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Ikeda, Myra Biju, Ed.D.

University of Hawaii, 1988

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ADMINISTRATIVE IMPLICATIONS ON THE EFFECTS OF PRIOR LANGUAGE, SOCIO-ECONOMIC STATUS, ORAL LANGUAGE PROFICIENCY RATE, AND AGE ON SECOND LANGUAGE ACQUISITION

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF EDUCATION

IN EDUCATIONAL ADMINISTRATION

MAY 1988

BY

Myra Biju Ikeda

Dissertation Committee

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ABSTRACT

The purpose of this study was to analyze the relationships of selected variables on second language acquisition. The students in this study attended a local high school in Honolulu, Hawaii upon their arrival from Vietnam. The forty students were non-English speakers learning English for the first time. The second language Vietnamese students were analyzed in comparison groups of: 1) prior language and socio-economic status, 2) prior language and early language proficiency or attainment, 3) prior language and age, 4) socio-economic status and early language proficiency or attainment, and 5) socio-economic status and age.

The data for the ex post facto co-relational study were based on the external and internal environmental variables which were identified as the factors of the comparison groups mentioned. Various levels of these factors were investigated to test for possible significant relationships. The adjusted means of the dependent variable, cumulative grade point averages, were tested to determine if any significant differences exist among the groups. The covariates were the reading, math, and language raw scores of the Metropolitan Achievement Test (MAT).

Several Two-Way Analysis of Covariances revealed no significant differences among the comparison groups of: 1) prior language and socio-economic status, 2) prior language and early language proficiency or attainment, 3) prior language and age, 4) socio-economic status and early language proficiency or attainment, and 5) socio-economic status and age. Neither the main effects nor the interaction effects were statistically significant.

The study indicated that because the nature of the MAT in the three content areas (reading, math, and language) resembles the expectations of the school curriculm, the prediction of students' success in the curriculum is more closely related to their performance in these areas of the standardized test. Although prior language, socio-economic status, early language proficiency (oral), and age may have some relationship to the students' GPA's, the differences are not significant. The adjusted means of the GPA's based on the covariates of MAT reading, math, and language indicated that the group was homogeneous.

The study has important decision-making implications for school administrators who must provide equal educational opportunities for second language minority students. Policy decisions dealing with the delivery of a feasible and effective program require further knowledge of the variables that affect the rate of second language acquisition. The implications of the internal and external variables within a complex systems model affect the decision-making role of administrators who also should be well informed about the problems and discoveries made in the area of second language acquisition. An elaboration of a conceptual model based on a systems model and its synthesis into a theoretical framework incorporating language acquisition theories is highly recommended.

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Chapter One

Introduction and Statement of the Problem

The purpose of Chapter One is to provide a documentary background that will be helpful in introducing the problem, need, significance, and purpose of this study. This chapter also introduces the conceptual and theoretical rationale for the formulation of the hypotheses that will add further information to the field of study.

Origin

The special needs of language minorities or students whose first language is not English are important concerns of program managers who must demonstrate equal provisions for learning opportunities in the school environment. The major issues which involve English instruction to language minorities historically concern the systematic approach for the identification, assessment, programming, and exiting or mainstreaming of these students. The effectiveness of this systems approach is important in making decisions about students' proficiency levels and needs, ability grouping, program effectiveness, curriculum needs, trend analysis, compliance remedies, and fiscal justifications.

Assessment is probably the most perplexing area of concern because of the limited research available on language minorities in the U.S., and because of the heavy dependence on assessment instruments to determine student needs and mainstreaming or exit criteria.

The extent of the entrenchment and the support of the various instructional approaches--bilingual, bilingual/bicultural, multilingual/multicultural, transitional bilingual, and ESL--depends on the criteria for the implementation of the program. The bilingual, bilingual/bicultural, and multilingual/multicultural programs utilize the student's native language or culture while introducing and developing the skills of the second language and culture. The bilingual/bicultural programs, however, may have an additional goal of maintaining and developing the student's native language and culture simultaneously with the second language and culture. The transitional bilingual education programs (TBE) operate in a similar manner, however the instruction in the native language is no longer required once the student is fully functional in the second language. The English-as-a-Second Language (ESL) programs may generate from or be incorporated into bilingual programs or its semblances, with the intent of providing a structured English language acquisition program with modifications to the regular English curriculum. Program criteria should reflect several concerns, such as: student needs, financial constraints, and federal guidelines resulting from the Lau vs. Nichols decision mandating equal provision for minority or second language students with special needs in the schools.

To comply with the guidelines for federal funding, each state is responsible for the planning and implementation of a program that satisfactorily meets the needs of its language minorities. Assessment instruments measure student performance and determine the degree of servicing required to meet the needs of the students. The assessment scores have an impact on the Office of Civil Rights' compliance regulations and mainstreaming once the exit criteria are met.

Assessment Realities

Much confusion concerning the appropriate ways of assessing language proficiency and dominance for entry and exit purposes in bilingual education derives from the lack of conceptual frameworks clarifying the relationships between "communicative competence" and academic achievement (Cummins, l98lc, p. 43). Different measures and instruments can assess either area of proficiency without a connected explanation of the interrelationships that prevail. Since language assessment is necessary for the placement of students in proper classes that will promote the development of academic skills, assessment tests must have predictive validity for academic achievement. Context-embedded (oral language of daily use that is less formal) measures may be useful in assessing exit criteria to a limited extent. The context-reduced (formal and more intricate usage) measures, such as the Metropolitan Achievement Test scores may more accurately reflect the communicative demands of an all-English classroom, and may be more appropriate in assessing mainstream or exit criteria.

A prevailing assumption about IQ tests is that academic potential can be measured through IQ testing because of the high correlations between IQ and academic achievement tests. IQ tests alone do not suffice in assessing the intelligence of students from backgrounds other than the dominant cultural group because of the possibility of cultural or linguistic bias (Cummins, 1981c, p.6). Dependence on IQ tests may prematurely label students as having "low intelligence," leading to tracking and lower expectations (Cummins, 1981c, p. 6). The rights of linguistic minorities became scrutinized as a result of numerous court cases involving minorities who were erroneously labeled "handicapped." With the advent of the Larry P. vs. Riles decision, the State of California

was prohibited from using intelligence tests for the identification of black educable mentally retarded children (Landurand, 1981, p. 3). Furthermore, the court's decision in the Diana vs. State of California case required the retesting of the misclassified Mexican American and Chinese speaking children who were placed in classes for the mentally retarded children to be conducted in the students' primary languages (Landurand, 1981, p. 3).

Although educators are more cognizant of the dangers of cultural and linguistic bias because of the vast amount of research conducted in the areas of intelligence and achievement testing, a disproportionate number of bilingual students is still being "deported" into special education and vocational classes. Especially during the past decade, U.S. educators have been addressing the issue of bias in educational programs and tests because of court decisions and legislative mandates. Many states have implemented bilingual education programs to reduce the language barriers to students' achievement. Public Law 94-142, 1975, Section 612 states that "tests and evaluation procedures will be selected and administered so as not to be racially or culturally discriminatory" and that they must be "administered in the child's native language."

Court decisions and legislative mandates attempt to enforce compliance; however, this is difficult to achieve without support and understanding from professionals who need to be well-informed about the issues of bilingualism. The delivery of appropriate programming requires an understanding about the process of second language acquisition. A lack of clear understanding of the problem is evident in the practices and perpetuation of myths about second language acquisition. Cummins, associate professor in the Department of Curriculum at the Ontario Institute for Studies in Education, emphasizes,

"most minority language students are still taught predominantly in English by non-bilingual teachers and most are still assessed by monolingual psychologists with assessment tools and procedures that were designed only for children from the majority Anglo group" (Cummins, 1982, p. 1).

Misconceptions linking bilingualism with language handicaps and low achievement still persist. Because research to substantiate the proper assessment process and strategy is scarce, decision making and educational policy are often left to "common sense." Erroneous assumptions in the past supported the policy that schools had to eradicate the first language (L_1) of minority students in order for them to learn the second language (L_2), which was English (the dominant or majority language), and to identify with the dominant cultural group. Other assumptions also deal with the length of time it takes minority language students to become "proficient" in English. Cummins believes that teachers and psychologists erroneously assume that minority language students have "learned English" or become "English proficient" when they have acquired peer-appropriate fluency in everyday communication--usually within eighteen months to two years of exposure to English (Cummins, 1982, p. 2).

The data discussed by Cummins from studies of immigrant students' learning of English and from successful bilingual programs show that it takes approximately five to seven years, on the average, for minority language students to approach grade norms in academic aspects of English proficiency (Cummins, 1982, p. 7). Acquisition of meaning in academic classroom situations requires more knowledge of the language than is required in context-embedded face-to-face situations. As language skills are mastered, they become less cognitively demanding, and some language subskills are mastered more

rapidly (e.g., pronunciation and syntax in L_1) (Cummins, 1982, p. 6). Since considerable differences exist among individuals, Cummins feels that it is not appropriate to speak of mastery when L_1 context-reduced (e.g., reading, writing) and context-embedded (e.g., oratory) skills are assessed; reference should be made to the degree of proficiency.

The term "English Proficiency," therefore, should be applied to students who are proficient in both context-embedded situations and context-reduced (academic) situations, which take five to seven years to master at a comparative level of proficiency with native English speakers. Students in the context-embedded (face-to-face) situations may require only two years to reach oral language proficiency in comparison to the students in the context-reduced situations who require more time to acquire proficiency in formal academic skills. Without this understanding of the kinds of context implied and kinds of cognitive demanding skills required, low academic performance or test scores among minority language students may be attributed to deficiencies in the student or his background experiences. The student becomes victimized by misconceptions, assumptions, and inappropriate assessment instruments or standards for appraisal.

The standards of appraisal must take into consideration the maturity or age of the learners since the more cognitively matured or older learner with better developed L_1 proficiency is better able to acquire cognitively demanding aspects of L_2 proficiency more rapidly than younger learners (Cummins, 1981c, p. 29). The area of research according to Cummins where younger learners may have an advantage is pronunciation, which is one of the least cognitively demanding aspects of both L_1 and L_2 proficiency.

Bilingualism also may produce inherent advantages. The poor verbal-academic performance in early studies often regarded bilingualism as a cause of language handicaps and cognitive confusion. Recent findings indicate that bilingual children are more cognitively flexible in certain respects and better able to analyze linguistic meaning than are monolingual children (Cummins, 1981c, p. 37). Albert and Obler report in their neuropsychological findings that:

> Bilinguals mature earlier than monolinguals both in terms of cerebral lateralization for language and in acquiring skills for linguistic abstraction. Bilinguals have better developed auditory language skills than monolinguals, but there is no clear evidence that they differ from monolinguals in written skills (Cummins, 1981c, p. 38).

The bilingual student's exposure to more training in analyzing and interpreting language than monolingual children creates a favorably demanding task that requires more concentrated effort. The greater analytic orientation to language is also a view of Vigotsky, who argues that "being able to express the same thought in different languages will enable the child to see his language as one particular system among many, to view its phenomena under more general categories, and this leads to awareness of his linguistic operations" (Cummins, 1981c, p. 38). Lambert and Tucker also substantiate this belief in suggesting that as children develop high level bilingual skills, they are likely to practice a form of "incipient contrastive linguistics" by comparing the syntax and vocabulary of their two languages (Cummins, 1981c, p. 38).

The full advantage of bilingualism, however, may be linked with the threshold levels of linguistic proficiency which must be attained in order to avoid cognitive deficits (Appendix E). Investigations by Cummins indicate that relatively low levels of academic proficiency in both languages are prevalent when L_1 is gradually being replaced by a more

dominant and prestigious L_2. The students often develop high levels of proficiency in both languages if the primary language is valued and allowed to develop along with the second language. These theories have led to the hypothesis that there may be threshold levels of linguistic proficiency which bilingual children must attain in order to avoid cognitive deficits and enhance the beneficial aspects of bilingualism.

In order to assess second language students properly, further research to determine the factors that influence second language acquisition is necessary. Research dealing with the transfer of cognitive abilities from primary languages (L_1 or L_2) to English instruction (L_2 or L_3) in monolingual and bilingual speakers may reveal more information about cognitive flexibility. Other factors including the influences of socio-economic status, early oral language acquisition in English, age, and possible interaction effects with prior language facility (monolingualism versus bilingualism) may explain relationships about second language acquisition and achievement in the high school curriculum. A better understanding of the individual differences present among second language learners is essential in evaluating programs and assessing second language students amidst the various programs attempted in the United States.

Background of the Problem

Administrative Implications

The major administrative concerns described herein deal with compliance regulations when providing equal educational opportunities to second language students. Within the framework and guidelines, however, the identification of needs and the delivery of effective programming to meet those needs are specific concerns of administrators.

Because of these concerns, a conceptual framework dealing with a systems model and language acquisition theories is important. The significance of the learner variables will help to identify the needs and problems which may exist because of the internal and external environment. Program input, output, and feedback stages depend heavily on information dealing with the environmental contexts of the learner. Goals and objectives are determined from the relationships analyzed.

The background of the problem beyond the administrative concerns branches outward into four major categories related to learner variables: I) transference of cognitive abilities, 2) socio-economic influences, 3) age or acquired years of education in L_1 as a variable, and 4) competency areas and time factors related to language proficiency.

Problems Dealing with Learner Variables

Research by Cummins has shown that well developed cognitive abilities in L_1 (primary first language) enhance bilingual facility. This ability to apply context-reduced cognitive skills is necessary for achievement in L_2 (second language) (Cummins, 1982, p. 6). Research by Coleman, Jencks, and L.W. Fillmore also indicates that socio-economic background influences achievement in the majority or dominant language. Age may also be a factor in determining the expectations of second language students who may not have the full cognitive development realized in their native L_1 language. Where the minimal age differences are apparent, however, as among high school adolescents who have developed facility in their L_1, less cognitive variations may be expected. Little is known about the relationship between the learning rate of students with

one primary (L_1) language versus two primary (L_1 and L_2) languages who are exposed to a new dominant language (L_3) such as English. Learning English as a second or third language has important implications for academic achievement.

Transference of Cognitive Abilities

While bilingual expectations may be based on the facility of the student's primary language because of his probable cognitive development in that language, it is not clear that such advantage would be applicable in the acquisition of a third (L_3) language, causing multi-lingualism. Some may conjecture that confusion or distortion would result with the acquisition of a third language. Others may conjecture that the ability to transfer messages into a second language creates more cognitive versatility when transferring the skills learned to a third language. Peal and Lambert (l962) have reported that bilingual childrens' performances demonstrated a more diversified structure of intelligence and greater flexibility in thought than monolingual children (L. W. Fillmore and Valadez, p. 678).

Cummins reported that a large number of studies has reported that bilingual children are more cognitively flexible in certain areas and are better able to analyze linguistic meaning than are monolingual children (Cummins, 1979b).

> Albert and Obler (1978) conclude on the basis of neuropsychological research findings that: Bilinguals mature earlier than monolinguals both in terms of cerebral lateralization for language and in acquiring skills for linguistic abstraction. Bilinguals have better developed auditory language skills than monolinguals, but there is no clear evidence that they differ from monolinguals in written skills (Cummins, l98lc, p. 37).

Perhaps these findings reflect additional practice and training that bilingual students receive in analyzing and interpreting language. This concept was also supported by

Vigotsky (1962), who believed that the bilingual child's analytic orientation to language, the ability to express the same thought in different languages, enabled him to see his language as one particular system among many, leading to an awareness of his linguistic operations (Cummins, 1981c, p. 38). The ability to generalize from one's experiential background and to adapt the experiences to new situations was believed to be inherent.

Socio-economic Influences

Earlier studies conducted by Coleman (1966) and Jencks (1973) substantiate the correlation of socio-economic backgrounds and achievement. Coleman reported that only a small part of the inequality in test scores is the result of differences in school programs and the allocation of resources (Coleman, 1966). Jencks reported that school reform would do little to reduce the extent of cognitive inequality among students (Jencks, 1972). Jenks concluded that differences in attainment among individuals were related to socio-economic status (SES) and I.Q. rather than the differences in schools and their programs. Jencks estimated a correlation of about .35 between family economic status and scores on various elementary and secondary school standardized tests (Jencks, 1972, p. 78). According to the Educational Testing Service, when SES was defined in terms of family income alone, the average of 19 correlations between income and measures of educational achievement was .32 (Test Scores and Family Income, 1980, p. 8).

In view of the national statistics available, it is not clear whether the prior socio-economic backgrounds of second language students who assume a similar new economic status in a new society will affect the achievement of these students. Greater demands may be placed on these students because the acquisition of a dominant new second or third langauge requires more effort and motivation to succeed. Among students with

similar cultural backgrounds, a high, middle, or low socio-economic level as reflected in family income may have a significant relationship with achievement. As mentioned by Cummins, "linguistic, cognitive, or educational factors by themselves cannot account for the school failure of minority students because there are large individual and group differences in academic achievement of minority students exposed to the same educational conditions" (Cummins, 1981c, p. 34).

Age or Acquired Years of Education in L_1 as a Variable

It is also uncertain whether an extended period of two years additional education in L_1 at the junior high school level would create a significant enough difference in the students' cognitive development to affect the student's level of achievement in high school. Students attaining less formal education in their primary language from their native countries may not have reached the threshold necessary to transfer the much needed cognitive skills required to master a new language readily (Cummins, 1981c, p. 39). The age or acquired years of education in L_1 relates to the cognitive demands of context-embedded (informal), or context-reduced (formal, academic) skills. If these skills are already developed in L_1, achievement gains in L_2 or L_3 may be greater. The scaled scores, however, are based on a normal population without an adjustment for second language variations. The age variable and its relationship to prior language acquisition and prior socio-economic status should be investigated to determine if a significant relationship exists between age and achievement.

Competency Areas and Time Factors Related to Language Proficiency

L.W. Fillmore conducted a research project at the University of California, Berkeley, that revealed some of the language skills needed by ESL students to succeed in a classroom. Her schemata indicated that both comprehension and production of both oral and written language were necessary to succeed in the classroom environment. There are different beliefs regarding readiness; and the range is from a belief that it takes 2 to 3 years to one that takes 4 to 6 years to achieve readiness (Cummins, 1981c; L.W.Fillmore, 1983).

The skills and knowledge needed for literacy development or for the comprehension of text materials involve linguistic skills that draw from both language and reading tests. The oral skills and comprehension skills, therefore, must be assessed independently. Cummins (1979) emphasizes this point when he rebukes the monolithic "linguistic competence" concept and argues for the distinction between the social and the ideational functions of language. Cummins calls the social type of language the "Basic Interpersonal Communication Skills" or "BICS" and the cognitive and academic type of language the "Cognitive Academic Language Proficiency" or "CALP" (L.W. Fillmore, 1982, p. 146).

