evidence for multiplying rule in prediction of life performance were asked to predit the performance of management trainees, a within-group member. Since people tend to behave in an egalitarian manner with members of their own group and egalitarian philosophy is analogous to the parallelism pattern in Motivation x Ability effect (Gupta & Singh, 1981; Singh 1981), it was predicted that both post-graduate students of management and professional managers would predict performance of a management trainee according to an adding rule. There was indeed a parallelism pattern in the Motivation x Ability effect for both postgraduate management students and professional managers. This confirms the hypothesis clearly. It is also notable that both students and managers followed the same rule and so the present result has high external validity (Singh, Note 3). This result along with the results of Singh and

Bhargava (Note 1) on exam performance and Singh and Bhargava (Note 2) on life performance suggest that cognitive algebra really varies with the nature of the task.

Does the hypothesis of task-difference raised above imply that variations in cognitive algebra would be found at each level of development? The answer seems to be no. The same group of first year college students had predicted both exam performance (Singh & Bhargava, Note 1) and life performance (Singh & Bhargava, Note 2) by the averaging rule. This indicates that there is perhaps an interaction between age and task. The group which is able to follow multiplying can shift the integration process to an adding or an averaging rule, if the schemata so demand. But the group which has not developed a multiple necessary causal schema would tend to handle all tasks in the same way. The most frequently used strategy seems to be the averaging rule. This hypothesis of Age x Task interaction can possibly account for much of the inconsistency in cognitive algebra (Anderson & Butzin, 1974; Anderson & Cuneo, 1978; Surber, 1980, 1981b; Wilkening, 1979, 1981).

It should be emphasized that shifts from multiplying to adding rule should not be interpreted as task-

simplification (Anderson & Butzin, 1974; Graesser & Anderson, 1974; Gupta & Singh, 1981; Shanteau & Anderson, 1972). The same group of subjects who followed an adding rule for combination of motivation, ability, and luck factors followed multiplying for Ability x Probability of performance effect. Accordingly, it may be stated that parallelism and linear fan pattern are reflective of true causal schemata consistent with the practices in society.

Summary

There seems to be an interaction effect of age and task on cognitive algebra. The postgraduate students who follow multiplying in prediction of life performance adopted an adding rule in prediction of exam performance as well as managerial performance. This did not happen at the level of the first-year of college students. Fluctuations in rule thus occur more at the level of post-graduate than undergraduate students. Such fluctuations, it should be emphasized, reflect on prevalent causal schemata and not task simplification.

Status of the Cultural Difference Hypothesis

The results of present research have important implications for the cultural-difference hypothesis. According to Gupta and Singh (1981) and Singh et al (1979), Indian and American college students differ in their outlook on how motivation and ability determine performance. American follow multiplying rule; Indian follow an averaging rule.

This cultural-difference hypothesis was originally based on data from undergraduate college students and school students. Even though the present research used a different task, the results are identical with those of Gupta and Singh (1981) and Singh et al (1979) up to the level of undergraduate students. This confirms the cultural difference hypothesis.

Surber (1981a), who obtained results similar to those of Gupta and Singh (1981) and Singh et al (1979), proposed that task difficulty can account for the failure of linear fan pattern in Motivation x Ability effect She also demonstrated that Motivation x Ability effect yields converging, parallel, and diverging pattern when exam is described as easy, moderately difficult, and extremely difficult. She, therefore, suggested task difficulty as an alternative to the cultural-difference hypothesis.

In a series of experiments on prediction of exam performance (Singh & Bhargava, Note 1), no evidence for linear fan pattern was obtained even when difficulty of task was experimentally manipulated. In the second series of four experiments on prediction of life performance (Singh & Bhargava, Note 2), opportunity available to the stimulus persons was manipulated as difficulty of task. This manipulation did not yield result consistent with the hypothesis proposed by Surber (1981a) either. In fact, the linear fan pattern was strongest when opportunity available to the stimulus persons was described as all. Experiment 2 of the present research had manipulation of opportunity too. However, the factorial plot of the Motivation x Ability effect on life performance did not change as a function of opportunity available to the stimulus persons. Considered together, results from these studies provide clear refutation of the task-difficulty explanation favoured by Surber (1981a, 1981b). As far as undergraduate students from India and the United States are concerned, they still seem to differ in their outlook on how motivation and ability determine performance.

