CHAPTER VI

CONCLUSION
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The research begun with the objective of evaluating the consequences of bilingual experience on cognitive skills, metalinguistic competence and educational achievement in a tribal set-up within the cultural context of Orissa, a South Eastern province in India. The locale of the study was Phulbani District, where it was possible to find unilingual and bilingual children from a relatively homogeneous sociodemographic background and the same Kond tribal culture. There were no linguistic barriers between the experimenter and the subjects, who were tested in Oriya, the language of the state and the medium of instruction in schools. The test materials and the situations were made as familiar to the subjects as possible. The tests fell into four categories: (1) tests of intelligence, memory, reasoning and concrete operational thinking, (2) tasks related to simultaneous-successive information processing model, (3) measures of metalinguistic competence, and (4) measures of educational achievement.

Major Findings

The preceding sections were packed with data, statistical analyses and detailed discussion of the findings. Therefore, the salient research findings are briefly reported below.

1. The bilinguals outperformed the unilinguals on measures of nonverbal intelligence, syllogistic
reasoning, general memory proficiency and strategies, and concrete operational thinking. The data also registered a significant developmental trend in respect of these cognitive skills. With increasing grade level of the subjects the differences between the bilingual and unilingual subjects tended to be wider.

2. The simultaneous and successive processing differences between the bilingual and unilingual subjects were clearly noted in favour of the former. Bilingualism made a difference in successive processing at the higher and not at the lower grade levels, whereas its influence on simultaneous processing was clearly visible at each of the grade levels under investigation.

3. Bilingualism was found to promote children's general metalinguistic competence including their analysed knowledge of language and ability to manipulate and control over language. With increasing grade and age level of the subjects, the bilingual-unilingual difference continued to be larger; at higher grade level significant differences were observed in respect of all the metalinguistic measures in favour of the bilinguals whereas at the lower grades significant differences occurred for a major portion but not
all of the metalinguistic tests.

4. The average level of performance of the bilinguals in almost all the major school-related subjects was significantly higher than that of the unilinguals, perhaps because of their superior metalinguistic and cognitive skills which are naturally responsible for better school performance.

5. The correlational analyses indicated relatively stronger level of relationship among the cognitive, the metalinguistic and the educational achievement measures, perhaps providing an empirical support to the view that metalinguistic awareness mediates the relationship between bilingualism and general intellectual and academic functioning.

6. The factor analytic results suggested that bilinguals' cognitive skills are relatively more differentiated compared to unilinguals in that their cognitive task performance shared a great deal in common with metalinguistic competence. Furthermore, the bilinguals were found to employ more effective coding strategies like simultaneous and successive processing for performance on metalinguistic measures.

The findings reported above support the previously stated hypotheses. The relationships among the various
clusters of measures as indicated by the correlational as well as factor analyses were studied on an explanatory basis; no specific hypotheses were developed earlier for the purpose.

Mechanisms for Bilingual Competence

The question of whether or not the bilingual is cognitively different from the unilingual was addressed in the present study. The early phase of research all over the world was criticized on grounds of methodological pitfalls, inadequate sample size and use of nonstandardized testing devices. Unlike some of the earlier research, the bilinguals and the unilinguals in the present study came from the same geographical region of the state, and shared the same socioeconomic conditions. The acquisition of both the languages (Kui and Oriya) in case of the bilinguals was not done at the cost of one of the languages, thus fostering in them what Lambert (1975) termed as additive form of bilingualism. Since the subjects shared the same culture, the confounding role of biculturalism along with bilingualism was to a large extent eliminated. The sample size was satisfactory and even relatively large compared to some studies conducted in different parts of the world. The testing instruments provided familiar and in some cases standardized methods of assessment in the developmental and psycholinguistic literature.