CALP is a prerequisite to literacy and academic achievement. Unlike the face-to-face social exchanges of BICS, CALP resembles the language that is used in texts and other "decontextualized verbal academic tasks" (Cummins, 1980a). While perceived as separate skill areas, both are necessary to succeed in a classroom setting. The challenge to the teacher is the transmission of comprehension skills reflective of both skill areas that are required in the active participation in classroom activities. Both oral and written assignments can be anticipated in the experiences of the learner.

When examining the linguistic demands of the textbooks, psycholinguists, such as Adams and Bruce (1980), Bransford and Johnson (1973, pp. 383-438), and Collins, Brown, and Larkin (1980) have shown that the comprehension of texts is far more complex and exceeds the demands of mere decoding skills (L.W. Fillmore, 1982, p. 147). Relationship between text materials and larger experiential schema is necessary to develop a mental image described in texts. Language tests and reading tests, therefore, may not be adequate in predicting the comprehension capabilities of ESL students if they focus on only structural skills.

According to L.W. Fillmore, based on the research project conducted at the University of California, Berkeley, students need to have sufficient background in all of these language functions in order to participate effectively in the classroom. To benefit from the classroom experience, the students must be able to engage in interchanges which require the ability to comprehend the instruction and the ability to respond with their own thoughts.

This concept reinforces the theory introduced by Cummins who differentiates between "Cognitive Academic Language Proficiency" (CALP) and "Basic Interpersonal Communication Skills" (BICS). Both areas of language development are necessary since the child must understand instructions, participate in recitations and discussions, comprehend text material, and formulate ideas for oral and written expression. The task of preparing students for the mainstream, therefore, requires a great deal of time if proficiency of English were analyzed according to the expectations revealed in the University of California, Berkeley study.

An analysis of high school GPA's would be reflective of the students' overall performance in classroom situations. It enhances the assessment capabilities of assessment instruments that measure CALP and BICS skills independently of the content skill areas. The relationship of early oral language proficiency based on a Basic Inventory of Natural Language (BINL) score of 3 and overall achievement based on GPA's should be investigated. The interrelationship amongst early language proficiency with prior language (L_1, L_2) and socio-economic status should also be investigated.

Conceptual Framework to the Problem

The conceptual framework to the problem is based on a synthesis of the Complex Systems Model by Thomas with the language acquisition theories developed by Cummins and L.W. Fiilmore.

Complex Systems Model

An adaptation of Thomas' Complex Systems Model as depicted in figure 1 illustrates the environmental concerns that administrators must consider when determining goals for limited English proficiency programs in the school system. There are two environmental levels:

1) the "external environment" includes information dealing with global contexts, such as Country of Origin (Vietnam, etc.), Dominant Language (Vietnamese, Chinese, etc.), Socio-Economic Status (high, middle, low), and Regulatory Agencies which interpret and regulate the Federal and State laws determined by the courts, the Department of Health, Education, and Welfare (H.E.W.), and the Office of Civil Rights (O.C.R.); and

2) the "internal environment" includes information dealing with the learner variables (i.e., age, L1 or L2, and SES) that are input into the system as the student

enters the program, the characteristic variables that are derived from the process of engaging in the program (i.e., a functional oral English level of a BINL 3 attainment in year 1 or year 2), and the output variables that can be expressed through grade point averages (GPA).

The "inputs" of the Complex Systems Model are important to the theoretical framework because they compose the variables that may influence the "outputs" or outcomes of the progamming of Students of Limited English Proficiency (SLEP).

The "outputs" of the Complex Systems Model are important to the theoretical framework because they provide efficiency and effectiveness feedbacks to the inputs and goals. The "output" variable utilized in this study is the cumulative grade point average (GPA) of the students at the completion of their three years in the school system. Program decision-making requires such feedback to maximize its delivery system.

The element of time as it relates to the attainment of a BINL 3 in "year 1" versus "year 2" is also important to the theoretical framework because it introduces a variable generated from the students' participation in the program. The rate of oral language development (a BINL 3 proficiency in the first or second year) reflects the students' readiness for achievement testing to determine their mainstream potential. Regardless of this variable, however, the students remained in the program until they were able to exit with a 25 percentile score in all three areas (reading, math, and language) of the Metropolitan Achievement Test (MAT).

Understanding the Complex Systems Model of the organization requires an acceptance of both the external and internal environmental forces upon the system. Contextual awareness of both the learners' needs as they enter the system and the environmental

influences on the learning process is necessary to administrate and justify any plan of action dealing with limited English proficiency programs. A strong contention of the theoretical approach is that the outputs of the systems model are heavily dependent upon learner characteristics which may be prevalent because of external and internal environmental forces. The variability amongst the output or measured performance of the learner must be attributed to the learner's total environmental context.

Whereas Figure I depicts the Complex Systems Model in its totality, Figure 2 depicts the internal environmental variables (dependent and independent) as it pertains to this study. The variables are drawn from second language acquisition theories which imply possible relationships among variables affecting the rate of language acquisition. These variables which are postulated as being part of the inquiry mode of the theoretical framework have become superimposed into a higher level theory orientation which incorporates the Complex System Model and extends to a complete decision-making model where the inputs, outputs, and feedback form the basis for the setting of future goals and objectives. The following section explains the incorporation of the variables from the Complex System Model into the the general theoretical framework as assumptions. The hypotheses used to test the assumptions formulate the constructs which form the basis for decision-making. The unity of the schema is presented in Figure 3.

Figure 1

Complex Systems Model

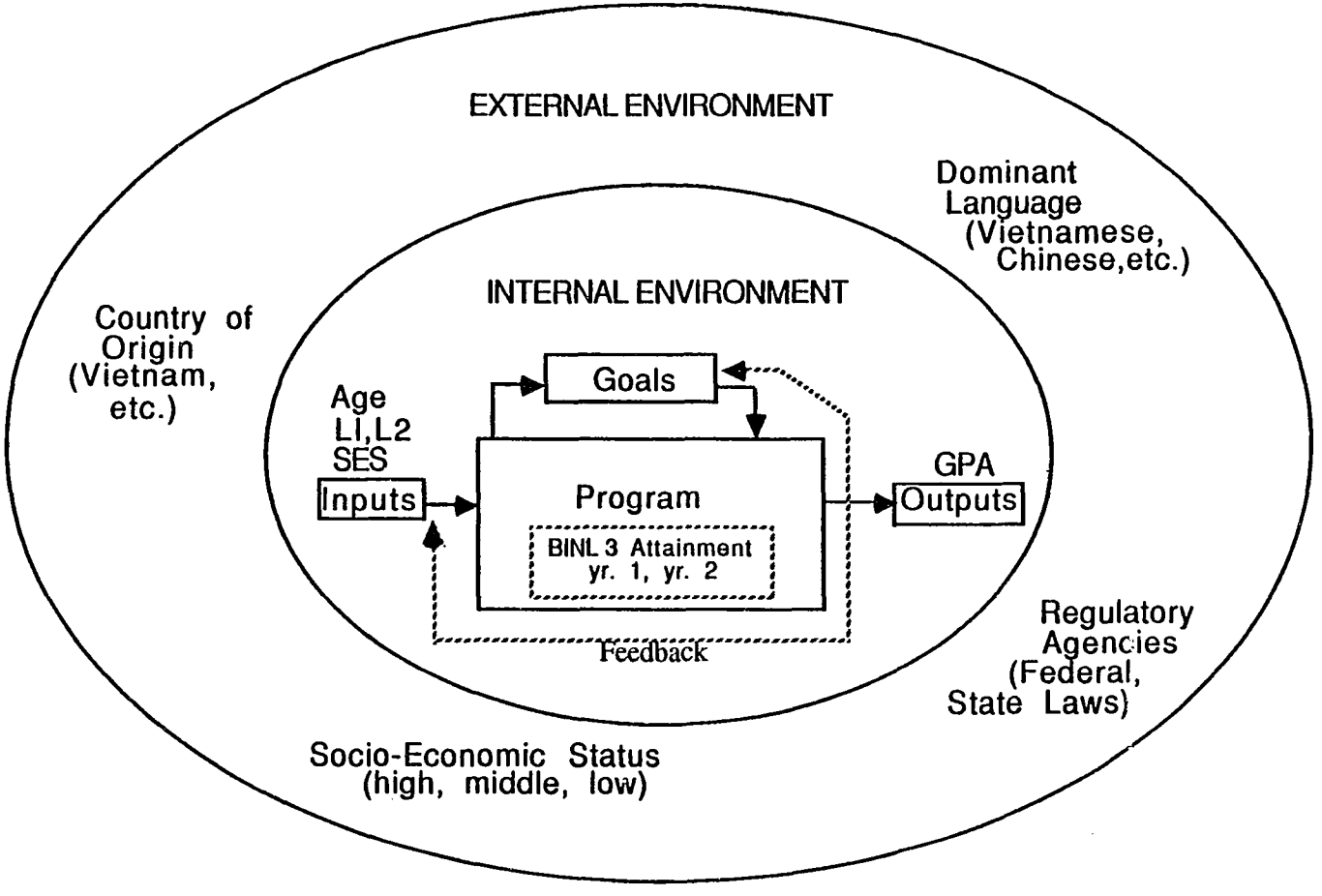
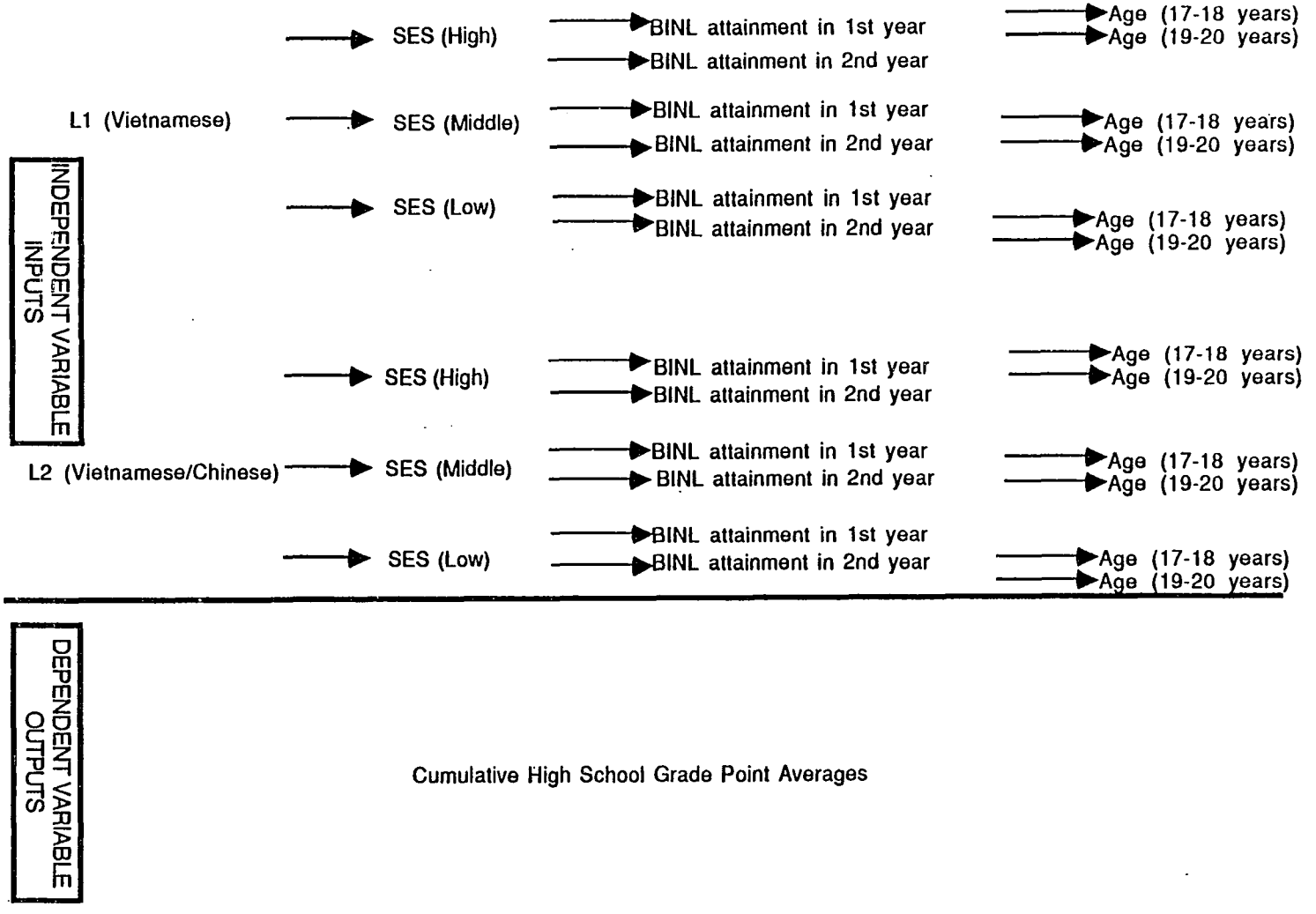


Figure 2

Internal and External Environmental Variables



Transposing the Conceptual Framework to the Theoretical Framework

This theoretical framework is based on the assumptions of pertinent research dealing with learner variables as outlined in the interactional model developed by the Office of Bilingual-Bicultural Education of California State Department of Education (1982) and noted linguists, such as Cummins and L.W. Fillmore. These assumptions upon which the theoretical framework of this study is based form the underlying concepts that are pertinent to the total analysis of second language acquisition theories. This framework helps to identify the problems that the learner may experience in the environment, and illustrates the relationship and integration between the input, process (program), and output variables in this study.

Synthesis of Constructs in the Theoretical Framework

A synthesis of certain constructs dealing with second language acquisition theories and the complex systems model is necessary to establish program goals and to plan class objectives. A diagram (figure 3) of the different aspects of the theoretical framework may be helpful in understanding the rationale and the significance of the research as it pertains to a Complex Systems Model. Important constructs from second language acquisition theories need to be incorporated into the Complex Systems Model to provide the rationale for identifying the needs of the learners and the problems to be encountered. Such a synthesis within the theoretical framework recognizes an inherent decision-making tool that will be useful in setting or modifying goals and objectives for programming. The generative process follows a progression as described in figure 3 and as outlined below:

1. Some of the assumptions about the second language learner are inherent in existing theories in the field and have been previously studied as reported. They are identified (#1 in figure 3) as learner variables (meaningful content & activities, personalities, prior experiences, social and learning styles, age of exposure, proficiency in the primary language, use of a primary and secondary language, sociocultural determinants, and cognitive skills) affecting student performance and rate of language acquisition.

2. The learner variables under investigation in this study and not previously the topic of research are identified (#2 in figure 3) as sets of variables (prior language, socio-economic status, oral language proficiency based on a BINL 3 score in the first or second year, and age) affecting student performance and rate of language acquisition. These variables also fall in the realm of assumptions which are being tested. The assumptions (#2 in figure 3) dealing with the "inquiry mode" are constructs supporting the theoretical base, but cannot be recognized as propositions until sufficient data are available to determine the significance of the hypotheses (#3 in figure 3).

3. The assumptions dealing with substantial research by Cummins and L.W. Fillmore are constructs (#5 in figure 3) supporting the theoretical base as well as propositions (#4 in figure 3) which add more gravity to the framework.

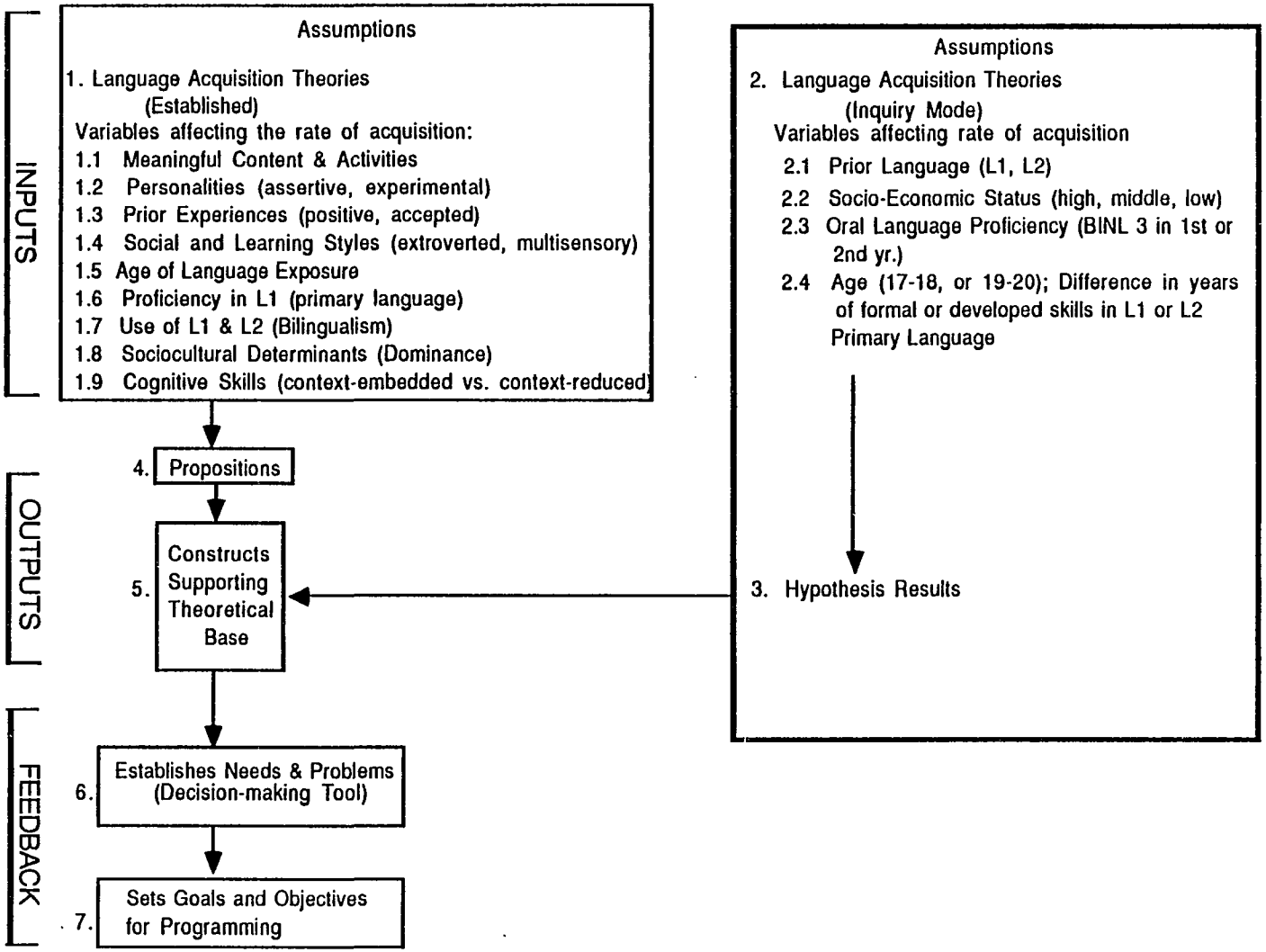
4. The constructs (#5 in figure 3) which are part of the theoretical framework provide the necessary information to make judgments about the learner. They provide pertinent information about the learner variables that will be useful in program

decision-making. The efficiency and effectiveness feedback from the Complex Systems Model will help to decide on future input and goal setting decisions.

