ABSTRACT

ACHIEVEMENT JUDGMENTS BY SCHOOL TEACHERS: AN INFORMATION INTEGRATION ANALYSIS. Supervisor: Ramadhar Singh.

The present research applied information integration theory to achievement judgments by school teachers. School teachers contribute directly to the development of human resources in any society. A study of their causal conception of what makes the student successful, therefore, has a great practical interest. It is surprising, however, that Anderson's two volumes, Foundations of information integration theory (1981) and Methods of information integration theory (1982) mention no study of cognitive algebra of school teachers. Since cognitive algebra reflects on the process underlying judgment, the present dissertation reports how school teachers process and integrate information about motivation and ability of students in prediction of their performance.

It is commonly believed that motivation multiplies ability (Heider, F. (1958). The psychology of interpersonal relations. New York: Wiley). If multiplying rule is true, then factorial plot of the Motivation x Ability effect should yield a linear fan pattern. Twelve reports on prediction of
performance from information about motivation and ability are currently available. Some studies obtained evidence for the multiplying rule (linear fan pattern); others obtained evidence for the adding and averaging rules (parallelism pattern). Three hypotheses have been suggested to account for the use of different rules in prediction of performance.


The present research tested a new hypothesis that role people play in their life determines their causal schema. The basis of this hypothesis was the role theory Sarbin, T.R., & Allen, V.L. (1968/1975). Role theory. In G. Lindzey & E. Aronson. The handbook of social psychology. (Vol. 1, pp. 488-567). New Delhi: Amerind Publishing. Since there is no study of cognitive algebra of school teachers and teaching represents an important occupational role, the hypothesis was tested with teachers of Kendriya Vidyalaya of the Delhi region.
A series of four experiments were performed. Experiment 1 \((n = 60)\) paired number of average motivation information with ability and asked school teachers to predict exam performance of so-described students. Descriptions were also generated by varying number of pieces of information about motivation. These manipulations were made to distinguish between alternative rules. Results indicated that teachers averaged information about motivation and ability of the students when they predicted their performance in exam. The manipulations of set-size of motivation information and missing information yielded negative results. Set-size effect was not present with teachers. They did not make any imputation about missing motivation or ability information when they were asked to predict performance on the basis of motivation alone or ability alone.

Experiment 2 \((n = 60)\) was a further check on the generality of the absence of set-size effect and imputation, using non-academic competitive situations. Subjects made prediction about performance of 10-year-olds in a puzzle solving, vocal music, or drawing-painting competition. This experiment found evidence for a small set-size effect and that was restricted to positive information only. Again, there was no evidence for any imputation about missing motivation information. The results confirmed the averaging hypothesis.
Experiment 3 (n = 36) and 4 (n = 32) studied prediction of life performance, a task which has been found to obey the multiplying rule. In Experiment 3, information about motivation and ability as well as reliability of two types of information were manipulated experimentally. The factorial plot of the Motivation x Ability effect showed divergence. According to the multiplying rule, the divergence should be concentrated in the Linear x Linear trend. However, statistical analyses disclosed higher order trends. This questioned the multiplying rule for prediction of life performance. Manipulation of reliability of ability information indicated further evidence for the averaging rule: As the reliability of ability information increased, the effectiveness of motivation information decreased. There were two other notable findings. First, reliability of motivation information was effective only when motivation information was positive. Second, teachers seemed to have non-zero initial opinion about ability.

Experiment 4 used the logic of two-operation model Singh, R. (in press). Two problems in cognitive algebra: Imputations and averaging-versus-multiplying, In N.H. Anderson (Ed.), Contributions to information integration theory. New York: Academic Press. The main design had three pieces of motivation information paired with one piece of
information about ability. The secondary designs had each of the three pieces of information about motivation paired with the very ability information. Both the multiplying and differential weight averaging rule predicted a linear fan pattern in the Motivation x Ability effect. The critical test between the two rules came from the steepness of slope of the four-cue and two-cue curves. According to the multiplying model, the two-cue and four-cue curves should form a common linear fan pattern. But if the averaging rule is true, then two-cue curve should have steeper slope than the four-cue curve. Data of Experiment 4 supported the prediction of the differential-weight averaging model but refuted the multiplying model. This experiment also yielded evidence against imputation about missing information in prediction of life performance.

Considered together, the findings of the present series of four experiments on prediction of task performance by teachers disclose the following features of information integration and information processing:

1. School teachers average information about motivation and ability when they predict performance of school students. The same averaging rule is used in all task conditions. Such a consistent evidence for averaging rule lends support to the main
hypothesis of the present research that occupational role determines causal schema about how motivation and ability determine performance.

2. Number of pieces of motivation information matters in prediction of performance only when information is positive.

3. Ability information is more effective when it comes from a source of high than low reliability. This implies that teachers have an initial opinion of ability.

4. Although the set-size and reliability of motivation information had negligible or weak effect, there were indications for a positivity bias in teachers. Both factors had produced an effect at the level of positive information.

5. When needed information is not available for judgment, it is natural for the subject to infer some value of information. Experiments 1, 2, and 4 clearly showed that teachers make no imputation about the missing information.

6. Nature of task affects weighting pattern and not the integration rule. Exam and competition tasks invoke equal weighting of information, whereas life performance tasks cause differential weighting.
Implications of the above results were discussed for the hypotheses of cultural difference, task difficulty, nature of task, and role of subjects. Suggestions for further research were also offered. It was especially emphasized that information integration theory provides an analytic framework for further study of social cognition of school teachers.