Having corrected some of the problems encountered in
earlier studies, the present findings were expected and were also found to be congruent with the trend of the more recent bilingual literature. The bilingual superiority in respect of general intellectual functioning and metalinguistic competence was clearly observed in the present study. It thus appears that the linguistic advantage of the bilinguals possibly mediates its effects through a deeper cognitive system to a relatively more general domain of human cognitive functioning. The exact mechanism by which such an effect is brought about is not yet clearly known; the possible interpretations are only speculative.

As pointed out earlier, the cognitive benefits accruing to the bilinguals can be interpreted as showing the influence of a second language on their thought processes. Ability to encode experience in two languages rather than one enables individuals to develop an objective orientation towards language and its properties, which obviously provide the basic foundations for almost all the different types of intellectual skills. The bilinguals, with the help of different language systems, seem to structure their world with different strategies which are apparently metacognitive in character. Studies in ethnoscience and anthropological analyses of cognition (e.g., Tyler, 1969) show that across different cultures, linguistic features are related to the way in which the
external world is structured. Okoh (1980) also suggests that "... being able to understand and to speak two languages offers the individual two windows and corridors through which to view the world, ... bilingual children may perhaps be potentially more creative than monolingual children; the former should be able to draw upon more than one way of perceiving phenomena" (p. 164).

The previous analysis clearly points out that the use of two linguistic codes endows the bilinguals with special skills which can be characterized generally as metacognitive skills and particularly as metacommunicative/metalinguistic skills. The present factor analytic findings provide support to such an analysis in that the metalinguistic competence shared a great deal in common with the cognitive measures in case of the bilinguals but not the unilinguals. To able to maintain two language systems and to resist any possible interference of one language with another, the bilinguals would obviously develop special coding strategies and use them effectively as per the cognitive and linguistic requirements of tasks and situations. The two basic coding strategies investigated in the present study were simultaneous and successive coding of information. The bilinguals were found to be superior in both and unlike the unilinguals deployed both the coding processes more effectively in their metalinguistic performance. The present research
lend support to the view that bilingual's superiority over unilinguals on cognitive, linguistic, and academic achievement measures can be explained with the help of a metalinguistic hypothesis which suggests that the use of two languages endows the users with special awareness of the formal and objective properties of language, enables them to analyze linguistic inputs more effectively, and serves to provide the necessary control mechanism for cognitive development.

One might argue that bilingual superiority as observed in the present study might have been due to a pre-existing difference between the bilingual and the unilingual samples. The tenability of this explanation cannot, however, be fully refuted. In such cases, one would look for significant differences at the lowest grade level, and significant interaction effects, if any, between linguistic status and grade level of the subjects. In the present study, for some of the cognitive and metalinguistic measures, the bilingual-unilingual differences appeared to emerge at the higher grades in the absence of any pre-existing differences at the level of Grade Two. This trend was specifically noted in respect of intelligence, memory, verbal-logical reasoning, successive processing and some measures of metalinguistic awareness. Furthermore, the interactive effects of grade and bilingualism were found to be
significant for concrete operational thinking, two measures of memory, two of successive processing, and five out of the eight measures of metalinguistic competence. The results thus suggest that with increasing grade level of the subjects, the bilingual-unilingual difference tends to widen in favour of the former. In view of this, it would be hard to accept the proposition that bilinguals' superiority can be largely accounted for by a pre-existing difference between them and their unilingual counterparts. On the other hand, one would tend to believe that with increasing age, bilinguals are more and more exposed to wider experiences in both languages, as a result of which they progressively differentiate themselves from their unilingual age-peers in acquiring skills that can be considered metacognitive in character.

**Implications of the Study**

Bilinguals' superiority over unilinguals is a theoretically and empirically supported phenomenon. The cognitive advantage of the bilinguals cannot simply be accounted for by socio-cultural factors that exist and covary with bilingualism. The present findings provide additional support for the existing trend in bilingual literature.

The question then is whether or not bilingualism should be encouraged by the government and appropriate
policy making bodies. The evidence gathered in the present study obviously provides an answer in the affirmative. The issue of promoting more than one language assumes an increasing importance in India, where there are many official languages and many more dialects and subdialects spoken by a large number of people sharing the same culture. In India, and all over the world, bilingualism and for that matter multilingualism is a fact of life. Contrary to public opinion, the present findings argue in favour of promoting two languages, and making both a part of the curriculum during the early developmental period.