5. As a decision-making tool, the identified needs and problems (#6 in figure 3) help to set the goals and objectives (#7 in figure 3) for programming. They also help to establish the basis for modification or continuation by setting a criteria to interpret feedback from the system.

The diagram of the different aspects of the theoretical framework may be helpful in understanding the rationale and the relationships of the dependent and independent variables, and the significance of the research as it pertains to an administrative decision-making model and a complex language acquisition systems model (figure 3). The assumptions in the form of dependent variables are "inputs" into the program model. The resulting propositions, hypotheses, and constructs belong to the "output" mode. Feedback from the research will provide pertinent information to decision-making concerning the setting of program goals and objectives.

Figure 3
Adaptation of Variables to the Theoretical Framework



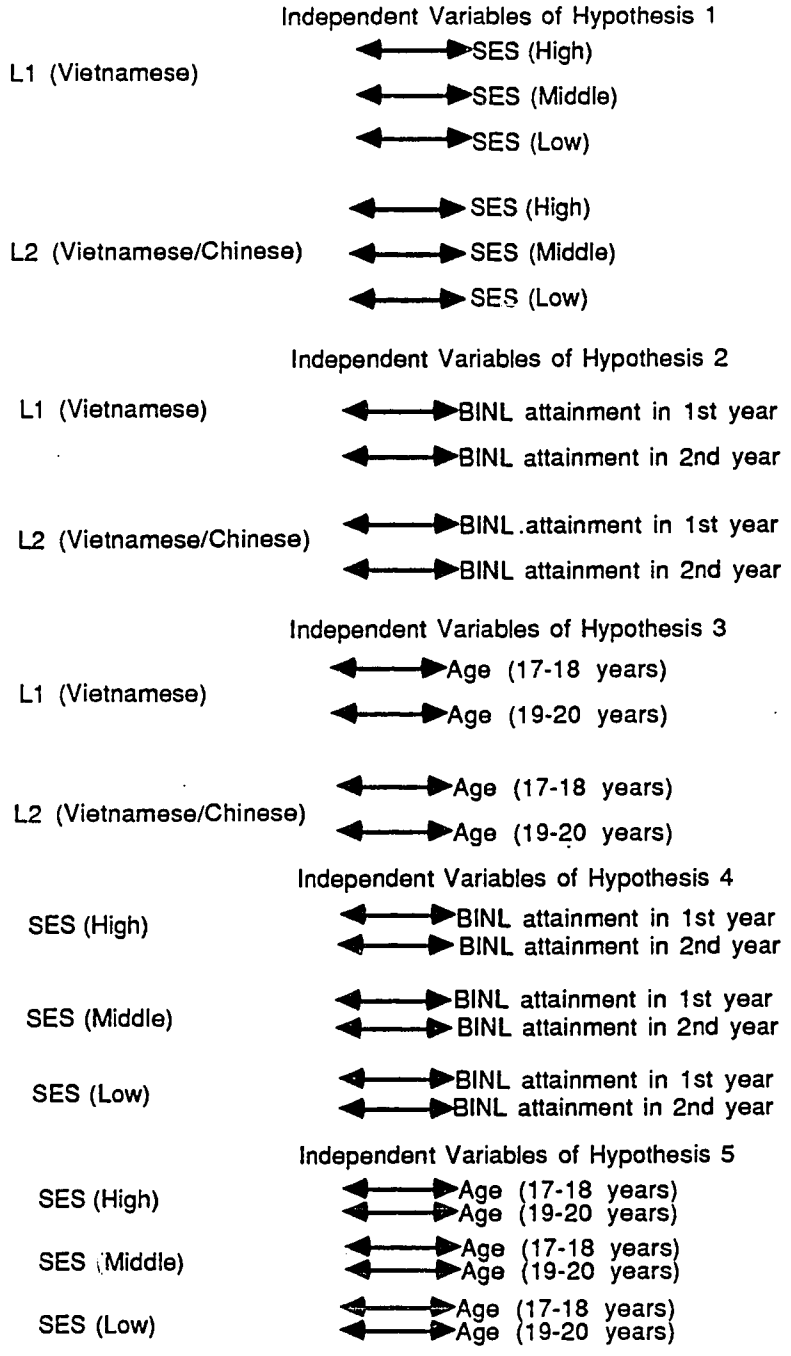
Need for the Study

The English as a Second Language (ESL) approach is used with students who advance into progressive levels of difficulty as they ascend each grade level. Significant differences among the students should be identified early in order to determine programatic needs. Resource allocation and program strategies should be based on the needs of particular groups of students if it is known that certain factors influence the overall performance of ESL students (based on GPA's).

Programs require a systematic approach in the programming of ESL students in order to meet compliance requirements in a timely manner. The outputs must be fed back to adjust for inadequacies or intervention needs if the systems approach in programming depicts a high level of variability. If significant differences are found in the GPA's or outputs, the unified program may require variable intervention strategies to adjust for individual needs. Additional resources, however, may not be warranted if all groups are successful in maintaining a satisfactory average GPA at the end of three years in lieu of their initial differences. The initial differences that have an impact on the overall success (measured through GPA) of students, however, must be identified to improve programming and resource allocations.

The State of Hawaii's research on second language acquisition remains incomplete. There is a need to expand research in the field because of the large numbers of Students of Limited English Proficiency (SLEP) identified. The variables that affect second language acquisition need to be investigated. The variables examined in this study are represented in Figure 4 as they relate to the hypotheses being investigated.

Figure 4
Independent Variables of Hypotheses 1-5
(Dependent Variables: GPA)



Significance of the Study

The research concerning transitional bilingual education programs, which use the student's native language initially while introducing and developing the skills of the second language, and submersion programs, which use the second language as the only medium of instruction, is inconclusive. In view of the lack of substantiation based on the available data, transitional bilingual programs remain the dominant method supported by federal grants in preparing limited English speakers for mainstreaming. The usual period of bilingual support in such programs is three years, unlike the aims of bilingual maintenance programs which generally service a child for six years in their attempt to preserve the student's bilingualism. Immersion programs provide instruction geared to the student's English proficiency in the second language indefinitely. Canadian studies demonstrate that immersion programs are more effective among middle-class, "language majority" students. The implications are skeptically interpreted in the U.S., however, because the method may not be appropriate for American minority limited English students of low socio-economic status. Bilingual advocates usually refer to the first year of a four-year longitudinal study by S.R.A. Technologies Inc. in criticizing the immersion method since the first year scores indicated that bilingual programs produced students who consistently outperformed immersion students in reading, language-arts, and mathematics tests conducted in both English and Spanish. The first large scale evaluation conducted by the U.S. Education Department may affect the amount of program flexibility and size of funding by the Reagan Administration. The study was designed to evaluate the

two conflicting theories--bilingual education versus immersion--to aid Congress in its decision concerning the removal of restrictions on federal funding for immersion and other alternatives to transitional bilingual education.

Investigations into the variables that affect learning within the particular methods of instruction are essential prior to making comparisons among the various methods employed. Intra group and inter group comparisons need to be examined with separate objectives in mind. Perhaps in the presence of certain variables, a significant difference may prevail in either or all of the various methods mentioned. If such were the case, flexibility in programming would be more advantageous to complement the deficiencies that may impede student achievement. A tremendous amount of time, money, and effort has been spent to achieve equal access and programming to meet federal compliance regulations. At the same time, individual differences do not appear to be addressed in the effort to provide equal opportunity through equal programming. The analyses of individual as well as group differences need to be researched in the future.

Administrators need feedback to facilitate and administer the SLEP program in Hawaii. Planning and organization require knowledge about the needs of the learners and the variables that influence learning. Furthermore, administrators have a tremendous responsibility in justifying SLEP support services because of compliance measures and evaluation stipulations.

Statement and Purpose of the Study

The purpose of the study was to analyze the relationships between students in comparison groups of : l) prior language and socio-economic status, 2) prior language and early language proficiency or attainment, 3) prior language and age,

4)socio-economic status and early language proficiency or attainment, 5)socio-economic status and age. The analysis would help to identify the significant factors that may influence high school GPA's amongst high school ESL students.

Research Questions

The study focused on the following questions:

1. Is there a significant difference between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and socio-economic status (high, middle and low)? Are there any significant interaction effects between prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) for each individual covariate?

2. Is there a significant difference between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) based on a BINL 3 score, measuring context imbedded oral usage? Are there any significant interaction effects between prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) for each individual covariate?

3. Is there a significant difference between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and age differences (17-18, and 19-20)? Are there any significant interaction effects between prior language acquisition (L_1, L_2) and age differences (17-18, 19-20) for each individual covariate?

4. Is there a difference between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and early language proficiency score, measuring context imbedded oral usage? Are there any interaction effects between socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) for each individual covariate?

5. Is there a significant difference between the adjusted means of GPA's for ESL students with different socio-economic (high, middle and low) status' and age differences (17-18, and 19-20)? Are there any interaction effects between socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) for each individual covariate?

Hypotheses

Five major null hypotheses were formulated to respond to the previously stated research questions. These null hypotheses are:

I. There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) for each individual covariate.

2. There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) based on a BINL 3 score,

measuring context imbedded oral usage. The variables will be examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) for each individual covariate.

3. There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and age differences (17-18, l9-20) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and age differences (17-18, 19-20).

4. There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) based on a BINL 3 score, measuring context imbedded oral usage. The variables are examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) for each individual covariate.

5. There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) when examined with each of the following covariates

individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) for each individual covariate.

Description of the Operational Variables

A description of the independent and dependent variables is provided in this section. An expanded definition of each of the variables is also provided in the definition section.

Independent Variables

The independent variables in the study were: prior language (L_1, L_2), socio-economic status (high, middle, low), early language proficiency (first or second year attainment), and age (17-18, 19-20). These factors were examined at various levels to determine if individual differences existed among the factors.

Dependent Variables

The dependent variable was the Vietnamese students' cumulative high school grade point averages. The high school grade point averages were computed on a four point scale (A=4, B=3, C=2, D=1). The grade point averages were taken from the final report of the graduating seniors. All of the Vietnamese students in the study graduated from Roosevelt High School.

Limitations

This study utilized an ex post facto correlational design which analyzed the relationships between the sets of data selected. A limitation in such studies rests in the fact that the study is based on an ad hoc approach rather than a truly experimental design. The quasi-experimental design did not enable the kind of manipulation that would normally occur in an experimental setting, however, the natural setting of the educational

environment rendered realistic results without rigidly imposed controls which may have altered the learning environment. It was also not feasible or possible to isolate the minority groups to form control groups because of the Federal guidelines (Appendix D).

Another limitation was the limited number of Vietnamese students remaining in the program for the three year period within any single graduating class. All of the available Vietnamese students remaining in the program until their graduation were incorporate into the study without a random sample being drawn. Three graduating classes (1982, 1983, and 1984) were therefore involved in the study to measure the variability of their overall high school performance (GPA) against the dependent variables of prior language, SES, early language attainment, and age.

The same kind of program delivery was maintained over the five year period that the study alludes to. History factors did not appear to impose any threats to the validity of the study.

Generalizability is limited to Roosevelt High School, which is a city public high school in the Honolulu District of the State of Hawaii. The outcomes and yields may vary with other district schools, especially with the rural schools that were not heavily populated with Vietnamese refugees.

A recognized limitation was attributed to the lack of sensitivity associated with the BINL. The validity of the BINL was based on a comparison with the Gilmore Oral Reading Test. The validation study of the correlation of the BINL with the Gilmore Oral Reading Test was based on oral responses to pictures and to written curriculum materials. Data on the levels of language instruction in the learning materials were not available. The

students in the validation study were also representative of students dominant in either English or Spanish rather than Vietnamese.

Similar problems were noted with other validity studies conducted to validate measures such as the MAT which did not represent Vietnamese students with similar demographic backgrounds.

Definitions

The following definitions will help to clarify the technical and specialized terminology referred to throughout the research literature.

1. Age

   "Age" at two levels (17-18, 19-20) indicates the students' ages at the time of graduation. Since the students researched did not possess school transcripts upon enrolling, they registered for the 10th grade, which was the entry level in the three year high school curriculum, regardless of their ages and prior educational backgrounds in Vietnam.

2. Basic Inventory of Natural Language (BINL)

   Basic Inventory of Natural Language (BINL) is an assessment instrument used to determine the oral English proficiency levels of non-native speakers who are potentially Students of Limited English Proficiency (SLEP).

   BINL 1 = non-English speaker

   BINL 2 = limited English speaker

BINL 3 = functional English speaker (level required to meet exit criteria in Hawaii--although this level must be accompanied by a 25% score in all three areas of the MAT in order to meet the mainstreaming criteria)

BINL 4 = proficient English speaker

3. Early Language Proficiency

"Early language proficiency" at two levels (first year or second year attainment) indicates the year in which the students passed the BINL with a "3" score which qualified them to take the Metropolitan Achievement Test. The level "3" score indicates a functional level of oral English proficiency. The supposition is that those who acquire the proficiency score of a BINL 3 early may be more successful later in the curriculum as judged by their cumulative high school grade point averages. Those attaining the BINL 3 score early in the first year were predicted to be more successful because of their rapid oral language acquisition in comparison to those who attained the BINL 3 score in the second year.

4. High School Grade Point Averages

"High school grade point averages" (HSGPA) were computed on a four point scale (A=4, B=3, C=2, and D=1). The grade point averages used as the dependent variable were taken from the seniors' final grade reports which indicated their cumulative grade point averages.

5. L_1, L_2, L_3

L_1= primary or first language (study refers to Vietnamese speakers who were monolingual prior to learning English)

L_2 = secondary language (study refers to Chinese as well as Vietnamese speakers; students in the L_2 category were bilingual before learning English)

L_3 = tertiary language (study refers to English for L_2 students since English will be the third language acquired by students who are already identified as bilingual speakers of other languages: Chinese/Vietnamese)

6. Language Dominance Rating (LDR)

Language Dominance Rating (LDR) is a categorized system with 5 rating levels pertaining to the relative use of English and a language other than English. The evaluation of the Native Language Proficiency score and the BINL score results in the assignment of a language dominance category.

Language Dominance I: Monolingual in language other than English

Language Dominance 2: Dominant in language other than English

Language Dominance 3: Bilingual

Language Dominance 4: Dominant English

Language Dominance 5: Monolingual English

7. Metropolitan Achievement Test (MAT)

Metropolitan Achievement Tests (MAT) are nationally standardized achievement tests used to measure student progress in all of the District's Compensatory Education Programs. The three areas measured in the SLEP program are: language, reading, and math. The exit criteria of the SLEP program require 25 percentile scores in each of the three areas.

8. Native Language Proficiency (NLP)

Native Language Proficiency (NLP) is measured by an instrument administered by bilingual personnel who are proficient in both English and the student's native language. The scales include: not proficient, marginally proficient, and proficient. The categories help to determine the students' needs and language dominance ratings.

9. Prior Language

"Prior Language" at two levels (Vietnamese, Chinese/Vietnamese) indicates the language or languages the students were familiar with prior to entering the U.S. as well as their monolingual or bilingual capacity prior to learning English. "L1" students were monolingual with only Vietnamese as their native language, and "L2" students were bilingual with Chinese and Vietnamese as their native languages prior to entering the U.S.

10. Socio-Economic Status (SES)

"Socio-economic status" (SES) at three levels (high, middle, and low) indicates the status of income determined by the students' fathers' occupation in Vietnam. The transcription of income to status was attained from a survey indicating the students' fathers' occupations. A former Vietnamese labor union officer assisted in the determination of SES.

Chapter Summary

This chapter has presented background information to introduce the problem, need, significance, purpose, hypotheses, and limitations of this study. Explanations of the operational variables and definitions of the technical terminology were also incorporated into the chapter.

A conceptual framework based on the Complex Systems Model and language acquisition theories was developed and transposed into a theoretical framework. The theoretical framework helped to identify the problems that the learner may experience in the environment and illustrated the relationships among the input, process (program), and output variables in this study. The variables that affect the rate of second language acquisition were perceived as the assumptions which helped to formulate the questions and hypotheses for this study.

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Chapter Two

Review of Literature

The purpose of Chapter Two is to provide a review of the pertinent literature available in the field of language acquisition that will be helpful in understanding the research questions examined.

Program Diversity:

International Studies on Bilingual and ESL Programs

Studies have been conducted to identify the merits of particular delivery strategies and programs. The literature available is scarce and is usually reflective of the Spanish American ethnic groups or European populations. The various approaches include the: bilingual maintenance, transitional bilingual, bilingual/bicultural, multilingual/ multicultural, English as a Second Language (ESL), and traditional mainstream approach with supplementary language arts. Bilingual programs have often combined their objectives with multilingual/multicultural approaches. The amount of emphasis and time spent on the development of the primary and secondary languages and cultural aspects also varies across programs. The description of the individual programs and their narrow distinctions are contained in the definition section. Many programs are ecclectic in nature, however, and the fine distinctions have become diffused. The major distinctions between the general bilingual program objectives and the ESL objectives need to be further clarified since the rate of second language acquisition is a variable that may affect

the overall achievement of second language students. Both approaches have produced theories about achievement that are relevant to the present research.

Troike, Professor of Educational Policy Studies, College of Education, and Director, Office of Multicultural/Bilingual Education, University of Illinois in Urbana in his article "Synthesis of Research on Bilingual Education" reveals that:

> While the evidence for the effectiveness of bilingual education is thus mounting, there is no counter evidence in favor of the ESL-only approach. In fact, the situation is just the opposite. Although in some instances ESL programs have been shown to improve student achievement (Willink, 1968), in others they have been found to have no effect or even a negative effect (Upshur, 1968; Hale and Budar, 1973). In the few cases where ESL and bilingual education have been directly compared, bilingual education has been more effective. In the San Francisco case reported above, Chinese students in the ESL program scored no better than those who were in the regular school program (Troike, 1981, p. 502).

The most controlled comparison to date is from the Rock Point community school on the Navajo reservation, where bilingual students were above grade level in English reading by the end of their sixth year, while students in an ESL program were over a year below grade level in reading and falling further behind with each year (Troike, 1981, p. 502). If the study were not carried out to the sixth year, the short-term evaluation would have erroneously concluded that ESL was more effective than the long-range advantage of the bilingual approach. A synthesis of these approaches--bilingual and ESL--is what is ideal in bilingual education programs.