Gupta and Singh (1981) called attention to the point that result of difference between Indian and American students is based on a very narrow cultural group of

college students. Moreover, parallelism and linear fan pattern are not necessarily restricted to India and the United States. In each country, there would be some groups who would follow parallelism and somewho would follow linear fan pattern. The present result bears upon the suggestion by Gupta and Singh (1981). In India, management students indeed follow multiplying rule when they predict life performance. No less important, they also use an adding rule if the task so demands. This means that prediction of performance depends upon backgrounds of the subjects (e.g. age, culture) as well as the nature of the task.

Summary

The original idea for a cultural difference between Indian and American students on how motivation and ability determine performance is still tenable. Undergraduate college students tend to adopt an averaging rule in predition of exam as well as life performance. Postgraduate students, however, follow both rules depending upon the nature of task. The hypothesis of task-difficulty does not seem to be applicable in India. Accordingly, it may be said that cognitive algebra underlying prediction of performance depends upon age, culture of the subjects, and nature of the task.

Further Work

Task Differences

Results of the present research indicate that cognitive algebra depends upon the nature of the task. The tasks that have been used to study the averaging-multiplying controversy in prediction of performance have been restricted to performance in exam (Gupta & Singh, 1981; Surber, 1980, 1981a, 1981b; Singh et al, 1979; Singh & Bhargava, Note 1), life (Singh & Bhargava, Note 2), puzzle and athelete contest (Anderson & Butzin, 1974; Kun et al, 1974), and on job.

To provide a solid test of the hypothesis of nature of task, it is now necessary to study other tasks. For example, judgement of area from height and width (Anderson & Cuneo, 1978; Wilkening 1980, 1981), performance on puzzles, games and sports from motivation and ability (Anderson & Butzin, 1974; Kun et al, 1974; Suber 1980) and distance from time and velocity (Wilkening, 1981) tasks where multiplying rule have been noted at quite early age in the western cultures. Direct comparison with respect to these tasks would provide clear evidence on whether multiplying rule really develops late in India as the present results of life performance suggest.

Status of Stimulus Person

The discrepency between the results obtained in Experiment 1 and 3 was accountable by the status of the stimulus person. Postgraduate students predicted life performance of high school students by a multiplying rule but performance of management trainees by an adding rule. The adding type rule was hypothesized on the basis of similarity between the status of the stimulus person and the subjects. If this ingroup-outgroup interpretation has any merit, further study of prediction of performance of technicians, supervisors, managers and so on would be expected to yield different results from the same group of managerial subjects. More specifically, they should predict performance of their subordinates according to a multiplying rule but of a manager according to an adding rule.

Vroom (1964) has proposed that job performance should be a multiplicative function of motivation and ability. The result of an adding rule for management trainees in Experiment 3 thus calls attention to a need for more detailed study of prediction of job performance by managers. Such a work would have applied implications for management of human resources (Pareek & Rao, 1981), for expectancy of boss actually determines performance of his subordinates (Livingston, 1969).

Problems of Imputations

Most of the work on cognitive algebra in India has studied imputations at the level of adults. The present result also shows that imputations are made only at the adult level. Imputations provide direct clue as to how the missing information is handled, and we do encounter many problems of missing information in our daily life. Results of the present study indicate that it is possible to study precise imputations within the framework of information integration theory. Accordingly, detailed study of imputations in social cognition deserves further work.

In a study of deserved punishment from information about intention and consequence of action of actors, Leon (1980) found evidence for imputations even with young children. If a similar task is used with children in India, it would be possible to take clear position with respect to developmental and cross-cultural differences in imputations in social cognition.

Concluding Comments

In his review of the status of developmental psychology in India, Parameswaran (1972) laments that most of the studies of developmental processes have been confined

to just the survey methods. They all have "loosely designed methods" and "badly selected samples". Also, discussion of the data is quite vague in most of the published literature. In fact, all studies lack any developmental focus. They are not based on any specific theoretical model either. The second review of literature on developmental processes by Anandalakshmy (1980) hardly shows any noticeable improvement.

