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**DEVELOPMENTAL TRENDS
IN
PREDICTION OF LIFE PERFORMANCE**

**A THESIS
Submitted
to
GUJARAT UNIVERSITY
for
THE DEGREE OF DOCTOR OF PHILOSOPHY
in
PSYCHOLOGY
by
SHIVGANESH BHARGAVA**

**Under the Supervision of
DR. RAMADHAR SINGH**
Professor & Chairman
Organizational Behavior Area
Indian Institute of Management
Ahmedabad

JUNE 1983

To my Father

DECLARATION

I hereby declare that the present research carried out by me for the degree of Doctor of Philosophy in Psychology is original and independent. I further declare that no part of this thesis has been submitted for any other degree or diploma of any other University or Institution.

Ahmedabad
June, 1983

SHIVGANESH BHARGAVA

CERTIFICATE

This is to certify that the thesis "Developmental Trends in Prediction of Life Performance" submitted by Mr. Shivganesh Bhargava to the Gujarat University, Ahmedabad for the degree of Doctor of Philosophy in Psychology is a record of bonafide research work carried out by him under my supervision and guidance for the last two years and six months. The results embodied in the thesis have not been submitted to any other University or Institute for the award of any degree or diploma.

Ahmedabad
June, 1983

RAMADHAR SINGH
Thesis Supervisor

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ABSTRACT

Bhargava, Shivganesh, Ph.D., Gujarat University, June 1983. DEVELOPMENTAL TRENDS IN PREDICTION OF LIFE PERFORMANCE. Supervisor: Ramadhar Singh.

The present research had three interrelated goals. The first was to trace developmental changes in integration rules underlying prediction of life performance from information about motivation and ability of the stimulus persons. The second was to determine the developmental shifts in inferences people make about unknown causes of performance. The final was to examine the interaction between developmental level and nature of task in prediction of life performance.

Three experiments were performed. Experiment 1 ($n = 144$) used students from Standard V, VII, IX and XI of a school, first-year students from a college, and post-graduate students from a management college. Stimulus persons were described by various pieces of motivation and ability information. These stimuli were constructed according to the method of information integration theory (Anderson, N.H. Foundations of information integration theory. New York: Academic Press, 1981; Anderson, N.H. Methods of information integration theory. New York: Academic

Press, 1982) and were taken directly from an unpublished study by the thesis supervisor and the author. The earlier study had shown that postgraduate students follow a multiplying rule while predicting life performance. Experiment 1 thus determined the developmental level at which the linear fan pattern in the Motivation x Ability effect predicted by the multiplying rule changes into parallelism predicted by the adding-type rule. This developmental analysis was necessary to check whether the cultural-difference hypothesis proposed by Singh and his associates (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; Gupta, M., & Singh, R. An integration-theoretical analysis of cultural and developmental differences in attribution of performance. Developmental Psychology, 1981, 17, 816-825.) is restricted to only prediction of exam performance.

Experiment 1 yielded three main results. First, the multiplying rule is indeed followed by postgraduate students in prediction of life performance. This confirmed our previous findings. Second, first-year college students and school students all used an averaging rule consistent with the cultural-difference hypothesis. Finally, the conven-

tional distinguishing tests between alternative rules of information integration were found to be confounded with the problems of imputations about missing information. When one of the two necessary causes was absent, subjects imputed some value for the absent information. This analysis was possible by demonstrating the operation of the two-stage, averaging-multiplying model for prediction of life performance.

Experiment 2 ($n = 24$) used advanced undergraduate students as subjects. Stimulus persons were described with respects to their motivation, ability, and opportunity available. Although this group of subjects had a weak linear fan pattern, statistical tests suggested that there is a stage of transition. That is, multiplying seems to emerge from averaging at the level of advance undergraduate students but it gets fully developed only at the level of postgraduate students. Experiment 1 and 2 thus demonstrated a developmental trend in life performance. It appears that multiplying rule develops in India around the age of 20. This result is striking, for children of Standard II in the United States have been found to obey multiplying in prediction of performance (Kun, A., Parsons, J.E., & Ruble, D.N. Development of integration processes using ability and effort information to predict outcome. Developmental Psychology, 1974, 10, 721-732.

The multiplying rule for prediction of life performance at the level of postgraduate students may be because of age of the subjects or the nature of the task. Experiment 3, therefore, used postgraduate students of management ($\underline{n} = 28$) as well as professional managers from a public ($\underline{n} = 14$) and a private ($\underline{n} = 14$) sector organization. The experimental task required the subjects to predict performance of management trainees from information about their motivation, ability, luck, and probability of success in the department. If the multiplying rule in prediction of life performance is attributable to the age of the subjects, the linear fan pattern would be expected to be present in Motivation x Ability effect in both groups of subjects. On the other hand, if nature of task is crucial, then multiplying rule may not always be employed.

Analyses of data from Experiment 3 supported the hypothesis of the nature of task but rejected the alternative hypothesis of age difference. Both postgraduate students of management and professional managers had predicted managerial performance according to an adding-type rule. This result was, however, not attributable to the operation of task simplification, for Ability x Probability of Success in the Department effect had the linear fan pattern. Accordingly, the hypothesis of nature of task was confirmed.

Surber (Surber, C.F. Effects of information reliability in prediction of task performance using ability and effort. Journal of Personality and Social Psychology, 1981, 40, 977-989) also studied prediction of exam performance from information about motivation and ability of students. She obtained results similar to those of Singh et al and so questioned the cultural difference hypothesis. She suggested that a hypothesis of task difficulty may be an alternative explanation for the averaging rule reported by Singh et al. In subsequent study, she (Surber, C.F. Necessary versus sufficient causal schemata : Attribution for achievement in difficult and easy tasks. Journal of Experimental Social Psychology, 1981, 17, 569-586) obtained evidence for her hypothesis of task difficulty.

Two different series of experiments, one on exam performance and another on life performance, by the thesis supervisor and the author obtained no evidence for the hypothesis of task difficulty. Experiment 2 and 3 of the present research also had manipulation of task difficulty by specifying opportunity for the stimulus persons and probability of success in the department. In both experiments, the pattern in Motivation x Ability effect was exactly the same across the various levels of the task difficulty. Therefore, the hypothesis of task difficulty cannot account for the data obtained with Indian subjects.

Considered together, the present set of three experiments show that multiplying rule develops from an averaging rule in prediction of life performance around the age of 20 in India, that the task difficulty explanation proposed by Surber cannot account for the absence of linear fan pattern in Motivation x Ability effect, and that nature of task and developmental level of subjects seem to interact in determination of life performance. Also notable is the result that subjects impute value for missing information when they are asked to make prediction of life performance. This usually happens when multiplying rule is employed to predict life performance. The present research thus makes contributions to developmental as well as social psychology, and suggests further research on social cognition using information integration theory.