Other studies have indicated that excessive use of English in the bilingual classroom ironically tends to lower the student's achievement in English (Troike, 1981, p. 503). The failure of the traditional English curriculum to educate ESL students is a conclusion amply documented in national statistics showing low achievement levels and high drop-out rates for linguistic minorities. The two assumptions about bilingual education are that

people are more likely to learn if they understand what is being taught, and that students with limited English ability will not fall behind if they can study subject matter content in their native language while they are mastering English.

Troike highlights his research on bilingual education for the Research Information Service in a concise and revealing manner. The findings that are contrary to commonly accepted notions are especially informative:

1. Bilingualism is not a disadvantage. Bilingual students actually have an advantage over monolinguals in cognitive flexibility and linguistic abstraction.
2. Code-switching--the ability to shift between one's native language and English, sometimes in mid-sentence--is a special social skill, not merely a corruption of either language.
3. Introverted students are less likely to learn a language at the same rate as extroverted students since language achievement is affected by the student's participation and ability to communicate meaningfully.
4. Negative teacher or societal attitudes directed toward non-English background students or their cultures inhibit student motivation, self-esteem, and achievement. Social values have a powerful effect on language learning.
5. Ironically, excessive use of English in bilingual classrooms tends to lower students' achievement in English, although increased parent involvement and positive teacher attitudes about the second language and its culture help break the language barrier.
6. Persons beyond the age of puberty are rarely able to develop an unaccented pronunciation. However, through late adolescence, older students continue to grow in language learning ability. Extensive use of English in bilingual programs should be delayed until the upper elementary grades.
7. Children who are able to continue in bilingual programs throughout their elementary school years make significantly greater achievement gains than children in programs teaching English as a second language, where they may actually fall behind grade level.
8. Consolidation of linguistic skills occurs around 10 or 11 years of age. Interrupting the development of a child's native language may have a destabilizing effect on the child's cognitive development. By losing competence in the native language, the child may become semi-lingual (a concept referred to as subtractive bilingualism). Thus, students in bilingual programs do better if instruction in their native language is continued through the fifth or sixth grade.
9. English-speaking students in immersion programs who study their regular curriculum in a second language (usually one that is socially subordinate) learn the curriculum about as well as if they were taught in English (additive bilingualism).

> Because English is spoken at home and in society, these students are not apt to forget their native tongue as they learn the second language (Troike, 1981, p. 504).

Levy in her presentation before the American Orthopsychiatric Association, Inc., focuses on how the underutilization of bilingual-bicultural instruction in the classroom negatively affects the child's ability for academic success, as well as his ability to acquire a positive self concept. The teacher as a role model is also important in conveying social skills, self image roles, and language stimulation. Levy defines Bilingual-bicultural Education as:

> Instruction in two languages and the use of those two languages as mediums of instruction...for any part or all of the school curriculum, and including study of the history and culture associated with the student's mother tongue. A complete program develops and maintains the children's self-esteem and a legitimate pride in both cultures (Levy, 1978, p. 1).

Since there is agreement among a number of researchers that students who achieve below their level of competence suffer significant losses in self-esteem, a child's school experience should foster respect for the language, culture, and the child as an individual. A bilingual-bicultural program should include a pluralistic classroom and a teacher who is able to instruct in a pluralistic model in contrast to one who focuses upon assimilating the child into the Anglo culture. It is believed that the latter emphasizes the superiority or inferiority of the language and culture, and encourages the restricted use to correct forms of school-approved usage. It is also advantageous to utilize examiners who are sensitive to cultural differences and who can administer tests in the student's preferred language so as not to negatively bias the testing results. In a diglossic classroom setting, children are also able to function without the stress of exclusion, as there is continual promotion of both languages. The promotion of the child's first language will increase a child's emotional development and assist him in acquiring feelings of self worth.

Although bilingual education has yet to prove its effectiveness conclusively, several findings strongly support the underlying principles of bilingual education as a more effective approach than the English-only approach, which depends mainly on ESL strategies. In the Santa Fe Bilingual Program, it was found that children enrolled in the bilingual program consistently performed significantly better than the control group (in an English-only program) in both reading and mathematics (Cummins, 1981c, p. 26). Those continuing with the bilingual program from second grade caught up with United States norms in reading by the fifth grade and stayed close in the sixth grade, surpassing the national average for math in the fourth grade and maintaining an equal or above average status through the sixth grade.

In the Legarreta Study: Direct ESL-Bilingual Comparison, three types of bilingual treatments were compared with two types of English- only treatments in the development of English communicative competence in Spanish-background kindergarten children. The three bilingual treatments were found to be significantly superior to the two English-only treatments in developing English language skills (Cummins, 1981c, p. 26). The most effective program was one with balanced bilingual usage.

The Nestor School Bilingual Program Evaluation in San Diego involved Spanish and English background students who learned through a teamteaching approach. The evaluation of the program showed that Spanish-background students gained an additional .36 of a year's growth in English reading for each successive year they spent in the bilingual program (Cummins, 1981c, p. 26). A comparison to the total school performance was significant.

> Spanish-background students who had spent five years or more in the bilingual program at the elementary level tended to perform slightly better in English reading than the school average at the junior high shcool level, despite the fact that at least 37 percent of the comparison group were originally native English speakers in the comparison district and only one month behind grade level. The English-background participants in the Nestor bilingual program perfomed at a higher level than the comparison groups on a large majority of measures; however, this may be due to a selection bias (Cummins, 1981c, p. 26).

The Colorado Bilingual Programs Evaluation reported that the non-English background students demonstrated a normal rate of academic progress in about 90 percent of the 39 programs for which data were obtained (Cummins, 1981c, p. 26). The evaluations conducted between the 1977 through 1980 school years represented Kindergarten through the third grade non-English background children who gained at least an additional .33 of a year's growth in academic achievement beyond the expected national norms (Cummins, 1983, p.23). In the 1979-1980 evaluations, 64 percent of the K-Grade 3 classrooms with non-English background students gained at least 14 percent more than the expected norms (Cummins, 1983, p.23).

The Sodertalje Program for Finnish Immigrant Children in Sweden reported that Finnish children in Swedish-only programs were found to perform worse in Finnish than 90 percent of equivalent socio-economic status Finnish children in Finland and worse in Swedish than about 90 percent of Swedish children (Cummins, 1981c, p. 27). Finnish was the major initial language of instruction which continued throughout elementary school. Swedish became the major language of instruction from third grade. By the sixth grade, the student performances in both Finnish and Swedish were at the same level as that of Swedish speaking children in Finland so performances in Swedish-only programs were less effective.

In the Manitoba-Francophone Study, in which minority francophone students in Manitoba were receiving varying amounts of instruction through the medium of French in the third, sixth, and ninth grades, French instruction showed no relationship to the children's achievement in English.

> In other words, francophone students receiving 80 percent instruction in French and 20 percent instruction in English did just as well in English as students receiving 80 percent instruction in Egnlish and 29 percent instruction in French. However, amount of instruction in French was positively related to achievement in French. In other words, students' French benefited at no cost to their progress in English (Cummins, 1981c, p. 28).

The Edmonton Ukrainian-English Bilingual Program in Alberta used Ukrainian as a medium of instruction for 50 percent of the regular school day throughout the elementary school. A study involving the first and third grade students revealed that those who were relatively fluent in Ukrainian as a result of their home usage were significantly better able to detect ambiguities in English sentence structure than either equivalent monolingual English-speaking children not in the program or children in the program who came from predominantly English-speaking homes (Cummins, 1981c, p. 28). By the end of the fifth grade, the children in the program were ahead of the comparison group in English reading comprehension skills.

Most of the data reported thus far clearly show that a well-implemented bilingual program is successful in developing English skills beyond what could be achieved by an ESL-only program. Where a diversity of minority languages exist, however, as in Hawaii, bilingual programs may prove to be costly. In Hawaii, bilingual part-time temporary teachers, half-time teachers, and educational assistants are available only for critical language groups (20 or more identified in each category). Schools in Hawaii often integrate the transitional-bilingual objectives with the ESL objectives (Appendix D).

Variations in service time may differ according to the options contained in the IAPS charts (Appendix A). Regardless of the program strategy utilized, many researchers including Troike have begun to focus on individual differences and learning styles as greater determinants of language acquisition success than the overall program strategy itself. Learner variables are more directly related to achievement.

In analyzing the proper kind of curriculum planning, Landurand (1981) discusses the varieties of linguistic minorities who have differing problems through the "State of the Art" in public school programming in bilingual special education. Students could be classified as: 1) having no spoken language due to severe language disorders, 2) having limited English proficiency with both languages below grade level, and 3) having bilingual capacity. The labels generally used to refer to these categories are Language Disabled, LEP, and Bilingual. The LEP category includes the sub-categories of special education students, students who have difficulty with ESL approaches; and students who have special needs because they may be emotionally, physically, or perceptually disabled.

According to Landurand, who presented her paper at the Council for Exceptional Children Conference on the Exceptional Bilingual Child in New Orleans in February, 1981, the students in all of the three categories mentioned earlier are "victims" of the following "realities":

1. The population of linguistically and culturally different children is growing in public schools.
2. Most linguistically and culturally different students are receiving inappropriate services in regular education programs.
3. Linguistic/cultural minority students in public schools have been erroneously misclassified as students needing or not needing special education services.
4. There are very few school systems that have developed and implemented a comprehensive systematic procedure for evaluating culturally and linguistically different students.

5. Schools desperately need trained bilingual/bicultural educators who represent the targeted population in order to provide the needed direct services.
6. All educators need professional development in order to be active participants in developing and implementing culturally responsive education.
7. School systems at a building level need to develop and implement creative models in order to be able to diagnose, prescribe, and deliver culturally responsive educational programs to minority students (Landurand, 1981, pp. 2-7).

Proficiency in Specific Subject Matter

The debate over the most appropriate form of instruction for Limited English Proficiency (LEP) students remains unresolved although attaining English fluency is the major goal of most programs. The additional advantages of additive bilingualism or maintenance of both languages may be achieved in some bilingual programs; however, the test of successful implementation rests on the level of proficiency attained in English. The U.S. Commission on Civil Rights (1975) accepted the earlier assumption that bilingual education provided a means of transmitting instruction in a continuous program adaptive to prior linguistic, cultural, and social experience, thereby supporting the instruction of subject matter in the students' L_1. The attempt to incorporate L_1 or bilingual instruction was intended to ease the transition of learning English without retardation in the subject matter being learned.

Language

The debate over methodology has extended into the subject matter as well as learner variables. Macnamara (1966) reported that LEP students taught in the weaker L_2 language performed poorly in subjects taught in the second language in comparison to students taught in their primary language (L.W. Fillmore and Valadez, 1986, p. 661). Macnamara indicated greater retardation in areas where language played a major role. He

attempted to distinguish the subject areas requiring more L_1 instruction. He also delineated particular areas, such as mathematics, that may require more intense primary language instruction. Problem solving and verbal reasoning were areas demanding more primary instruction in the native language, whereas mechanical arithmetic and computation were less language demanding and better taught in the students' second language.

Math

Saville and Troike (1971) came to different conclusions regarding the language in which mathematics should be taught. They believed that mathematics should be taught directly in English rather than in the students' L_1 or bilingually to ease the transfer into advanced mathematics which required fluency in English (L.W. Fillmore and Valadez, 1986, p. 664). They did not believe that mathematics skills were as readily transferred across languages as were reading skills. Generally, however, Canadian immersion studies and U.S. studies comparing mathematics achievement in LEP students have not indicated problems in the transference of mathematics skills.

Reading

Since enough experiences with the second language are also required, the appropriateness of the primary versus the secondary languages becomes a necessary area of investigation. The amount of use as well as the subject area it is used with is often discussed. In the area of reading, a distinction is made between the skills required in decoding versus the skills required in comprehending the meaning of a text. The reader must understand the knowledge of the language, of conventions of its use, of the real world, and of the topics treated in the test. In a study conducted on English speaking students in

Canadian schools, Cziko (1978) discovered that only the native speakers and advanced immersion students were able to make use of context clues (L.W. Fillmore and Valadez, 1986, p. 661). Cziko indicated that the difficulties experienced by second-language readers may have been due to their inability to make use of syntactic, semantic, and discourse cues that ordinarily serve as sources of information for fluent first-language readers (L.W. Fillmore and Valadez, 1986, p. 661).

The emphasis on oral language skills development prior to the development of reading skills has application in second language acquisition theories. Modiano (1973) conducted a study in the Chiapas highlands of Mexico and discovered that the children who learned to read first in their L_1 were more successful in becoming literate in L_2 than were those who learned to read directly in Spanish, a language they were learning at the same time (L.W. Fillmore and Valadez, 1986, p. 661). The children who learned to read initially in their L_1 were able to apply the skills they acquired through their native language to the second language that they were learning. Modiano (1973) attributed the success of the L_1 readers to their ability to separate the task of learning to read from the task of learning a new language; the two tasks were often confused by L_2 readers (L.W. Fillmore and Valadez, 1986, p. 661).

Rosier (1977) compared the effectiveness of initial reading instruction given to Navajo-speaking children in their native language with reading instruction given in English. He found that the group that was taught to read in their L_1 scored significantly higher than the L_2 reading group in the English achievement tests used--the Stanford and

the Metropolitan Achievement Tests (L.W. Fillmore and Valadez, 1986, p. 662). Although the L_1 group did not outperform the L_2 group until after the second grade, the margin of difference between the groups widened with each year. The effects of bilingual instruction appeared to be cumulative with significant differences after the third grade. The skills acquired through L_1 appeared to be transferable.

Engle (1975) in her international study on the use of vernacular languages in early education examined whether children taught subject matter in their L_1 learned to read more rapidly in an L_2, and whether they were more knowledgeable about the subject matter. Engle concluded that neither method was superior because a number of social, cultural, and practical factors may make one preferable over the other in specific situations (L.W. Fillmore and Valadez, 1986, p.662). Oral language training in L_2 was more likely to enhance L_2 literacy. Engle also noted that students taught through the native language approach may take longer to learn to read in L_2, but they make greater gains than those who have learned through L_2 over time. The general research in the area of reading indicated that oral and written English are equally important in the development of literacy in English. Those who were already literate in another language were able to transfer their literacy in English with greater ease than those who did not attain L_1 literacy.

Thonis (1981) notes that transfer of reading skills depends on the following factors: 1) the similarity in the ways written symbols represent linguistic forms in the two systems; and 3) the carryover of positive attitudes towards reading, and of habits of

attention, concentration, and persistence that can develop through a prior sucessful experience with learning to read (L.W. Fillmore and Valadez, 1986, p. 663). Thonis also mentions that a premature switch from L_1 to L_2 reading is likely to interfere with the development of higher-order reading skills.

The relationship amongst subject area mastery in language, reading, and mathematics to overall school achievement requires further investigation. Students may excell in certain areas with higher overall achievement gains. The relationship of subject matter readiness and success, and the influences of age and other sociological or economic status factors are other areas of inquiry.

Learner Variables

While some Limited English Proficiency (LEP) children can acquire a new language in 2 years, the majority may take as many as 2 to 3 years longer (L.W. Fillmore and Valadez, 1986, p. 674). In some cases, students may require 6 to 7 years of exposure to acquire a new language regardless of the type of program implemented. The variations may result from the programs implemented to a certain extent in combination with factors related to the social setting. Individual characteristics of the learners, including their social skills, their attitutdes, their motivations, and their learning style in handling complex cognitive tasks are important variables in the learning process.

Students who are intellectually capable and motivated to do well have generally performed better in school than students lacking these characteristics, however, intellectual capability and motivation do not appear to be a major source of successful second language acquisition. While bright children who are motivated are successful in

many instances, many experience difficulty in learning a second language. Other factors must be considered also.

Language learning is a social as well as a cognitive process that requires learners to speak, interact, and collaborate with other speakers of the language. Social skills and social style are important variables in the learning situation.

Learning style also influences the variability of second language learning. The ability to apply a variety of cognitive strategies to the task of discovering relationships in the environment is important in the learning process. Observation skills, differentiation skills, application skills, and flexibility are important factotrs that should be developed. A sense of confidence and willingness to try out new learning experiences are characteristics that could increase the rate of second language acquisition.

Age is also a learner variable since it is a popular view that younger children learn second languages more successfully than older children. Age is also a consideration in Cummins' (1981c) "Interdependence Hypothesis" in which uninterrupted language and cognitive development are more crucial to later academic and language development than early exposure to a second language (L.W. Fillmore and Valadez, 1986, p. 676). According to Cummins, a premature switch to a second language may disrupt the development of the cognitive structures of both languages. Cummins also disagrees with the concept that learning a second language beyond the early years of school will be too late for success. Cummins believes that older learners are able to acquire cognitively demanding aspects of an L_2 more rapidly than younger learners because they are cognitively more mature with better developed L_1 skills (L.W. Fillmore and Valadez,

1986, p. 676). The older have an advantage in acquiring the more academic types of language skills.

Ekstrand (1982) investigated the relationship between age and length of residence (LOR) in Sweden, and the learning of Swedish as a second language (L.W. Fillmore, 1986, p. 676). The students ranged from 8 to 17 years of age and had been in Sweden for less than three years. The second-language performance was measured by tests of oral and written language comprehension and production, and intelligence was measured by tests standardized on native Swedish speakers. The older immigrant students outperformed the younger speakers on both measures, leading Ekstrand to conclude that "language learning ability improves with age as does intellectual functioning" (L.W. Fillmore and Valadez, 1986, p. 676). Oral production was not significantly related to age although it was related to LOR. LOR did not have a significant relationship to intelligence according to Ekstrand's investigations.

Ervin-Tripp (1974) in their observational case studies comparing young children with older ones, and Snow and Hefnagel-Hohle (1978, 1982) in their cross-sectional studies comparing children with adults indicated that older learners make more rapid progress in learning second languages (L.W. Fillmore and Valadez, 1986, p. 677). Better cognitive memory and maturity because of older chilren's experiences with phonology and reading skillls in another language are probable reasons for the advantage amongst older second language learners.

The relationship between L_1 and L_2 proficiency when age is a variable has been investigated by Cummins et al. (1981a), and Skutnabb-Kangas and Toukomaa (1976). Cummins reports that:

> Older Japanese immigrant students, whose L_1 literacy skills were better developed, acquired English proficiency significantly faster than younger immigrant students. It was also found that students who immigrated at younger ages developed significantly lower proficiency in Japanese compared to students who immigrated at older ages and who had been in Canada for the same amount of time. All the students in this study were from upper-class backgrounds (Cummins, 1981c, p. 31).

Skutnabb-Kangas and Toukomaa also report that:

> Among Finnish immigrant children in Sweden, the extent to which L_1 had been developed prior to contact with Swedish was strongly related to how well Swedish was learned. Children who migrated at age 10-12 maintained a level of Finnish close to Finnish students in Finland and achieved Swedish language skills comparable to those of Swedes. By contrast, children who migrated at younger age levels or who were born in Sweden tended to reach a developmental plateau at a low level in both Finnish and Swedish academic proficiency (Cummins, 1981c, p. 31).