Singh and his associates (Gupta & Singh, 1981; Singh, 1982; Singh & Bhargava, Note 1; Singh, Sidana, & Saluja, 1978a, 1978b; Singh, Sidana, & Srivastava, 1978) have recently applied information integration theory to the study of children's cognition. These studies deal with multiple causation, that is, how various causes, facilitative as well as inhibiting, are perceived to operate in any event. Results from these experimental studies have clearly shown that children have a good matric sense, that they are able to utilize more than one piece of information, and that their judgments indeed obey algebraic rules. The present research was also performed within the same paradigm. Results reported here further illustrate that information integration theory can indeed provide a penetrating approach to develop ~~experi-~~ mental changes in social cognition.

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APPENDICES

APPENDIX A

Instructions: Experiment 1

In this exercise, I am going to present information about 37 students of Standard X. They have been drawn randomly from a quite large population of students. Naturally they vary widely with respect to some of the characteristics which make one successful in life.

You will receive 2 types of information about each student. One type of information would indicate how motivated is the student. Motivation means how vigorously that student tries on any assigned task or work. This information is obtained from 1-4 teachers of each student. These teachers had known the students for at least 5 years. The teacher indicated his opinion of the student's motivation (effort on any assigned task) using labels Extremely low, Very much below average, Below average, Average, Above average, Very much above average, and Extremely high. Please note that teacher of each student is not the same. Also treat opinions of each teachers as equally important and valid information about student's motivation.

The second type of information indicates the intellectual capacity of the student. This information is obtained from 1 teacher. Each teacher indicated his opinion of the student's intelligence along a 7-point scale: Extremely low, Very much below average, Below average, Average, Above average, Very much above average, and Extremely high.

The third type of information indicates how much opportunity for growth is available to each student. The available opportunity will range from Not at all, Very very low, A little bit of, Some, A moderate amount of, Fairly much, A good deal of, A great deal of, and All. This information was obtained from a teacher with complete knowledge of student's family and other conditions. Opportunity for growth depends upon socio-economic conditions, physical, social and educational facilities, and scope for doing whatever one wishes to do. Teachers were, therefore, asked to indicate their assessment of opportunity available for growth of each student along the above-mentioned 9-point verbal scale. All the 37 students selected for this study have all the opportunity available for doing well in their life. You will, therefore, pay careful attention to their two internal characteristics of motivation and intellectual capacity while predicting level of life performance of each student.

Inspite of our best attempts, we could not always get information from all the four teachers about the motivation of each student. In some cases, you will thus get information from 3, 2, or 1 teacher. In a few cases, motivation information will not be available at all. Similarly, in a few cases, information about ability will also

be absent. With these cases, you will act on the basis of whatever information is available about him.

Knowing motivation and intellectual capacity of the student with all opportunity available to him, you have to predict how well the described student would perform in his life. That is, how high he would go in his life. (We assume that each student would go to some profession. By life performance we mean performance in a profession only.) Your prediction of his life performance will be made along a 21-step ladder scale. This scale begins with 1 and ends with 21. 1 means he would remain at the bottom; 21 means he would reach the peak. Other numbers denote performance of different magnitude. For each student, you have to predict the level of his life performance. (We assume that effort on task and intelligence will remain at the same level throughout his life.) Because these students vary widely in effort and intellectual capacity, I urge you to make predictions as precisely as possible.

To make you familiar with the nature of the task and the use of response scale, I will give 12 practice examples. Please work with all the 12 examples one by one, and try to understand the task. It is extremely important that you understand the task fully. If there is any question, please feel free to ask.

