CONCLUSIONS, GENERALIZATIONS AND SUGGESTIONS

CONCLUSIONS AND GENERALIZATIONS

In this study, eleven Hindi-sentence-patterns developed by the researcher for non-Hindi speaking students have been taken as the subject-matter of presentation through two methods - Audio-lingual and Cognitive-code. An attempt was made to see the relative effectiveness of both methods for intelligence levels and socio-economic status in the teaching of Hindi sentence-patterns to non-Hindi speaking students.

The following hypotheses were tested in the present study:

- There is a significant difference between the outcomes of the application of Audio-lingual and Cognitive-code methods.

- The Cognitive-code method is more effective at high and average levels of intelligence as compared to the Audio-lingual method.
The Audio-lingual method is more effective at low level of intelligence as compared to the Cognitive-code method.

Socio-economic levels may account for a significant variation between outcomes of the Audio-lingual and Cognitive-code methods.

The study was conducted on a sample of 180 students of class IX, selected from the South Indian Schools of Tamil Association in Delhi. The total number of subjects in each treatment group was 90.

The experimental design provided a $2 \times 3 \times 3$ classification of a factorial pattern. It involved two methods of instruction, three levels of intelligence and socio-economic status. The factors were, then, analysed by the three-way Analysis of Variance.

The experiment involved three factors - two treatment variables, two modes of classification and a dependent variable. The independent variable which is the treatment variable for this experiment comprises the two methods of instruction viz. Audio-lingual and Cognitive-code methods. Levels of intelligence and socio-economic status provide the two modes of classification and achievement was treated as dependent variable.
The main effects of methods (A), intelligence levels (B) and socio-economic status (C), and their interaction effects were analysed by applying 'F' test. The 't' test was applied for further analysis of the pairs of levels of main factors which showed significant 'F' ratios as well as the significant interaction effects among the different pairs of A, B and C.

The findings and conclusions regarding the main effects and interaction effects are as follows:

As it is obvious from Table (24) of Analysis of Variance, the 'F' ratio for 'A' was significant. This leads to the conclusion that difference between the effects of the two methods was highly significant implying rejection of the null-hypotheses in this case.

The comparison of the actual mean-attainments for both the methods also proves that a significant difference between $A_1$ and $A_2$ exists. It is further proved that the Cognitive-code method is more effective as compared to the Audio-lingual method in the presentation of Hindi sentence-patterns to non-Hindi speaking students.

It may be further noted from this table that 'F' value for intelligence levels (B) is significant at both the levels of confidence. The null-hypothesis in this case
too is rejected. It may, thus, be stated that the attainment of students varied for different levels of intelligence (High, Average and Low).

Thus, the difference among high, average and low levels of intelligence appears highly significant. From an examination of the mean-attainments for different levels of intelligence in both the methods, it may be concluded that the attainment of students belonging to high level of intelligence is superior to that of average and low levels of intelligence for both the treatments. This means that high group of intelligent students achieved comparatively higher marks in both the methods in the teaching of Hindi sentence-patterns as a second language.

It may, further, be observed that for both the methods, students belonging to average level of intelligence obtained higher marks when compared to low level of intelligence.

The Analysis of Variance (Table 24) indicates a significant 'F' ratio for the levels of socio-economic status (C). The null hypothesis was, therefore, rejected. The attainment of students varies for different levels of socio-economic status in both the methods.

A careful analysis of mean-attainments for both the
methods shows that the difference among high, average and low levels of socio-economic status was significant for both Audio-lingual and Cognitive-code methods.

Thus, it seems plausible that the attainment of students belonging to high level of socio-economic status is higher than that of average and low levels for both the methods.

It may also be stated that the attainment of students belonging to average level of socio-economic status is superior to that of low level of socio-economic status in both the methods - Audio-lingual and Cognitive-code.