Interestingly, in support of the two studies, Troike (1978) reported that immigrant students from Mexico perform better educationally than native-born Mexican-Americans. Troike stated that:

> It is a common experience that...children who immigrate to the United States...after grade six...rather quickly acquire English and soon outperform Chicano students who have been in United States schools since grade one (Cummins, 1981c, p. 31).

Troike also referred to several studies dealing with surveys that reflect the perceptions of teachers and administrators who also support the observation that older immigrant students achieve better than native-born Chicano students. Studies that refute these findings have often reported skewed results since students were representative of significantly lower socio-economic backgrounds than the native-born students, and the students' attendance in the United States was only between two and five years.

Cognitive Transference between L_1 and L_2

Early psychological research indicated that bilingualism affected normal cognitive development because it was assumed that the mind could not develop its potential capacity

and operate under full power if it were divided linguistically. Earlier research by Darcy (1953, 1963) supported this concept of cognitive confusion and incomplete knowledge or control of any language (L.W. Fillmore and Valadez, 1986, p. 678). The earlier concepts were challenged by Peal and Lambert (1962) through their study that demonstrated that French-English bilingual children in Montreal were significantly better on measures of both verbal and nonverbal intelligence than were carefully matched monolingual children (L.W. Fillmore and Valadez, 1986, p. 678). The children's performance indicated a more diversified structure of intelligence and greater flexibility in thought than monolingual children.

Duncan and De Avila (1979) examined the theory of bilingualism providing a "cognitive metaset" for dealing with experience which enabled bilingual learners to develop a facility for analyzing cognitive schemes for appropriate situations and the capacity for transferring its application to new situations (L.W. Fillmore and Valadez, 1986, p. 678). The cross-sectional study assessed the relationship between the degree of bilingualism and cognitive functioning based on measures of linguistic proficiency, intelligence, and cognitive style amongst 200 young (grades 1-3) Hispanic students. Duncan and De Avila (1979) discovered a positive and uniform relationship between bilingual proficiency and intellectual functioning, with bilingual children outperforming all other groups in their test of intellectual functioning.

The performance of students who are bilingual (L_1 and L_2) prior to learning a new third language (L_3) and their comparison with monolingual students learning the same L_3 language has been an intriguing area of concern in the research undertaken. Whether

flexibility and cognitive advantages are prevalent among multilinguals has led to the first hypothesis in the present thesis.

The cognitive transference between L_1 and L_2 is dependent on the level of proficiency attained in the primary language. According to Cummins, the "Threshold Hypothesis" assumes that those aspects of bilingualism that might positively influence cognitive growth are unlikely to come into effect until children have attained a certain minimum or threshold level of proficiency in the second language as well as in the primary language (Cummins, 1981c, pp. 38-39). A low level of proficiency in one or both languages would lead to inadequate interactions with the environment. Cummins proposes that there are two thresholds with the attainment of a lower level of bilingual proficiency being sufficient to avoid negative cognitive effects, and the attainment of a higher level of proficiency being necessary to lead to accelerated cognitive growth. The Threshold Hypothesis illustration (Appendix D) is an adaptation by Cummins from Toukomaa and Skutnabb-Kangas (1977) (Cummins, 1981c, p. 39).

Both the monolingual and prior bilingual students in this study have reached an adequate threshold level of proficiency in their primary language or languages. This factor should be controlled so that a positive cognitive transference can be assumed for both groups. It is important that the prior language development be controlled for.

Rate of Language Learning, Individual Differences, and Cultural Background

The relationship between cognitive and social processes in second language acquisition and their variations due to learner differences is a major area of inquiry. Based on several large-scale NIE supported studies on English language and academic development in bilingual and all-English classrooms, L. W. Fillmore demonstrated the extent to which

learner characteristics and social context variables are associated with the variability in language learning. Learner characteristics include learning style, social style, linguistic background, and cultural background. The purpose of the NIE study was to identify and understand the sources of the variability which constitutes a major problem for the learners and teachers in second language programs. A noted variability in the rate of second language acquisition (2 to 3 years, or 4 to 6 years) raised questions about the learners as well as the programs implemented. Unfortunately, program effectiveness was judged on how quickly LEP students learn English sufficiently well enough to enter the English-only mainstream classes. The average length that students remain in bilingual classes without reflecting badly on the program was usually two to three years. Most learners were in need of more years of special services regardless of the kind of program implemented according to L.W. Fillmore. The unrealistic expectations of early mainstreaming have de-emphasized the use of the native language as a viable means of instruction. The view that English-only instruction would hasten second language acquisition (immersion education), has been heavily criticised by those who support bilingual education. The data supported by L.W. Fillmore indicated that the definition of "proficiency" was referred to in only a narrow framework. Students with "basic skills" backgounds did not have the sufficient skills to achieve successfully in the mainstream in a meaningful way. She advocated further training in higher thinking skills with extended biligual assistance to develop cognitive skills.

L.W. Fillmore's research conducted in 1985 indicated that significant differences were noted based on "how" English was used and not "how much" English was used (L.W. Fillmore, 1986, p. 476). The English only classes did not make greater gains in English

than the bilingual classes. Based on a Berkeley NIE study, "Learning English through Bilingual Instruction Study," L.W. Fillmore (1982) concluded that other variables indicated significant gains for LEP students. These variables include: l) the teachers' use of language in the classroom, 2) the way the learning activities were structured and organized, 3) the methods and approaches they followed in presenting materials to the students, 4) the kind of materials being taught, 5) the opportunities teachers provided for students to participate in lessons, and 6) the discussion strategies implemented. These instructional variables interacted in complex ways with student variables, differently affecting the development of comprehension and production skills according to L.W. Fillmore. The opportunities for students to practice English with their English speaking peers and teachers and the opportunities for verbal participation in instructional activities were more directly related to production than comprehension. Comprehension was more directly related to how teachers used English and presented the materials for instruction.

The instructional variables, however, affected oral language development differently depending on the learners' cultural background and on their initial level of English proficiency. Interaction with peers was more important with the Hispanic children than with the Chinese children who benefited little from peer interaction because of their hesitancy to interact until they could gain more confidence in speaking English. The Chinese students profited more through their interactions with their teachers and through teacher-directed English activities and practices.

The quality of the instruction appeared important to both the Chinese and Hispanic children; however, the Hispanic children did not perform as well as the Chinese students

when the instruction was poor and unclear. In fact, the Chinese students appeared more attentive when the lessons were unclear. The Chinese students, therefore, demonstrated more tolerance and patience. They seemed to be less concerned about the nature of the lesson even if it were tedious and meaningless with a lot of drills and practices.

Many children differ in their learning rates because of the kind of delivery experienced. Learning a language in the context of meaningful communication rather than through drills, for example, may stimulate the rate of language learning in students with compatible learning styles or specific cultural backgrounds. This would be reflective of the Hspanic student according to L.W. Fillmore (1986). In addition to meaningful content and activities, some children will learn at different rates because of their personalities, social and learning styles, and prior experience.

Because the LEP students differ widely in the number of years they require to reach a proficiency level, success in language development cannot be rushed at the risk of excluding higher level skills development. Proficiency should not be determined according to basic skills acquisition only. While basic language and literacy skills are necessary, the students need to be exposed to the content in a variety of subjects and need to be given the opportunity to apply higher level skills and problem solving skills. This philosophy discourages the belief that basic skills should become the basis for identifying LEP needs and proficiency levels. Accuracy in reading should not become more important than comprehension, and grammatical correctness should not become more important than communicating ideas. The content of specific subject matter should be comprehended and the expression of ideas should be fluid.

Achievement Testing and the Need to Conduct Program Evaluation:

The American Institutes for Research (AIR) Study

In wake of Proposition 13, budget slashers in federal, state, and local government have questioned the effectiveness of bilingual education and its merits. The study conducted by the American Institutes for Research (AIR) on the impact of ESEA Title VII Spanish/English programs is the first, and the only evaluation of bilingual education in the United States that is national in scope (Dulay, 1979, p. III2). The study received much attention and revealed critical questions about the interpretation of data.

> It encompassed 38 projects and over 11,500 children in 10 states at a cost of nearly $1 million. The AIR study reports that students in Title VII-funded Spanish/English bilingual programs performed at a lower level in English language arts than non-Title VII students and at the same level in mathematics as non-Title VII students. At first glance, such conclusions might appear to suggest that bilingual education does not work--that the use of a student's dominant language for instruction does not make a difference and may even be detrimental to academic achievement. A fact that is seldom highlighted when the AIR effectiveness findings are mentioned is that the findings do not refer to Spanish dominant limited English-speaking (LES)/non-English-speaking (NES) students, but to a heterogeneous group of students who were largely English dominant or English monolingual (65%-81% depending on grade level) (Dulay, 1979, p. III-3).

Unfortunately, the numbers of Spanish monolingual and Spanish dominant students were too small to allow comparisons between Title VII and non-Title VII programs. The AIR study, therefore, does not reveal the benefits from basic skills instruction through the primary language for non-English dominant LES/NES students. It is essential to understand the different groups of students since different programming needs and outcomes are generally expected. Aside from the non-English dominant LES/NES students, other categories include: balanced bilingual linguistic minority students, English dominant linguistic minority students, and English dominant majority students. The LES/NES students need primary language instruction to survive academically because they

need to acquire concepts and skills through a language they understand while learning English. In contrast, balanced bilingual and English dominant students do not need (non-English) primary language medium instruction to survive academically; the exposure to the non-English language serves to maintain their bilingualism or reactivate a lost or undeveloped primary language. For the English dominant majority student, the primary language provides exposure to a foreign language and culture; these student are also expected to grow conceptually at the same rate as they might have in an all-English program. It is important to realize that the different uses of the primary language for the different types of students will render different outcomes and expectations. Confusion arose from the study because of the criteria that was used by AIR to measure impact that would be appropriate for LES/NES students, who in essence constituted a small minority. It is unclear what can be definitively concluded from the study that focused on the wrong group of students.

After scrutinizing the research design standards and their findings amongst 38 research projects and 175 project evaluations, AIR recognized nine research studies from which three bilingual demonstration projects dealing with non-English students were selected. The selection process eliminated studies with the following weaknesses, which are difficult to control in a natural field setting.

1. No control for subjects' socioeconomic status
2. No control for initial language proficiency or dominance
3. No baseline comparison data or control group
4. Inadequate sample size
5. Excessive attrition rate
6. Significant differences in teacher qualification for control and experimental groups
7. Insufficient data and/or statistics reported (Dulay, 1979, p. III-3).

The following research summary represents the results of bilingual education programs that were in operation during the first 10 years of the experimental operation of bilingual education programs in U.S. public schools. More than half of the findings show that bilingual education worked significantly better than monolingual programs for LES/NES students. The results indicated that out of a total of 59 findings, 34 (58%) were positive; 24 (41%) were neutral; and only 1 (1%) was negative (Dulay, 1979, p. III-3). Based on these findings, the original intent of the AIR study to investigate the effectiveness of bilingual education on non-English dominant LES/NES students can be satisfied.

The Harlandale Independent School District Study

Program evaluation is dependent on objective measures and achievement testing. The problems that could be encountered become evident in a examination of the preliminary findings of the Harlandale Independent School District. The evaluation design and objectives are important in program management. From 1976 to 1981, a Title VII demonstration program located in the Harlandale Independent School District in the southside of San Antonio, Texas, attempted to demonstrate that one of the two bilingual approaches, transitional or maintenance, would provide more effective instruction for limited English speaking Mexican American students. The racial composition of the district in 1980-1981 was: Mexican American, 13,071 (82.33 percent); Anglo American, 2,714 (17.09 percent); American Indian, 9 (.05 percent); Asian 25 (.15 percent); and Black American, 56 (.35 percent) (Vazquez, 1981, p. III 30).

In the Harlandale ISD study, pupil achievement scores were documented and compared from kindergarten (1976-77) through the fourth grade (1980-81) during which time

the transitional approach was implemented in four classrooms in three elementary schools, and the maintenance approach was implemented in four classrooms in three comparable schools. The students in the demonstration and research study were grouped inside the classroom according to the purposes of instruction.

> The Spanish dominant students received Spanish instruction in reading, language, math, science, social studies, and cultural and self-concept activities. All new concepts were introduced in Spanish first, with the English language terms added later as oral English instruction progressed to that point. Spanish dominant students thus learned to read in Spanish first. For English dominant children, instruction to new concepts was in English. For the students in the maintenance approach, instruction was divided equally between the two languages, using English one day and Spanish on the following day. Clarification in the other language was given when needed (Vazquez, 1981, p. III 31).

Although various measures were used to compare the achievement of the two groups, the most significant findings of the study related to student achievement measured by the Comprehensive Test of Basic Skills (CTBS). During the first project year (kindergarten), mean scores indicated both groups were below grade level. During the spring of the fourth grade year, however, the maintenance group scored above grade level in all three areas of the CTBS: reading, language, and mathematics. The transitional group, while performing below the maintenance group, still achieved at the fourth grade level in all three basic skill areas. The fourth grade achievement scores by grade equivalence for the maintenance group and the transitional group, respectively were: reading, 5.0 to 4.4; language, 5.3 to 4.4; and mathematics, 4.9 to 4.5 (Vazquez, 1981, p. III 31).

In comparing the Title VII project scores with the district mean grade equivalent scores and the total school site achievement, the following were reported:

> I. In all subsections of the CTBS, the mean grade equivalent scores for the maintenance group exceed those of the total school mean.

2. In mathematics, reference skills and science, the mean scores of the maintenance group also exceed the total district mean scores.
3. The transitional group's mean scores did not exceed those of the total school nor the total district on any subsection of the CTBS (Vazquez, 1981, p. III 31).

According to the findings, the maintenance group exceeded the transitional group's performance on all sections of the CTBS. It should be pointed out, however, that the validity of the research is based on the comparability of the schools used in the study, the randomness of student selection, and the assignment to equitable learning situations that vary only by the instructional approach. The criteria for the evaluation is dependent on the effectiveness of the instructional approaches, and a significant difference level much be reached to be meaningful. In addition to these concerns, the comparisons of all students in the program during the fith year included those who entered the program after the initial year. Controls are difficult to impose across schools and over a long period of time. At the secondary level, especially, students enroll in elective courses and may enter the mainstream at varying times of their schooling thereby altering the uniformity of their programming.

Mainstreaming Criteria

Because there seems to be little correlation among different language proficiency tests (Language Assessment Scales, Bilingual Syntax Measure, and the Basic Inventory of Natural Language) in rating and identifying the same group of students as Limited English Speaking (LES) or Limited English Proficiency (LEP)students, the mainstreaming of second language students is based on different criteria (Spencer, 1984, p.36). The inconsistency of assessment tools and their incomparability with achievement and performance in the mainstream curriculum make the labeling of student proficiency and readiness for the mainstream rather arbitrary. Validity and reliability of the available

language proficiency tests have been questioned. As mentioned earlier, intelligence alone is not a significant factor in determining language proficiency. The combined relationship of linguistic, and psycho-sociological variables as well as intelligence may have a greater impact on the achievement of students. Regardless, other individual characteristics or experiences may have a stronger relationship to achievement in the mainstream. Tests alone, therefore, are not accurate in determining the overall success of second language students who enter the mainstream. They do not identify the students who require continued bilingual or ESL assistance. Suggestions for improvement may include teacher recommendations in addition to numerous standardized test measures. Teacher referrals and observations are often not standardized or reliable by themselves unless the objectives and criteria for the rating scales are substantiated. In addition, the discriminating variables that affect achievement should be identified and consideration of all factors (as stipulated in context evaluation) should be made prior to the determination of the mainstreaming standards. Achievement test scores in all areas should also be considered since the regular curriculum requires content specific skills that determine scholastic achievement. Oral language proficiency alone does not determine skills in the content areas. It does not even determine communicative competency in the specific content areas.

The State of Hawaii IAPS flowchart (Appendix A) outlines the systematic assessment of all second language students with the use of the Native Language Proficiency test, the Basic Inventory of Natural Language test, and the Metropolitan Achievement Test (Reading, Math, and Language). In order for a student to exit the Students of Limited English Proficiency program he must attain the proficiency necessary to meet the mainstream

criteria by obtaining a Native Language Proficiency score of 12 (a "good" rating in 4 categories), a Basic Inventory of Natural Language score of 3 (a "functional" rating based on ten oral responses to visual stimuli), and a Metropolitan Achievement Test score of 25 percentile in all three areas, including reading, math, and language. The three areas of the MAT help to assess certain content specific skills that are necessary for scholastic achievement.

Establishing program placement cutoffs to identify students who require special programming is only one of the objectives of testing. Operationally, testing helps to make instructional decisions about the students' proficiency levels and areas of weakness that need to be developed, to group similar students by ability, to measure program effectiveness, to determine the kinds of curriculum materials and facilities that may be appropriate, to measure compliance standards to justify continued appropriations, and to determine future trends for policy making.

The analysis of grade point averages in the curriculum is a more sophisticated attempt to examine the students' actual performance in the curriculum. The students' actual perfomances in the school environment are based on learning experiences that can be objectively measured up to a certain extent, however, there are other variables that also affect student performance. The individual differences mentioned in this study may influence a student's grade point average. The student's prior language (monolingualism) or languages (bilingualism) and their transfer, the student's early or late oral English acquisition, the student's age differences, and the student's socio-economic status are areas under investigation.

The terms personality and motivation are often discussed in conjunction with student perfomance, however, these variables are influenced by more specific variables including past experiences, age, and socio-economic status. A person's ambition and perseverance denote a strong motivational drive that may be influenced by a person's background experiences or socio-economic status. The status a person is accustomed to may become the incentive to achieve that level as a minimal level of success. The personality trait that is often tied to cultural or social factors is "shyness," which may be perceived as a reserved, conservative, or inhibited demeanor. A hesitancy to communicate with strangers and to volunteer answers in an unfamiliar environment may be a cultural or a personality trait that may impede rapid language acquisition. Within the same culture, however, one still finds variable personality traits. In summation, it is wise to examine specific variables that may account for the individual differences that may influence academic performance. This is the general purpose for context evaluation. These variables may help to predict student needs and performance.

Saville-Troike attempted to identify the factors which influence the success or failure of limited English-speaking students in the U.S. Her study involved students who were matched for English proficiency and socio-economic status at the beginning of the year and who were taught and tested in English. At the end of the school year, the sudents differed considerably in their school achievement. The factors examined included: relative productive competence in English morphology, syntax, and vocabulary; verbosity; patterns of social interaction; first language performance; and personality factors. According to her findings, vocabulary knowledge was the single most important area of second language competence when learning content through English was the

dependent variable; grammatical accuracy was of little importance to the students' immediate academic needs; communicative competence in social interaction did not insure communicative competence in academic situations; and the use of the first language enhanced conceptual development (Saville-Troike, 1984, p. 199). The students in the study were from similar advantaged socio-economic backgrounds with positive prior learning experiences. The differential achievement from success to failure was not initially anticipated since many factors were controlled and students were matched along several variables.