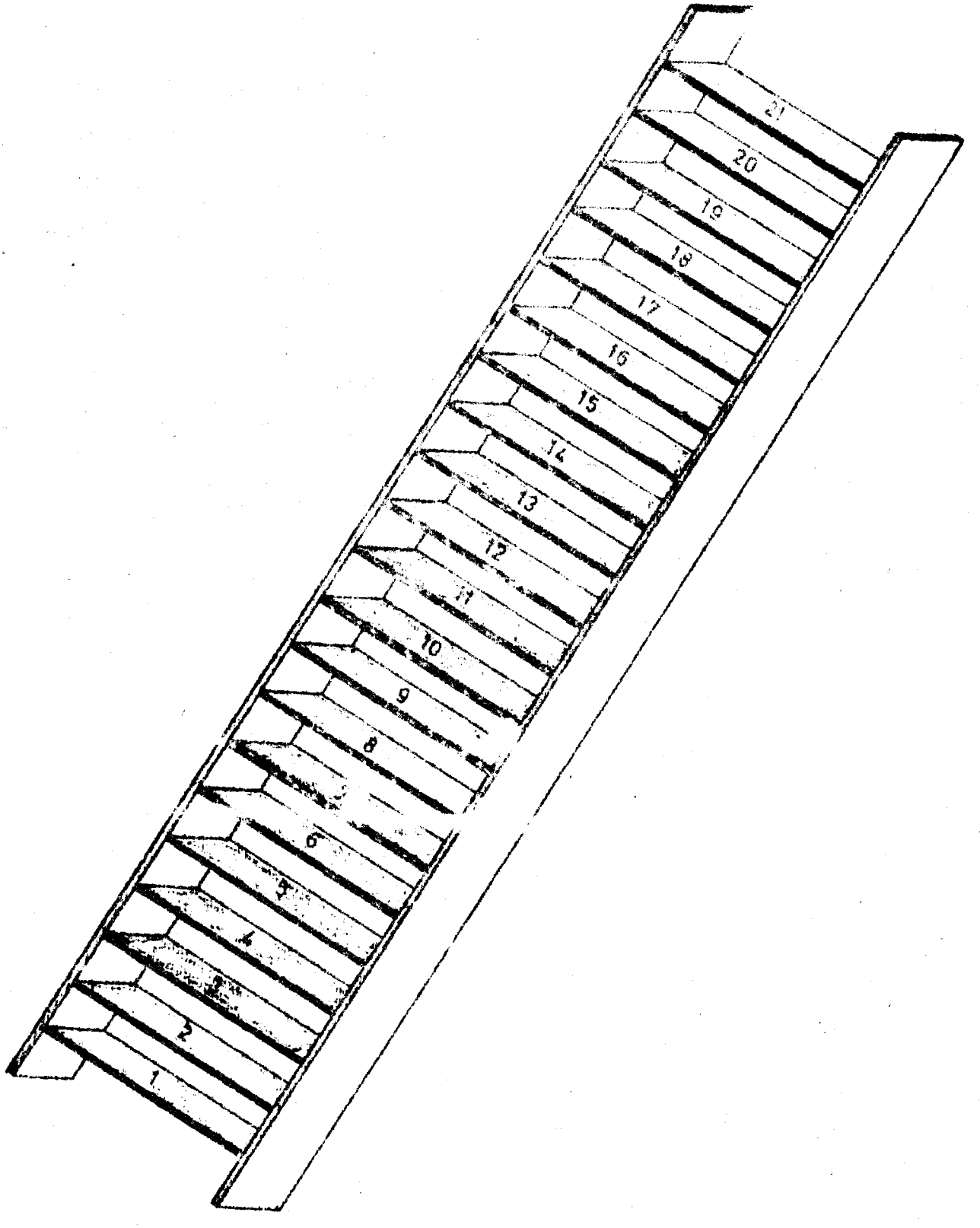
After the practice period, I will give you this pack of 37 cards. Rate all the 37 cards one by one. Enter the Code (No. 1-37) in the first column of the Response Sheet and your prediction of his life performance in the second column. Once you rate all the 37 cards, shuffle them thoroughly and rate them for the second time. Please repeat it for the third time also. This means you will really be making 111 judgments.

Please take the task seriously and extend your best cooperation.

Thank you.