The interaction effects of \( A \times B \) (Methods x Intelligence levels), \( A \times C \) (Methods x Socio-economic status), \( B \times C \) (Intelligence levels x Socio-economic status levels) and \( A \times B \times C \) (Methods x Intelligence levels x Socio-economic status levels) were analysed by applying the 'F' test. The 't' test was applied in cases where the 'F' ratios were found to be significant.

The findings relating to interaction-effects are as follows:

The 'F' value for interaction effects of \( A \times B \) was found to be significant. It may be affirmed that both methods - Audio-lingual and Cognitive-code interact
significantly with various levels of intelligence. This would imply that in order to produce good-results, the two methods require different levels of intelligence in the learner.

The 't' value for inter-action effects $A_B_1$ and $A_B_2$ was not found significant. The inference warrantable from this is that in both Audio-lingual and Cognitive-code methods, the attainments are equally effective within the treatment at high and average levels of intelligence but for between treatments, Cognitive-code method is more effective as compared to Audio-lingual method at both high and average levels of intelligence. Thus, the students of high and average intelligence, appear to have obtained higher marks in Cognitive-code method as compared to Audio-lingual method.

The 't' value (Table 28) for inter-action effects of $A_B_1$ and $A_B_3$ was found to be significant. The significance of 't' value for the difference of the mean-attainments for $A_B_1$ and $A_B_3$ clearly brings out that $A_B_1$ and $A_B_3$ appear to have interacted significantly. Thus, the high and low intelligence of students affected the achievement-scores of students in both the methods - Audio-lingual and Cognitive-code.

In the light of above results, it may be stated that Cognitive-code method is more effective at high level of
intelligence as compared to Audio-lingual method. It may be generalized that students of high intelligence perform better when taught through Cognitive-code method rather than Audio-lingual method.

Here, it may also be set forth as a thesis that Audio-lingual method is more effective at low levels of intelligence as compared to Cognitive-code method. This leads us to conclude that students of low intelligence tend to find Audio-lingual method more suitable.

The 't' value (Table 28) for interaction effects of A B2 and A B3 was found to be significant. It may, thus, be asserted that A B2 and A B3 indicate a significant amount of interaction. From the scrutiny of mean-attainments for A B2 and A B3 in both the methods, it may be observed that Cognitive-code method is more effective at average levels of intelligence as compared to Audio-lingual method. On further analysis, it also shows that Audio-lingual is more effective at low level of intelligence as compared to Cognitive-code method.

Thus, it may be hold that students of average intelligence find Cognitive-code method of instruction more beneficial than the Audio-lingual method when compared to students of low intelligence who find Audio-lingual method
more suitable. In view of the discussion of findings, the following conclusions appear tenable -

Cognitive-code method is more effective in producing learning when compared to the Audio-lingual method in the presentation of sentence-patterns of Hindi as a second language.

Some related studies conducted in other countries with regard to the effectiveness of Audio-lingual and Cognitive-code methods in the teaching of language as a second or a foreign language appear to substantiate this conclusion of our study.

Kenneth Chastain (1969) observed that the result of the prediction analysis for Cognitive-code groups were found to be "significant for all the language skills ..... on the other hand, the prediction co-efficient in the Audio-lingual groups were not very high."¹

In this study it was also concluded that having an ear for language is a definite asset in Audio-lingual type of activities in the class-room and that prediction was much less sure in the Audio-lingual class-room than in the Cognitive-code."²

²Ibid., p. 38.
In another study by Kenneth Chastain, Woerdehoff and J. Frank (1968), it was observed that results favour the Cognitive-code learning theory. Cognitive group subjects were able to understand and speak Spanish as well as subjects who used the language laboratory, those subjects also attained higher scores on the written tests. It was finally concluded that

- deductive presentation of material is superior to induction.
- analysis is more successful than analogy.
- pattern-practice drills do not succeed as well as drills stressing understanding.
- the natural order of presentation is less meaningful than use of all the senses in assimilating material being studied.  