Bilingualism should no longer be considered as an intellectual burden. Teaching concepts, principles and subject-specific facts in the two languages is thus a desirable proposition. This is because at deeper levels of conceptual and academic functioning, there is considerable overlap or interdependence across languages. Conceptual understanding developed in one language helps to make input in the other language comprehensible. The policy-makers can remain confident that if the program is effective in developing students' academic skills in both languages, no cognitive confusion or handicap will result; in fact the students may benefit in subtle ways from access to two linguistic systems.
Suggestions for Future Research

In relating bilingualism to cognition, the research up to date has been mostly correlational in nature. Interpretations have been made in terms of an apparent cause-and-effect relationship with bilingualism as the independent variable and task performance as the dependent variable. This has been followed by speculations concerning the influence of bilingualism on cognition. The research outcome has been definitely helpful for providing the first important steps for future investigations. Considering the special problems of non-replicability in cross-cultural studies, it is suggested that data should be obtained from a wide variety of cultural settings and populations in order to test the generality of findings.

There should be more process-oriented investigations, where it would be possible to examine which processes are developing as a function of using two language systems, and are associated with improved task performance. The simultaneous-successive model adopted in the present study is one such information-processing system, that can be profitably utilized in future studies.

Most of the previous studies have followed a cross-sectional design in evaluating the possible influence of bilingualism on cognition. It is suggested that a mixture
of cross-sectional and longitudinal designs, i.e., cross-sequential design may be followed in future investigations.

Factors that are extrinsic to but covary with bilingualism should be given due attention while studying the influence of bilingualism. Since it is not a unitary concept, the nature of bilingualism studied should also be clearly specified. Then only one would be able to study the role of bilingualism both in isolation and combination with other covarying factors such as SES, Sex, caste and urban-rural environment etc. In a developing country like India, these variables are important for purposes of research. Comparing the performance characteristics of bilinguals and unilinguals disregarding the socio-cultural boundaries would only bring in problems of interpretation by either enhancing or reducing the effects of bilingualism in ways unknown to the researcher.

As has been mentioned the metalinguistic competence in recent literature is conceptualized in terms of two underlying dimensions, i.e., children's analyzed knowledge of language and their ability to manipulate and control over language. One would surely like to explore in detail whether bilinguals' superiority is clearly marked in both areas of metalinguistic awareness. In doing so, the nature and context of the acquisition of two languages would provide enough insight into how bilingualism affects one or both the aspects of metalinguistic awareness, and
how this competence generalizes to the other important cognitive areas. To understand the mechanisms by which bilingualism brings out its effects, it would be worthwhile to examine the metalinguistic hypothesis which suggests that the metalinguistic awareness on the part of bilinguals provides the basic control mechanisms for a generalized cognitive structure.

If bilingualism promotes cognitive competence, we should be able to observe its effects in unschooled subjects, not just in case of schooled children who have fulfilled the sampling requirements of most of the studies conducted in different parts of the world. Donaldson (1978) has argued that introduction to formal schooling, especially learning to read, brings about improvement in metalinguistic ability, which in turn, allows the child to exercise greater control over his thought processes so that the basic cognitive skills can be effectively used in a wider range of situations. There is thus a need to examine the metalinguistic hypothesis of bilinguals' superiority with reference to the effects of schooling and its interaction with bilingualism.

Whether or not the generalized cognitive competence of the bilinguals as has been observed with laboratory-based and standardized measures, is demonstrated in real-life settings is an issue worthy of exploration. In that case, one would look for instances in the daily life
situation of people in a particular culture where they utilize a skill closely linked with one investigated in experimental studies. The task, however, is a difficult one, but it would supplement our research information in respect of the cognitive consequences of bilingualism by providing strong evidence for the issue of whether or not bilingualism is intellectually desirable.