APPENDIX E

Response Scale



APPENDIX C

Table 6

Summary of 6 x 3 x 2 x 3 x 3 (Developmental Groups x Trials x Number of Average Motivation Information x Motivation x Ability) Analysis of Variance on Prediction of Life Performance: Experiment 1

Source	SS	df	MS	F
Between-Subjects				
A: Developmental Groups	3937.34	5	787.47	6.02**
Subjects within groups	18042.15	138	130.74	
Within-Subjects				
B: Trials	1.43	2	0.71	0.08
A x B	92.77	10	9.28	0.99
B x Subjects within groups	2597.98	276	9.41	
C: Number of Average Motivation Information	705.99	1	705.99	41.16**
A x C	356.49	5	71.30	4.16**
C x Subjects within groups	2367.16	138	17.15	
D: Motivation	31211.53	2	15605.77	795.56**
A x D	615.37	10	61.54	3.14**
D x Subjects within groups	5413.95	276	19.62	
E: Ability	52448.12	2	26224.06	813.17**
A x E	1679.94	10	167.99	5.21**
E x Subjects within groups	8900.70	276	32.25	

Source	SS	df	MS	F
B x C	15.96	2	7.98	1.29
A x B x C	70.42	10	9.04	1.34
B x C x Subjects within groups	1709.14	276	6.19	
B x D	12.41	4	3.10	0.61
A x B x D	48.10	20	2.40	0.48
B x D x Subjects within groups	2788.83	552	5.05	
B x E	47.53	4	11.88	2.24
A x B x E	123.25	20	6.16	1.16
B x E x Subjects within groups	2927.67	552	5.30	
C x D	3777.26	2	1888.63	178.37**
A x C x D	162.87	10	16.29	1.54
C x D x Subjects within groups	2922.33	276	10.59	
C x E	1110.73	2	555.36	59.64**
A x C x E	420.96	10	42.10	4.52**
C x E x Subjects within groups	2570.14	276	9.32	
D x E	246.69	4	61.67	6.42**
A x D x E	284.34	20	14.22	1.48
D x E x Subjects within groups	5300.83	552	9.60	
B x C x D	34.53	4	8.63	1.02
A x B x C x D	92.18	20	4.61	0.97
B x C x D x Subjects within groups	2612.77	552	4.73	

Source	SS	df	MS	F
B x C x E	18.93	4	4.73	1.14
A x B x C x E	119.05	20	5.95	1.40
B x C x E x Subjects within groups	2344.61	552	4.25	
B x D x E	45.86	8	5.73	1.29
A x B x D x E	171.01	40	4.27	0.96
B x D x E x Subjects within groups	4910.26	1104	4.45	
C x D x E	618.87	4	154.52	19.20**
A x C x D x E	337.41	20	16.87	2.09**
C x D x E x Subjects within groups	4448.60	552	8.06	
B x C x D x E	81.47	8	7.68	1.69
A x B x C x D x E	179.95	40	4.50	0.99
B x C x D x E x Subjects within groups	5010.21	1104	4.54	

* $p < .05$

** $p < .01$

APPENDIX D

Table 7

Summary of 6 x 3 x 2 x 3 x 3 (Developmental Groups x Trials x Number of Isovalant Motivation Information x Motivation x Ability) Analysis of Variance on Prediction of Life Performance: Experiment 1

Source	SS	df	MS	F
Between-Subjects				
A: Developmental Groups	3441.43	5	688.28	6.46**
Subjects within groups	14710.65	138	106.60	
Within-subjects				
B: Trials	9.67	2	4.83	0.69
A x B	103.54	10	10.35	1.48
B x Subjects within groups	1929.92	276	6.99	
C: Number of Isovalent Motivation Information	1016.94	1	1016.95	71.48**
A x C	181.18	5	36.24	2.55**
C x Subjects within groups	1963.13	138	14.23	
D: Motivation	90795.05	2	45397.52	1388.73**
A x D	116.63	10	116.86	3.57**
D x Subjects within groups	9022.57	276	32.69	