Other factors which may influence achievement include active communicative participation, and home language influence and transfer. The styles of interaction based on the degree of active participation in communication with English speaking peers appear to be significant according to Strong and Johnson (1983) (Saville-Troike, 1984, p. 201). Strong reported that children who were talkative and verbally responsive in their native languages were more avid learners of English. Saville-Troike's findings, however, contradicted Strong's findings since students with poor academic achievement were found amongst both the most and the least talkative students (Saville-Troike, 1984, p. 210). Transfers from the structures and patterns of the first language to subsequent languages were also reported by Zehler (1981), Kaplan, Neimoianu (1980), and Saville-Troike (Saville-Troike, 1984, p. 201). Specific transfer of morphology, syntax, word order, and reading skills involving the inferrence of meanings from unfamiliar words were noted by Saville-Troike (Saville-Troike, 1984, pp. 213-214).

Establishing the mainstream criteria and predicting the probability of success once a second language student is exited from a special program require knowledge of various

assessment strategies. The knowledge of language proficiency tests, native language tests, achievement tests, and academic grades reflecting classroom norms along with teacher referrals is critical. The knowledge of specific individual differences and their relationships to success must also be considered. Perceptive teachers may incorporate these specific needs in their referrals of students who may require special programming versus the mainstream program, however, further research is necessary to standardize some of the generalizations made about individual differences and their impact upon programming.

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Chapter Three

Methodology

Chapter three explains the composition of the population, the data gathering procedures, the design, the instrumentation, and the statistical analysis to be performed

Population and Sample

The population to which this study generalized is the SLEP identified Vietnamese students who attend Roosevelt High School. Roosevelt High School is a public city school in the Honolulu District. Generalizability assumes the continuation of the guidelines for the identification, assessment, and programming system for the students of limited English proficiency.

The sample chosen for this study consisted of forty Vietnamese students who were initially non-English speakers upon their arrival to the United States. The sample included students who graduated in the 1982, 1983, and 1984 school years from Roosevelt High School. Twelve students were 1982 graduates; thirteen students were 1983 graduates, and fifteen students were 1984 graduates. Because of the limited number of students available to impose the necessary controls of ethnicity and language backgrounds, all of the Vietnamese students graduating during the three successive years were researched. It was necessary to draw the sample from the same school site to control for consistency in program objectives and standards.

Data Gathering Procedures

The program was uniformly administered to second language students who received 504 minutes of ESL instruction which included instruction in English language listening, speaking, reading, and writing; and an additional two periods of ESL instruction in the content areas initially. When the students attained a BINL 3 score, they received less service time only if they were able to pass one or more of the areas on the MAT at a 25% level. Yearly tests were administered in the areas not meeting the 25% criterion score in order to evaluate student progress and determine the programming needs for the following year. The raw data were collected at the end of the year's testing cycle. Because the study was primarily concerned with context-reduced (academic) proficiency as determined by the MAT results, only students who qualified to take the MAT were administered the test. Missing scores in the first year reflected this procedure. The procedure helped to deter wild guessing and frustration in situations where the students were unable to read or work with context-reduced tests.

The grade point averages of the students involved were obtained at the end of the three years of high school. The grade point averages were based on the final computation appearing on the students' report cards during the final semester of their graduation year. The school employed a four point system with four being high (A) and one being low (D). The raw score data was input into the University of Hawaii at Manoa Computer Center through a remote terminal in the College of Education.

Basic background information regarding the students' dominant ethnic background, birthdate, first language, and sex were obtained from the Student Enrollment Form, FORM SIS-10, which were disseminated by the Student Information Services Branch in the State of Hawaii. Similar information in addition to the whereabouts of the students' parents,

country of origin, occupations held by parents in Vietnam and Hawaii, socio-economic status based on prior backgrounds in Vietnam, and post high school plans were available through a survey circulated to the students by the program coordinator for background information. The Native Language Assessment Forms and BINL printouts also contained information verifying the students' dominant languages as well as scores on each test.

Instrumentation

The instrumentation included the MAT, the BINL, and the NLP tests. The validity and reliability information of these tests were discussed if they were available.

MAT

The Metropolitan Achievement Test (Form JS Advanced 2) was used in this study. The test was administered to large groups in the Spring (April to conform to norm test dates), and the students' achievement scores in reading, language, and math were used to program students the following year. The MAT scores were adjusted on the dependent variable (GPA). The process introduced control into the experimental data by making allowances for the initial differences among the groups.

The Metropolitan Item Analysis process, taking place in October 1985 and January 1986 involved approximately 14,000 test items, divided into three forms at each of seven battery levels. Approximately 93,000 students from 44 school systems participated. The participating schools represented the national school population in terms of geographic region, school enrollment, and socio-economic status. After the analysis, 7,500 items were selected and survey tests were developed in each of the skill areas based on the most representative items for the specific objectives.

The validity of the MAT in terms of content validity determines if the objectives and items cover the intended curriculum adequately. The content validity of the MAT must be

estimated by each school since variations within curricula are prevalent, eliminating its universality.

The reliability data based on the Kuder-Richardson Formula 20 reliability estimates were .93 for reading, .91 for mathematics, .88 for language, and .96 for basic battery (Prescott, 1978, p. 62).

BINL

The Basic Inventory of Natural Language measures the student's language abililties in terms of the complexity of their English usage. Language dominance and proficiency for students in grades K-12 are determined with the natural development of language through maturation taken into consideration. The complexity level scale ranges from 0 to 200. The average sentence length which is also measured by the BINL ranges between O and 15 words. The score ranges coinciding with the respective categories are : 0-24 for Non-English Speaking (NES), 24.1-100 for Limited English Speaking (LES), 100.1-125 for Fluent English Speaking (FES), and 125.1-200 for Proficient English English Speaking (PES).

A validity of the BINL "determining dominance and proficiency" was independently tested and studied by the Fresno Unified School District in 1975. The study's conclusion indicated that the test appeared to discriminate between the languages in identifying dominance and in providing a valid measure of growth in language development.

The BINL "oral language complexity" was validated with the Gilmore Oral Reading Test, which consists of 10 graded paragraphs of increasing difficulty. Students received higher scores if they were able to read more difficult paragraphs on the Gilmore Oral Reading Test. Similarly, the students received higher complexity scores when the complexity scores were scaled to the comparable language complexity of the Gilmoe Oral

paragraphs. Although a validation study of the correlation of the BINL with the Gilmore Oral Reading Test makes it possible to apply the complexity scores to written curriculum materials, data on the level of the language of instruction in learning materials are not presently available.

Two studies of the reliability of the BINL were conducted in Stockton and San Diego school districts in California. The studies measured the consistency of the levels of oral language complexity across the 10 sentence samples taken from each student in order to determine if the latter five sentences were more complex due to the student's "warming-up." The students in both districts represented a cross section of socio-economic status. In the Stockton study, 2,808 students from grades K-12 classified as English dominant were randomly seleted from a population of about 7,500 students, and in the San Diego study, 899 students from grades K-6 classifed as Spanish dominant were selected from a population of about 2,700 (Basic Inventory of Natural Languages, p. 6). The Spearman-Brown Split-Half Coefficient was used to correlate the two halves of student oral language samples which yielded r= .93. Therefore, the students dominant in either English or Spanish generated highly consistent levels in oral language complexity across the 10 sentences spoken.

A BINL validation study that represents absolute placement is depicted in Figure 7. The BINL oral language complexity score was validated with the Gilmore Oral Reading Test. When comparing the BINL to that of the Gilmore Oral Reading Test consisting of 10 graded paragraphs of increasing difficulty, the oral paragraphs were found to be comparable to the speech of students at ascending levels of language complexity. The students who received high scores on the Gilmore Oral Reading Test were able to read more difficult paragraphs. Likewise, students who could produce language comparable to the language of

the Gilmore Oral paragraphs were placed on a scale of increasing BINL levels of complexity. Figure 5 indicates that the BINL average complexity level scores for all ten levels of the Gilmore Oral Reading Test steadily rise in a similar manner with student scores when similar levels of language are generated orally.

Figure 5

Gilmore Oral Reading Test Analyzed

by BINL Language Complexity (BINL, 1978)

Paragraph No.	Totl. Words	Sent.	Avg. Sent. Length	Average Complexity Score Range	Level
1	24.0	6	04.0	017.2-032.2	24.3
2	45.0	8	05.6	023.6-050.8	39.5
3	50.0	7	07.1	032.2-118.5	52.3
4	73.0	7	10.4	044.2-149.6	78.2
5	105.0	8	13.1	050.8-157.8	100.6
6	118.0	7	16.9	094.0-190.6	130.0
7	127.0	7	18.1	094.0-190.6	140.0
8	161.0	8	20.1	094.0-190.6	147.2
9	181.0	9	20.1	050.8-190.6	148.0
10	256.0	10	25.6	110.3-190.6	167.9

NLP

The purpose of the Native Language Proficiency Test is to measure the student's listening and speaking proficiency in his native language in order to screen and place second language students in the proper program. The NLP instrument relies on the interview process where assessment is determined by a rater who is bilingual in both English and the student's dominant language. The student's native language is assessed through the observation of the student's proficiency in listening comprehension, oral production, and the use of appropriate non-verbal communication cues. The NLP

interview process is being used to assess Hawaii's students who represent approximately 45 immigrant languages. No validity or reliability test is available for the NLP.

Design of the Study

This study utilized an ex post facto correlational design. Sets of data were analyzed in an attempt to determine subsequent relationships between the sets of data.

The Pearson Product-Moment Correlation test was used descriptively to determine the significant relationships among high school grade point averages, the dependent variable; and the reading, math, and language scores of the MAT, which were the covariates.

Design Configurations for Hypotheses 1 through 5

The Two-Way Analysis of Covariances were based on the following factors or groups at two or three levels: I) prior language acquisition (Vietnamese and Chinese/Vietnamese) and socio-economic status (high, middle, and low), 2) prior language acquisition (Vietnamese and Chinese/Vietnamese) and early language proficiency (first year and second year attainment of a BINL 3--a functional score in spoken English, 3) prior language acquisition (Vietnamese and Chinese/Vietnamese) and age differences (17-18 and 19-20), 4) socio-economic status (high, middle, and low) and early language proficiency (first year and second year attainment of a BINL 3--a functional score in spoken English), 5) socio-economic status (high, middle, and low) and age differences (17-18 and 19-20). The covariates were the reading, math, and language scores on the MAT. The covariate scores were examined individually as well as simultaneously. The adjusted means of the grade point averages of the subjects were tested to determine if any significant differences exist amongst the groups. The main effects and interaction effects

were examined. The following diagrams illustrate the designs that were covered in the research. Each diagram is preceded by a brief explanation.

Figure 6 Diagram--Hypothesis One

In Figure 6, Prior Language makes reference to L_1 and L_2 categories to indicate the monolingual or bilingual capacity of the Vietnamese students upon their arrival. The L_1 designation indicates that the student is a monolingual Vietnamese speaker. The L_2 designation indicates that the student is a bilingual Chinese and Vietnamese speaker.

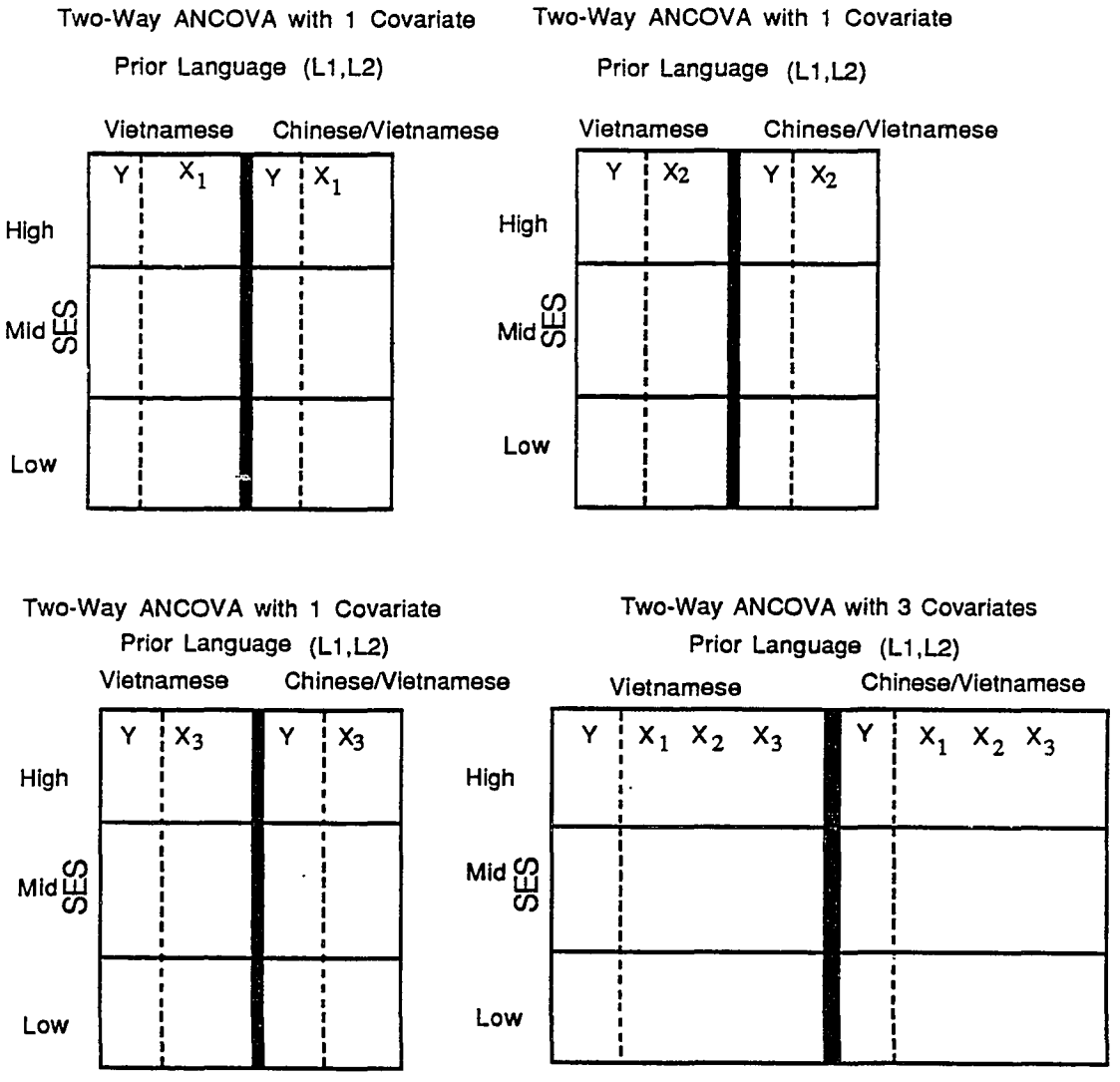
SES indicates three categories of high, middle, and low socio-economic status'. The SES in the study utilizes the income status determined by the students' fathers' occupations in Vietnam (Appendix F).

The factors of Prior Language at two levels and SES at three levels are examined first through a two-way ANCOVA with one covariate at a time initially. "X_1" indicates that the "Y" (GPA) is covariated with the reading MAT score in the first paradigm, "X_2" indicates that the "Y" is covariated with the math MAT score in the second paradigm, and "X_3" indicates that the "Y" is covariated with the language MAT score in the third paradigm. The fourth paradigm indicates that the independent variable "Y" is covariated by all three MAT scores (reading, math, and language) simultaneously.

The F ratios and significances among the factors in each of the paradigms along with their possible Interactions will be reported with their tabled results for each hypothesis in Chapter 4.

Figure 6

Design for Hypothesis One



Y =GPA

X_1 =Reading Metropolitan Test Score

X_2 =Math Metropolitan Test Score

X_3 =Language Metropolitan Test Score

Figure 7 Diagram--Hypothesis Two

In Figure 7, Prior Language makes reference to L_1 and L_2 categories to indicate the monolingual or bilingual capacity of the Vietnamese students upon their arrival. The L_1 designation indicates that the student is a monolingual Vietnamese speaker. The L_2 designation indicates that the student is a bilingual Chinese and Vietnamese speaker.

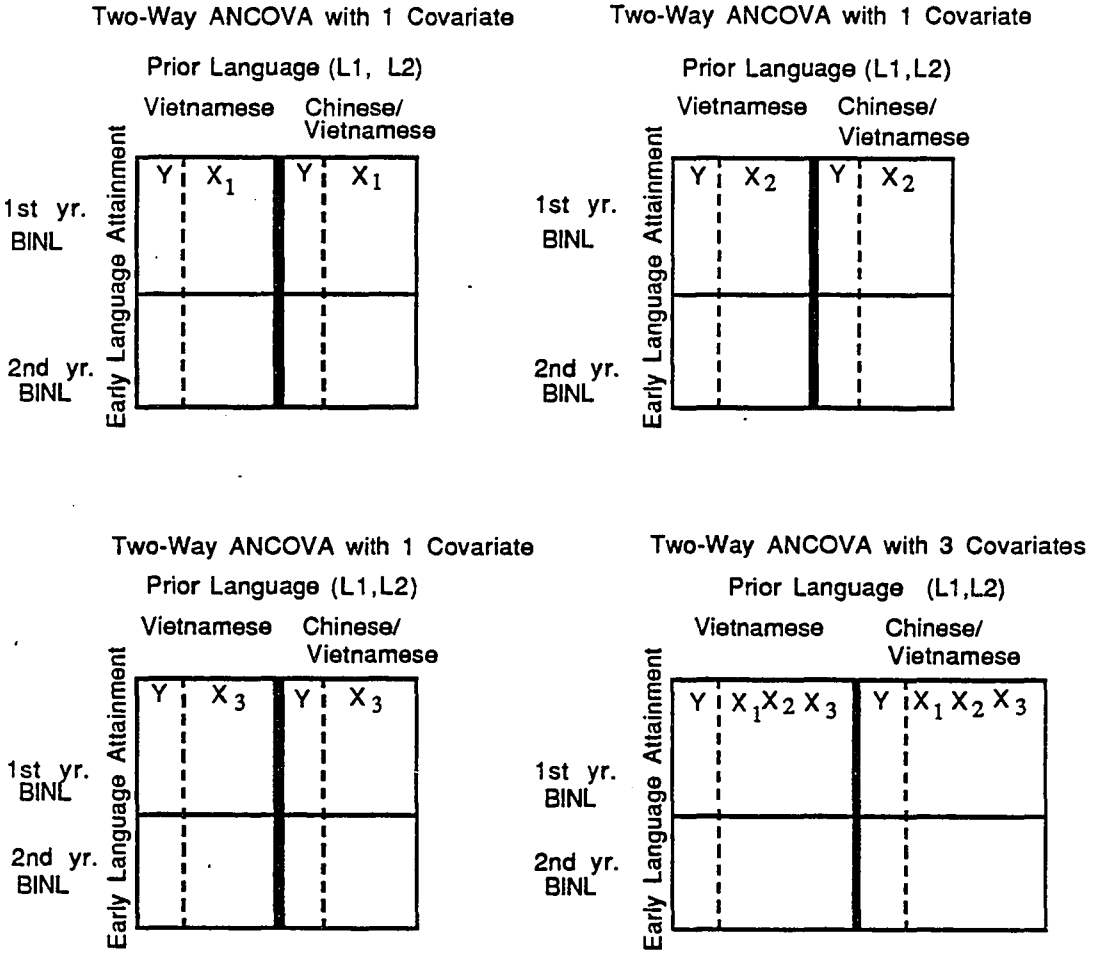
Early Language Attainment indicates two categories of 1st year BINL and 2nd year BINL. These categories delineate the year in which the student scored a BINL 3 proficiency level which allowed him to take the MAT to measure his academic skills and readiness for mainstreaming. The oral English proficiency score of a BINL 3 indentifies the student as a functional English speaker, however, he must remain in the program until he is able obtain a 25% score in all three areas of the MAT.