In another study by Mueller (1969), the results obtained in the programmed courses based to a large extent on Cognitive-code learning were superior to both the results of the Audio-lingual courses and the national norms, significant at the .01 level, in the listening and writing

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measures; in the reading test they were similar to that national norms but superior to two of the three Audio-lingual courses. A significantly larger percentage of students completed the two semester sequence which emphasized Cognitive-code learning principles.4

Some other generalizations which may be formulated from the analysis of our results are as follows:

- The achievement of students relating to high intelligence is comparatively superior to that of students belonging to average and low levels of intelligence in both the methods of instruction in the presentation of sentence-patterns of Hindi as a second language.

- The attainment of students relating to average intelligence is comparatively higher than that of students belonging to low level of intelligence for both the methods of instruction in the presentation of sentence-patterns of Hindi as a second language.

- The attainment of students relating to high intelligence is higher in Cognitive-code method

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of instruction in comparison to Audio-lingual method of instruction in the presentation of sentence-patterns of Hindi as a second language.

- Cognitive-code method of instruction is more effective for students having average level of intelligence as compared to Audio-lingual method for the teaching of sentence-patterns of Hindi as a second language.

- The achievement of students having low intelligence is high in Audio-lingual in comparison to Cognitive-code method.

- Achievement of high socio-economic status group is superior to that of average and low socio-economic status group for both the methods of instruction.

- The achievement of students relating to an average level of socio-economic status is higher than those belonging to low level of socio-economic status for both the methods of instruction.

- Cognitive-code method is more effective with regard to the achievement of students belonging to high level of socio-economic status as compared to Audio-lingual method.
- Cognitive-code method is more suited to students belonging to an average level of socio-economic status as compared to Audio-lingual method.

- Cognitive-code method is more effective with respect to the achievement of students belonging to low level of socio-economic status when compared to Audio-lingual method.

- Audio-lingual and Cognitive-code methods are equally effective for the attainment at all the three levels of socio-economic status.

- There is a relationship between methods and intelligence levels. Achievement in each method varies according to the intelligence levels of students.

- There seems to be no interaction between A and C, B and C (Intelligence and Socio-economic status) and among A x B x C (Methods, Intelligence levels and Socio-economic status levels).

LIMITATION OF THE FINDINGS

In considering the generalizations derived from the analysis of our findings above, it is to be mentioned that they are relevant only when assessed with reference to
the population selected for the study. All the conclusions and inferences are based on empirical data, which by their nature, are characterized by some degree of unreliability and are for all intents and purposes probability estimates.

SUGGESTIONS

Some suggestions with regard to further possibilities in the field are offered with a view to stimulate prospective researchers in this area. These are as follows: -

- A study to analyse the efficacy of Audio-lingual and Cognitive-code methods with regard to sex and intelligence may be designed.

- A study to evaluate the effect of Audio-lingual and Cognitive-code methods on the retention of students in the teaching of sentence patterns as a second language, may be conducted with regard to intelligence levels and socio-economic status.

- A study of comparison between linguistic and psychological bases of Audio-lingual and Cognitive-code methods in the teaching of structures as a second language, may also be planned.

- A correlational study of Audio-lingual and Cognitive-code methods with regard to student
factors - academic motivation, sex, language aptitude and school-ranks, may be designed on similar lines.

- A study to analyse the prediction of achievement with regard to writing and speaking skills for Audio-lingual and Cognitive-code methods, may be specially planned.

- The relevance of recent psychological studies to increase the effectiveness of Audio-lingual and Cognitive-code methods in the teaching of second language, may be studied in rigorously controlled experimental conditions.

- A study to analyse the effectiveness of Audio-lingual and Cognitive-code methods of instruction in the teaching of vocabulary of second language may also be taken separately.

- Analysis of the results obtainable from the application of Audio-lingual and Cognitive-code methods in the teaching of second or foreign language, may also be conducted.

- A study to analyse the interaction effects of intelligence levels and taxonomic categories relating to Audio-lingual and Cognitive-code methods may be designed in accordance with the available tools.