Source	SS	df	MS	F
E: Ability	62727.00	2	31363.50	963.37**
A x E	1368.38	10	136.84	4.20**
E x Subjects within groups	8985.40	276	32.56	
B x C	2.30	2	1.15	0.23
A x B x C	53.43	10	5.34	1.08
B x Cx Subjects within groups	1370.24	276	4.97	
B x D	10.38	4	2.59	0.49
A x B x D	76.41	20	3.82	0.72
B x D x Subjects within groups	2936.86	552	5.32	
B x E	12.74	4	3.18	0.57
A x B x E	156.24	20	7.81	1.40
B x E x Subjects within groups	3072.06	552	5.56	
C x D	4020.64	2	2010.32	165.27**
A x C x D	198.30	10	19.83	1.63
C x D x Subjects within groups	3357.27	276	12.16	
C x E	147.31	2	73.66	7.90**
A x C x E	401.88	10	40.19	4.31**
CxE x Subjects within groups	2573.12	276	9.32	
D x E	1197.86	4	299.46	24.15*
A x D x E	819.20	20	40.96	3.30*
D x E x Subjects within groups	6845.61	552	12.40	

Source	SS	df	MS	F
B x C x D	56.28	4	14.07	2.81*
A x B x C x D	71.95	20	3.60	0.72
B x C x D x Subjects within groups	2766.55	552	5.01	
B x C x E	21.81	4	5.45	1.13
A x B x C x E	138.02	20	6.90	1.43
B x C x E x Subjects within groups	2665.42	552	4.83	
B x D x E	25.97	8	3.25	0.69
A x B x D x E	184.06	40	4.60	0.98
B x D x E x Subjects within groups	5206.05	1104	4.72	
C x D x E	72.47	4	18.12	2.38*
A x C x D x E	261.83	20	13.09	1.72*
C x D x E x Subjects within groups	4193.52	552	7.60	
B x C x D x E	32.59	8	4.07	0.98
A x B x C x D x E	163.09	40	4.08	0.98
B x C x D x E x Subjects within groups	4568.77	1104	4.13	

* $p < .05$

** $p < .01$

APPENDIX E

Instructions: Experiment 2

In this experiment, I am going to present information about some boy students of Standard X. They have been drawn randomly from a quite large population of boy students. Naturally they vary widely with respect to some of the characteristics which make one successful in life.

You will receive 3 types of information about each student. One type of information would indicate how much effort the student puts in. Effort on task means how vigorously that student tries on any assigned task or work. This information is obtained from one teacher of each student. The teacher indicated his opinion of the student's effort on any assigned task using labels Never, Very rarely, Once in a while, Sometimes, Quite often, Very often, and Always. You have to consider opinion of the teacher as valid information about the trying habit of each student.

The second type of information indicates the intellectual capacity of the student. This information is obtained from 1 teacher who knew each student quite well. The teacher indicated his opinion of the student's intelligence along a 7-point scale: Extremely low, Very much below average, Below average, Average, Above average, Very much above average, and Extremely high. You have to con-

sider opinion of the teacher as valid information in forming your judgment of student's intelligence.

The third type of information indicates how much opportunity for growth is available to each student. The available opportunity will range from Very very low, A little bit of, Some, A moderate amount of, Fairly much, A great deal of, and All. This information is obtained from a teacher who had known student's family quite well.

Knowing effort on task and intelligence of the student as well as opportunity available to him, you have to predict how well the described student would perform in his life. That is, how high he would go in life. (We assume that each student would go to some profession. By life performance we mean performance in profession only.) Your prediction of his life performance will be made along a 21-step ladder scale. This scale begins with 1 and ends with 21. 1 means he would remain at the bottom; 21 means he would reach the peak. Other numbers denote performance of different magnitude. For each student, you have to predict the level of his life performance. (We assume that effort on task and intelligence will remain at the same level throughout his life.)

To make you familiar with the nature of the task and the use of response scale, I will give 10 practice examples. Please work with all the 10 examples one by one, and try to understand the task. It is extremely important that you understand the task fully. If there is any question, please feel free to ask.

After the practice period, I will give you this pack of 36 cards. Go through all the cards to familiarize yourself with the characteristics of target student and then shuffle the cards thoroughly. Rate all the 36 cards one by one. Enter the Code No. in the first column of the Record Sheet and your prediction of his life performance in the second column. Once you rate all the 36 cards, shuffle all the cards thoroughly and go to the second Record Sheet. Rate the cards for the second time. This means you will really be making 72 judgments.