The factors of Prior Language at two levels and Early Language Attainment at two levels are examined first through a two-way ANCOVA with one covariate at a time initially. "X_1" indicates that the "Y" (GPA) is covariated with the reading MAT score in the first paradigm, "X_2" indicates that the "Y" is covariated with the math MAT score in the second paradigm, and "X_3" indicates that the "Y" is covariated with the language MAT score in the third paradigm. The fourth paradigm indicates that the independent variable "Y" is covariated by all three MAT scores (reading, math, and language) simultaneously.

The F ratios and significances among the factors in each of the paradigms along with their possible Interactions will be reported with their tabled results for each hypothesis in Chapter 4.

Figure 7

Design for Hypothesis Two



Y =GPA

X_1 =Reading Metropolitan Test Score

X_2 =Math Metropolitan Test Score

X_3 =Language Metropolitan Test Score

Figure 8 Diagram--Hypothesis Three

In Figure 8, Prior Language makes reference to L_1 and L_2 categories to indicate the monolingual or bilingual capacity of theVietnamese students upon their arrival. The L_1 designation indicates that the student is amonolingual Vietnamese speaker. The L_2 designation indicates that the student is a bilingual Chinese and Vietnamese speaker.

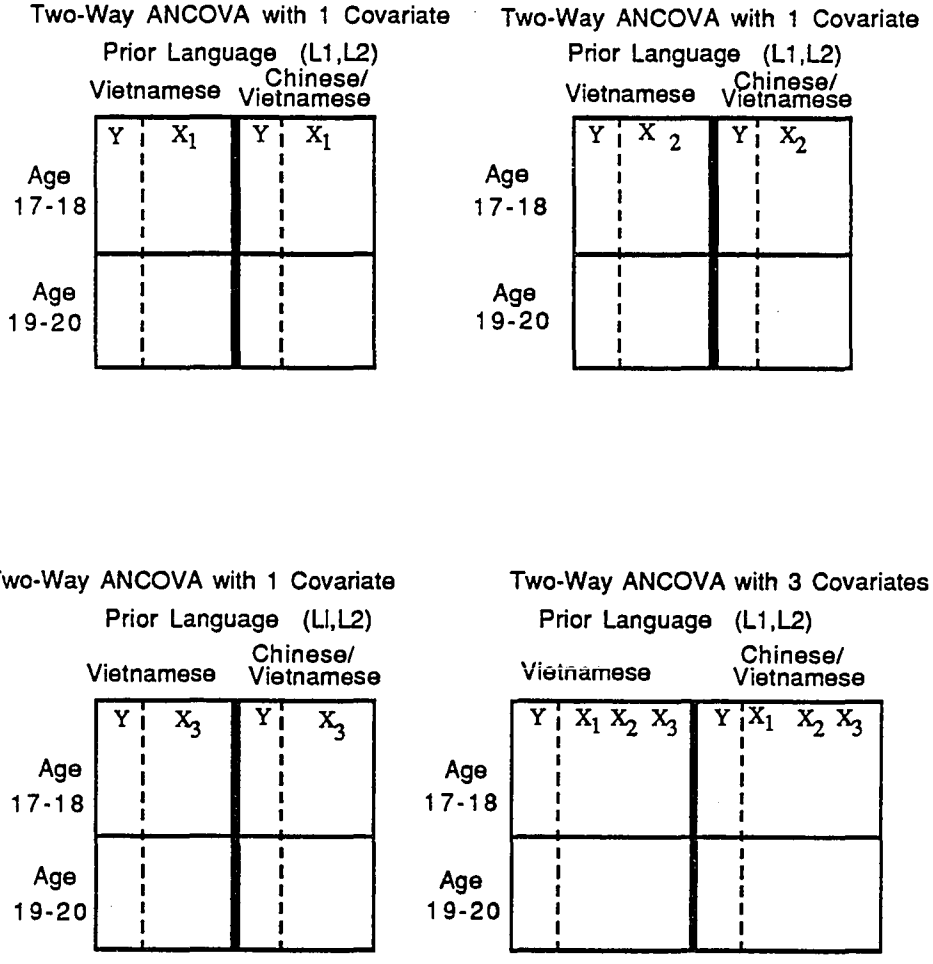
"Age" indicates two categories of ranges from 17 to 18 and from 19 to 20. The determination of the age categories are based on the students' ages at the time of graduation. The students' ages and prior grade levels in Vietnam did not affect their placement in the Hawaii school system since there were no transcripts to substantiate the completion of grade levels in Vietnam. Because all of the students in the study were classified as non-English speakers upon their arrival, they were all placed in the entry level courses regardless of their ages.

The factors of Prior Languae at two levels and Age at two levels are examined first through a two-way ANCOVA with one covariate at a time initially. "X_1" indicates that the "Y" (GPA) is covariated with the reading MAT score in the first paradigm, "X_2" indicates that the "Y" is covariated with the math MAT score in the second paradigm, and "X_3" indicates that the "Y" is covariated with the language MAT score in the third paradigm. The fourth paradigm indicates that the independent variable "Y" is covariated by all three MAT scores (reading, math, and language) simultaneously.

The F ratios and significances among the factors in each of the paradigms along with their possible Interactions will be reported with their tabled results for each hypothesis in Chapter 4.

Figure 8

Design for Hypothesis Three



Y =GPA

X_1 =Reading Metropolitan Test Score

X_2 =Math Metropolitan Test Score

X_3 =Language Metropolitan Test Score

Figure 9 Diagram--Hypothesis Four

In Figure 9, SES makes reference to three categories of high, middle, and low socio-economic levels. The levels of the SES reflects the income status determined by the students' fathers' occupations in Vietnam (Appendix F).

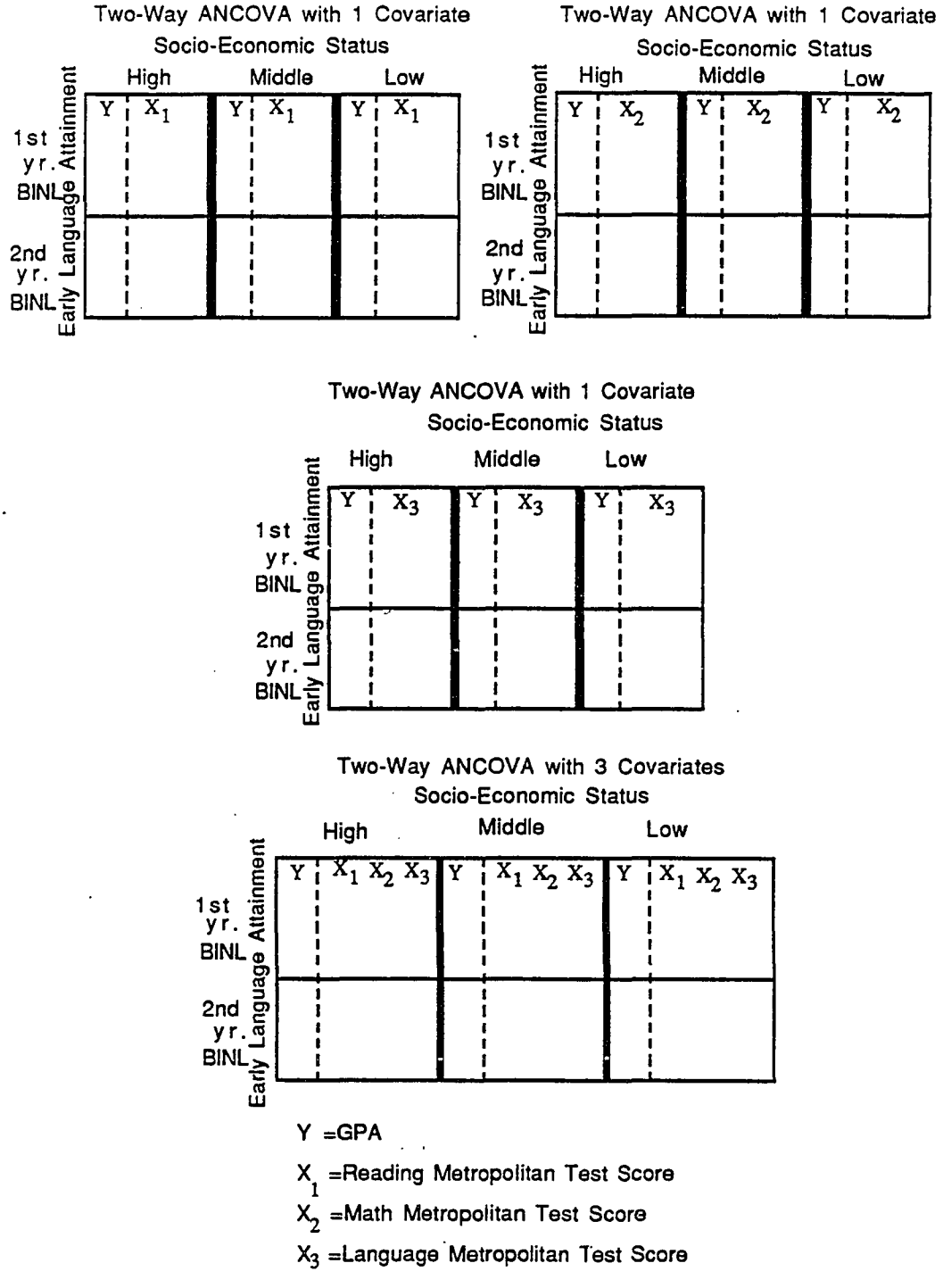
Early Language Attainment indicates two categories of 1st year BINL and 2nd year BINL. These categories delineate the year in which the student scored a BINL 3 proficiency level which allowed him to take the MAT to measure his academic skills and readiness for mainstreaming. The oral English proficiency score of a BINL 3 indentifies the student as a functional English speaker, however, he must remain in the program until he is able obtain a 25% score in all three areas of the MAT.

The factors of SES at three levels and Early Language Attainment at two levels are examined first through a two-way ANCOVA with one covariate at a time initially. "X_1" indicates that the "Y" (GPA) is covariated with the reading MAT score in the first paradigm, "X_2" indicates that the "Y" is covariated with the math MAT score in the second paradigm, and "X_3" indicates that the "Y" is covariated with the language MAT score in the third paradigm. The fourth paradigm indicates that the independent variable "Y" is covariated by all three MAT scores (reading, math, and language) simultaneously.

The F ratios and significances among the factors in each of the paradigms along with their possible Interactions will be reported with their tabled results for each hypothesis in Chapter 4.

Figure 9

Design for Hypothesis Four



Y =GPA

X_1 =Reading Metropolitan Test Score

X_2 =Math Metropolitan Test Score

X_3 =Language Metropolitan Test Score

Figure 10 Diagram--Hypothesis Five

In Figure 10, SES makes reference to three categories of high, middle, and low socio-economic levels. The levels of the SES reflects the income status determined by the students' fathers' occupations in Vietnam (Appendix F).

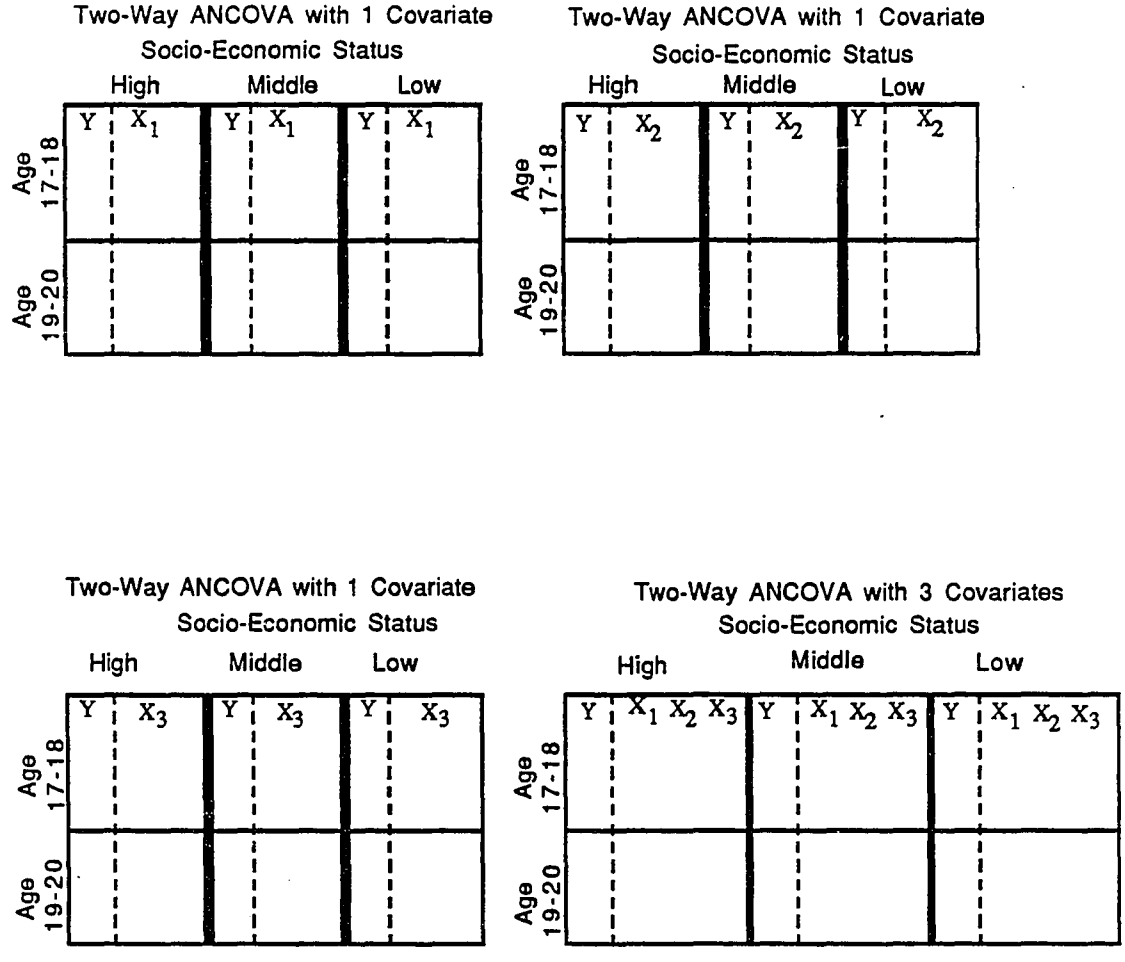
"Age" indicates two categories of ranges from 17 to 18 and from 19 to 20. The determination of the age categories are based on the students' ages at the time of graduation. The students' ages and prior grade levels in Vietnam did not affect their placement in the Hawaii school system since there were no transcripts to substantiate the completion of grade levels in Vietnam. Because all of the students in the study were classified as non-English speakers upon their arrival, they were all placed in the entry level courses regardless of their ages.

The factors of SES at three levels and Age at two levels are examined first through a two-way ANCOVA with one covariate at a time initially. "X_1" indicates that the "Y" (GPA) is covariated with the reading MAT score in the first paradigm, "X_2" indicates that the "Y" is covariated with the math MAT score in the second paradigm, and "X_3" indicates that the "Y" is covariated with the language MAT score in the third paradigm. The fourth paradigm indicates that the independent variable "Y" is covariated by all three MAT scores (reading, math, and language) simultaneously.

The F ratios and significances among the factors in each of the paradigms along with their possible Interactions will be reported with their tabled results for each hypothesis in Chapter 4.

Figure 10

Design for Hypothesis Five



Y =GPA

X_1 =Reading Metropolitan Test Score

X_2 =Math Metropolitan Test Score

X_3 =Language Metropolitan Test Score

Statistical Analysis

All statistical tests were performed on the Statistical Analysis System (SAS), a computer system for data analysis. The computer system is a group of computer programs that work together without the need to prepare separate jobs to plot data values or statistical tests. The data were input through the remote terminal at the College of Education to the University of Hawaii Computer Center, and testing was done through remote analysis using the Timesharing Option. The data was keypunched into the PACX system. The data was analyzed before and after entry into the SAS system.

The level of significance ($p \leq .05$) was chosen as the probability level at which the null hypothesis could be rejected.

A correlation matrix using the Pearson Product-Moment Correlation test was used to examine the relationships between the independent variables and the dependent variable. The SAS lists the variables, the correlation coefficients, their significance, and the number involved in the matrix. The correlation coefficient ranges from -1 to +1 with zero indicating no correlation. Correlational linearity is an assumption.

The Homogeneity of Regression Slopes Test was used to examine the linearity of the regression slopes in the models. The slopes of the within group coefficients should not differ significantly across groups. It is an assumption that the covariance model assumes a constant slope. A test for the homogeneity of regression coefficients is given as:

$$F = \frac{(E_{yy(adj)} - S_1)/(k - 1)}{S_1/(N - 2k)}$$

The $E_{yy(adj)}$ is the adjusted within group sum of squares(i.e., the sum of squared deviations about the regression line assuming a common regression coefficient over all

groups), and S_1 is the sum of squared deviations about the within class regression lines, each with a unique slope depending upon the particular treatment level. The degrees of freedom are indicated by k-1 and N-2k.