Please take the task seriously and extend your best cooperation.

Thank you.

APPENDIX F

Instructions: Experiment 3

In this decision-making task, we are going to present information about some management trainess of an organization. They have randomly been drawn from different departments/units (i.e., Personnel, Marketing, Finance and Accounting, Production, Material) of a large organization. Naturally they vary widely with respect to some of the characteristics which make one a successful manager.

You will receive 4 types of information about each trainee. One type of information indicates what has been his motivation for doing well in his respective field of work. Motivation means his willingness to do well; how sincerely and vigorously he has been trying to complete his job or task; how much effort he has been putting in. This information is obtained by considering the opinion of 2 bosses who supervised him recently. Please note that bosses are not the same for each trainee. The assessment of trainee's motivation will be presented along a scale of Extremely low, Very much below average, Below average, Average, Above average, Very much above average, and Extremely high. Please consider the assessment of motivation as an objective and valid index of each trainee's motivation.

The second type of information indicates the ability (capability, intelligence) of the trainee. This information is also obtained in the same way as motivation. Information about ability will also be presented along the same 7-point verbal scale of Extremely low, Very much below average, Below average, Average, Above average, Very much above average, and Extremely high. Please consider the assessment of ability as an objective and valid index of trainee's capability.

The third type of information indicates the luck (fortune) of the trainee. Luck means casual happenings of events in good or bad manner by chance. To determine how lucky a trainee has been in his life, each trainee was requested to recollect 100 unexpected events of his life. On the basis of the numbers of positive and negative outcomes of those unexpected events, each trainee was adjudged as unlucky or lucky. How lucky (fortunate) is a person will be described along a 7-point verbal scale of Extremely unlucky, Very unlucky, Unlucky, Neither unlucky nor lucky, Lucky, Very lucky, and Extremely lucky. Please consider this index of luck as reliable and authentic description of each trainee's luck or fortune.

The fourth type of information indicates the probability (chance) of success in the department of a trainee.

Probability of success refers to what are the chances of having success in the managerial cadre of the department. Probability of success in a department depends upon a number of characteristics of the department, namely, cohesiveness, task difficulty and clarity, support of bosses, cooperation from subordinates, etc. Considering such aspects of each department, an index of probability of success in that department has been worked out. Probability of success in managerial cadre of a department will thus vary from 0 to 1. For present purpose, please consider the estimate of probability of success as highly accurate.

This exercise requires you to look at the record of each trainee (i.e., his motivation, his capability, and his luck) as well as at the probability of success in his department and to predict what would be his performance as a manager. Please note that these trainees will be absorbed in the regular managerial cadre shortly. Your expectations from each of the trainees is thus required. Your expectation of each trainee will be expressed along a 21-step ladder scale. It begins with 1 and ends with 21. The bottom step means that the trainee will have low success as a manager; the top most step of 21 means that you expect him to be a great success. Other steps represent intermediate levels of performance as manager. You

will be choosing one of these 21 numbers to indicate your expectation of each trainee's performance as a manager. Since trainees vary widely in their motivation, ability and luck as well as in the probability of success associated with his department, it is quite natural to use numbers from the entire scale of 1-21 to indicate their performance as managers. I urge you to judge them as precisely as possible.

To make you familiar with the nature of the task and the use of response scale, I will give you 15 practice examples. Please work with all the 15 practice examples one by one, and try to understand the task. It is extremely important that you understand the task fully. If there is any question, please feel free to ask.

After practice, I will give this deck of 90 cards. These cards have numbers between 1-90 written on the top right corner as their code number. You will rate all the 90 cards one by one. Please enter the code number of the trainee in the first column of the Response Sheet and your expectation from him as manager in the second column. Once you rate all the 90 cards, please shuffle them thoroughly and rate them for the second time also. This means you will really be judging 180 trainees. We

are interested in your intuitive natural reaction to these persons. It is, therefore, necessary that you act in spontaneous way.

Please take the task seriously and extend your best cooperation. Your genuine cooperation will have great scientific and management implications.

Thank you very much.

A

VITA

June 1983

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