The Analysis of Covariance was used to test all of the five hypothess. The purpose of the analysis of covariance is to test the hypothesis that the group means are equal. The analysis of variance on the adjusted scores would be the proper approach if ß were known in the following equation:

$$Y_{ij(adj)}=Y_{ij}-ß(X_{ij}-X)=u+\tau_i+e_{ij}$$

Since ß is estimated from all of the data, however, the adjusted means are not independent of each other and the assumptions for establishing the ratio of mean squares as an F-distribution are violated. Therefore, the alternate formula should be used to arrive at the appropriate sum of squares and mean square terms which are adjusted for the covariate:

$$Y'_{ij}=Y+b_T(X_{ij}-X)$$

The predicted score Y'_{ij} represents the portion of the dependent variable accounted for by the covariate with knowledge of only the covariate. The following explanation accompanies the formula:

Y'_{ij}=the predicted score for observation j in group i

Y=the grand(sample) mean of the dependent variable

X_{ij}=the value of the covariate for observation j in group i

X=the grand (sample) mean of covariate

b_T=the estimated coefficient for the covariate

References

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Prescott, G. A., Balow, I. H., Hogan, T. P., & Farr, R. C. (1978). Metropolitan Achievement Tests: Teacher's Manual for Administering and Interpreting. The Psychological Corporation. Harcourt Brace Jovanovich, Inc.

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Chapter Four

Findings

The purpose of Chapter Four is to disclose the findings of the statistical analysis performed on the data collected for this research. The analysis was accomplished in order to reveal the differences and interaction effects between the adjusted means of GPA's for ESL students with: 1) prior language acquisition (L_1,L_2) and socio-economic status (high, middle, and low), 2) prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) based on a BINL 3 score, 3) prior language acquisition (L_1, L_2) and age differences (17-18, 19-20), 4) socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) based on a BINL 3 score, and 5) socio-economic status' (high, middle, and low) and age differences (17-18, 19-20). The comparison groups were examined with the reading, math, and language MAT covariates taken individually and simultaneously; and the interaction effects for the groups were examined with each covariate. The applicable statistical tests and findings of each hypothesis are presented.

Descriptive Statistics

The sample included forty Vietnamese students who graduated during the 1982, 1983, and 1984 school years. The sample consisted of twelve 1982 graduates, thirteen 1983 graduates, and fifteen 1984 graduates. Nineteen of the total group were in the 17-18 year old group and twenty-one were in the 19-20 group at the time of graduation.

The students were classified as non-English speakers at the time of their arrival with one or two primary languages. The group was composed of 27 Chinese and Vietnamese speakers, and 13 Vietnamese only speakers. The prior language factor was based on the students' knowledge of one or two of the languages which determined their monolingualism or bilingualism. Native language assessors employed by the Department of Education to administer the NLP were used to identify the proficiency levels of the students' primary languages. The reference to one prior language meant that the student was a monolingual student who knew only Vietnamese. The reference to two prior languages meant that the student was a bilingual student who knew both Vietnamese and Chinese prior to learning English, the third language to be acquired.

The early language attainment factor referred to the category of students who were able to take the Metropolitan Achievement Test (MAT) during the first year of their arrival. The determination of qualifying for the MAT was based on the students' ability to achieve a Basic Inventory of Natural Language (BINL) score of three or higher. The two levels of the factors are identified as 1st year language attainment or 2nd year language attainment. There were 26 students in the 1st year language attainment category and 24 students in the 2nd year language attainment category.

All of the 40 students in the study were classified as Vietnamese refugees upon their arrival. The socio-economic status variables were based on three levels (high, middle, and low) that were reflective of the students' parents prior income level in Vietnam. The income levels were determined through an analysis of the parents' occupation in Vietnam. The income information was obtained through a survey that was taken for background information. The placement into the categories of high, middle, and low was determined by a former Vietnamese labor union officer who was employed by the Department of Education

as a part-time temporary teacher when the survey was taken. The analysis placed 19 students in the high socio-economic status, 16 students in the middle socio-economic status, and 5 students in the low socio-economic status.

The selected measures of central tendency and variability of the variables of high school grade point average, reading score on the MAT, math score on the MAT, and language score on the MAT indicated that the forty students had a mean GPA of 2.92, a mean reading score of 20.95, a mean math score of 32.13, and a mean language score of 26.9. The standard deviations were .54 for GPA, 5.22 for MAT reading, 7.34 for MAT math, and 7.07 for MAT language. The students scored the highest on the MAT math test followed by the MAT language test, and the MAT reading test in declining order.

Correlation Matrix

The Pearson Product-Moment Correlation test was used to analyze the relationships of the independent variables with the dependent variable (HSPA). The correlation coefficients and statistical significances are included in Table 1.

The MAT language ($r=.39$) and the MAT math ($r=.38$) correlation coefficients were significantly correlated with HSGPA. The correlation between the MAT covariates and the HSGPA (dependent variable) were significant ($p=\leq.05$ or $p=\leq.01$) except for the MAT reading ($r=.24$) which was not significantly correlated with HSGPA.

Table 1

Pearson Product-Moment Correlations of High School GPA and MAT Scores

Variables	HSGPA	READ	MATH	LANG
HSGPA	1.00	.24	.38**	.39**
READ	.24	1.00	.43**	.35*
MATH	.38**	.43**	1.00	.57**
LANG	.39**	.35*	.57**	1.00

*p≤.05 **p≤.01

Assumptions:

Homogeneity of Regression Slopes

The tests fo the homogeneity of regression slopes were conducted for hypotheses 1, 2, 3, 4, and 5. The hypotheses were stated as follows:

Hypothesis 1

There are no significant differences (p≤.05) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) for each individual covariate.

Hypothesis 2

There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) based on a BINL 3 score, measuring context imbedded oral usage. The variables will be examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There is no significant interaction effect between prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) for the math covariate. However, there are significant interaction effects between the groups for the reading and language covariates.

Hypothesis 3

There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and age differences (17-18, 19-20) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and age differences (17-18, 19-20).

Hypothesis 4

There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) based on a BINL 3 score, measuring context imbedded oral usage. The variables are examined with each of the following covariates individually and simultaneously: reading, math, and

language MAT scores. There are no significant interaction effects between socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) for each individual covariate.

Hypothesis 5

There are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) for each individual covariate.

An assumption underlying the adjustment of the within group sum of squares is that the within group regression coefficients are equal. It is an assumption that the effect of the covariate on the dependent variable is the same for all levels of the categorical independent variable. A test for the homogeneity of regression slopes was conducted to satisfy this assumption. The assumption was violated for Hypothesis 2, however, the statistical analysis for the Analysis of Covariance was still conducted for consistency.

The results of the tests for the homogeneity of regression slopes for all of the hypotheses as depicted in Table 2 are as follows:

1) Hypotheses 1, 3, 4, and 5 were not significant when the tests for the homogeneity of regression slopes were tested. The homogeneity of regression slopes for the covariates and independent factors were not significant. The correlations between the covariates of reading, math, and language; and the independent variables were not statistically significant. 2) Hypothesis 2 was significant. The correlations between the covariates of reading and language, and the independent variables were significant.

Table 2

Tests for the Homogeneity of Regression Slopes

For Hypotheses I through 5

Covariates and Independent Factors	F-Value	Significance
Hypothesis One		
$F_{1Reading} = \frac{1.968/4}{7.596/29}$	1.878	(N.S.)
$F_{1Math} = \frac{1.133/4}{7.960/29}$	1.033	(N.S.)
$F_{1Language} = \frac{1.160/4}{7.822/29}$	1.074	(N.S.)
Hypothesis Two		
$F_{2Reading} = \frac{3.271/3}{6.704/32}$	5.215	$p \leq .01$
$F_{2Math} = \frac{.604/3}{7.621/32}$	.845	(N.S.)
$F_{2Language} = \frac{1.889/3}{6.981/32}$	2.890	$p \leq .05$

Table 2 (cont.)
Tests for the Homogeneity of Regression Slopes

Covariates and Independent Factors	F-Value	Significance
Hypothesis Three		
$F_{3Reading} = \frac{1.771/3}{8.120/30} =$	2.323	(N.S.)
$F_{3Math} = \frac{1.414/3}{7.800/32} =$	1.930	(N.S.)
$F_{3Language} = \frac{1.115/3}{7.686/32} =$	1.55	(N.S.)
Hypothesis Four		
$F_{4Reading} = \frac{1.228/4}{8.032/29} =$	1.108	(N.S.)
$F_{4Math} = \frac{1.374/4}{6.904/29} =$	1.445	(N.S.)
$F_{4Language} = \frac{1.846/4}{6.133/29} =$	2.190	(N.S.)
Hypothesis Five		
$F_{5Reading} = \frac{1.691/4}{7.902/29} =$	1.555	(N.S.)
$F_{5Math} = \frac{1.153/4}{7.219/29} =$	1.157	(N.S.)
$F_{5Language} = \frac{.121/4}{8.214/29} =$	.106	(N.S)

Analysis of Covariance:

Hypothesis 1

Hypothesis 1 stated that there are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) for each individual covariate.

The homogeneity of regression slopes test was conducted for each Two-Way ANCOVA. The assumptions for the homogeneity of regression slopes were not violated.

The findings for the ANCOVA of Hypothesis 1 are depicted in Table 3 for the reading covariate, Table 4 for the math covariate, Table 5 for the language covariate, and Table 6 for the simultaneous reading, math, and language covariates. The two groups, prior language and socio-economic status, were not significantly different on any of the four ANCOVA tests when the covariates were taken individually or simultaneously. There were no significant interaction effects between prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) for each individual covariate.

Table 3

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Socio-Economic Status

Covariate: Reading MAT Score

Source	DF	SS	MS	F
Model	5	1.367	.273	.900 n.s.
A(Prior Language)	1	.711	.711	2.35 n.s.
B(Socio-Economic Status)	2	.644	.322	1.06 n.s.
AXB Interaction	2	.011	.006	.02 n.s.
Error	33	10.007	.303	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 4

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Socio-Economic Status

Covariate: Math MAT Score

Source	DF	SS	MS	F
Model	5	1.221	.244	.812 n.s.
A(Prior Language)	1	.637	.637	2.13 n.s.
B(Socio-Economic Status)	2	.439	.220	.80 n.s.
AXB Interaction	2	.145	.073	.26 n.s.
Error	33	9.105	.276	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 5

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Socio-Economic Status

Covariate: Language MAT Score

Source	DF	SS	MS	F
Model	5	.935	.187	.730 n.s.
A(Prior Language)	1	.442	.442	1.73 n.s.
B(Socio-Economic Status)	2	.390	.195	.76 n.s.
AXB Interaction	2	.102	.051	.20 n.s.
Error	33	8.450	.256	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 6

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Socio-Economic Status

Covariates: Reading, Math, and Language MAT Scores

Source	DF	SS	MS	F
Model	5	1.045	.209	.816 n.s.
A(Prior Language)	1	.542	.542	2.12 n.s.
B(Socio-Economic Status)	2	.339	.170	.66 n.s.
AXB Interaction	2	.164	.082	.32 n.s.
Error	31	7.925	.256	
Total	36			

** $p \leq .01$

* $p \leq .05$

Hypothesis 2

Hypothesis 2 stated that there are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) based on a BINL 3 score, measuring context embedded oral usage. The variables are examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) for each individual covariate.

The homogeneity of regression slopes test was conducted for each Two-Way ANCOVA. The assumptions for the homogeneity of regression slopes were violated, but the ANCOVA was conducted in order to maintain the desired consistency and comprehensiveness. These groups were also determined prior to the study, and the demographic data could not be manipulated. It is known that statistical control is often introduced by collapsing the cells to reduce the number of cells thereby decreasing the possibility of a significant interaction. It was not possible, however, to collapse the number of cells in Hypothesis 2.

The findings for the ANCOVA of Hypothesis 2 are depicted in Table 7 for the reading covariate, Table 8 for the math covariate, Table 9 for the language covariate, and Table 10 for the simultaneous reading, math, and language covariates. The two groups, prior language and early language proficiency, were not significantly different on any of the four ANCOVA tests when the covariates were taken individually or simultaneously. There were no significant interaction effects between prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) for each individual covariate.

Table 7

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Early Language Proficiency

Covariate: Reading MAT Score

Source	DF	SS	MS	F
Model	3	1.66	.553	2.103 n.s.
A(Prior Language)	1	.577	.577	2.19 n.s.
B(Early Language Proficiency)	1	.763	.763	2.90 n.s.
AXB Interaction	1	.320	.320	1.22 n.s.
Error	35	9.210	.263	
Total	38			

** p≤.01

* p≤.05

Table 8

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Early Language Proficiency

Covariate: Math MAT Score

Source	DF	SS	MS	F
Model	3	1.638	.546	2.323 n.s.
A(Prior Language)	1	.343	.343	1.46 n.s.
B(Early Language Proficiency)	1	.764	.764	3.25 n.s.
AXB Interaction	1	.532	.532	2.26 n.s.
Error	35	8.229	.235	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 9

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Early Language Proficiency

Covariate: Language MAT Score

Source	DF	SS	MS	F
Model	3	1.215	.405	1.646 n.s.
A(Prior Language)	1	.457	.457	1.86 n.s.
B(Early Language Proficiency)	1	.333	.333	1.36 n.s.
AXB Interaction	1	.425	.425	1.73 n.s.
Error	35	8.599	.246	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 10

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Early Language Proficiency

Covariates: Reading, Math, and Language MAT Scores

Source	DF	SS	MS	F
Model	3	1.232	.411	1.678 n.s.
A(Prior Language)	1	.280	.280	1.14 n.s.
B(Early Language Proficiency)	1	.519	.519	2.11 n.s.
AXB Interaction	1	.434	.434	1.77 n.s.
Error	33	8.101	.245	
Total	36			

** p≤.01

* p≤.05

Hypothesis 3

Hypothesis 3 stated that are are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and age differences (17-18, 19-20) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between prior language acquisition (L_1, L_2) and age differences (17-18 19-20) for each individual covariate.

The Homogeneity of Regression Slopes test was conducted for each Two-Way ANCOVA. The assumptions for the homogeneity of regression slopes were not violated.

The findings for the ANCOVA of Hypothesis 3 are depicted in Table 11 for the reading covariate, Table 12 for the math covariate, Table 13 for the language covariate, and Table 14 for the simultaneous reading, math, and language covariates. The two groups, prior language and age differences, were not significantly different on any of the four ANCOVA tests when the covariates were taken individually or simultaneously. There were no signficant interaction effects between prior language acquisition (L_1, L_2) and age differences (17-18, 19-20) for each individual covariate.

Table 11

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Age Differences

Covariate: Reading MAT Score

Source	DF	SS	MS	F
Model	3	1.546	.515	1.936 n.s.
A(Prior Language)	1	.577	.577	2.17 n.s.
B(Age Differencs)	1	.195	.195	.73 n.s.
AXB Interaction	1	.775	.775	2.91 n.s.
Error	35	9.324	.266	
Total	38			

** p≤.01

* p≤.05

Table 12

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Age Differences

Covariate: Math MAT Score

Source	DF	SS	MS	F
Model	3	1.032	.344	1.365 n.s.
A(Prior Language)	1	.343	.343	1.36 n.s.
B(Age Differences)	1	.153	.153	.61 n.s.
AXB Interaction	1	.537	.537	2.13 n.s.
Error	35	8.835	.252	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 13

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Age Differences

Covariate: Language MAT Score

Source	DF	SS	MS	F
Model	3	1.244	.415	1.694 n.s.
A(Prior Language)	1	.457	.457	1.87 n.s.
B(Age Differences)	1	.340	.340	1.39 n.s.
AXB Interaction	1	.447	.447	1.83 n.s.
Error	35	8.570	.245	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 14

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Prior Language and Age Differences

Covariates: Reading, Math, and Language MAT Scores

Source	DF	SS	MS	F
Model	3	.89	.297	1.160 n.s.
A(Prior Language)	1	.280	.280	1.09 n.s.
B(Age Differences)	1	.186	.186	.73 n.s.
AXB Interaction	1	.424	.424	1.66 n.s.
Error	33	8.443	.256	
Total	36			

** $p \leq .01$

* $p \leq .05$

Hypothesis 4

Hypothesis 4 stated that there are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) based on a BINL 3 score, measuring context imbedded oral usage. The variables are examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) for each individual covariate.

The Homogeneity of Regression Slopes test was conducted for each Two-Way ANCOVA. The assumptions for the homogeneity of regression slopes were not violated.

The findings for the ANCOVA of Hypothesis 4 are depicted in Table 15 for the reading covariate, Table 16 for the math covaariate, Table 17 for the language covariate, and Table 18 for the simultaneous reading, math, and language covariates. The two groups, socio-economic status and early language proficiency, were not significantly different on any of the four ANCOVA tests when the covariates were taken individually or simultaneously. There were no significant interaction effects between the socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) for each individual covariate.

Table 15

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Early Language Proficiency

Covariate: Reading MAT Score

Source	DF	SS	MS	F
Model	5	1.99	.398	1.480 n.s.
A(Socio-Economic Status)	2	.764	.382	1.42 n.s.
B(Early Language Proficiency)	1	.822	.822	3.06 n.s.
AXB Interaction	2	.404	.202	.75 n.s.
Error	33	8.880	.269	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 16

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Early Language Proficiency

Covariate: Math MAT Score

Source	DF	SS	MS	F
Model	5	1.777	.355	1.449 n.s.
A(Socio-Economic Status)	2	.376	.188	.77 n.s.
B(Early Language Proficiency)	1	.779	.779	3.18 n.s.
AXB Interaction	2	.622	.311	1.27 n.s.
Error	33	8.090	.245	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 17

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Early Language Proficiency

Covariate: Language MAT Score

Source	DF	SS	MS	F
Model	5	1.823	.365	1.508 n.s.
A(Socio-Economic Status)	2	.546	.273	1.13 n.s.
B(Early Language Proficiency)	1	.417	.417	1.72 n.s.
AXB Interaction	2	.860	.43	1.78 n.s.
Error	33	7.991	.242	
Total	38			

** p≤.01

* p≤.05

Table 18

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Early Language Proficiency

Covariates: Reading, Math, and Language MAT Scores

Source	DF	SS	MS	F
Model	5	1.581	.3162	1.265 n.s.
A(Socio-Economic Status)	2	.314	.157	.63 n.s.
B(Early Language Proficiency)	1	.558	.558	2.23 n.s.
AXB Interaction	2	.710	.355	1.42 n.s.
Error	31	7.752	.250	
Total	36			

** $p \leq .01$

* $p \leq .05$

Hypothesis 5

Hypothesis 5 stated that there are no significant differences ($p \leq .05$) between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) when examined with each of the following covariates individually and simultaneously: reading, math, and language MAT scores. There are no significant interaction effects between socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) for each individual covariate.

The Homogeneity of Regression Slopes test was conducted for each Two-Way ANCOVA. The assumptions for the homogeneity of regression slopes were not violated.

The findings for the ANCOVA of Hypothesis 5 are depicted in Table 19 for the reading covariate, Table 20 for the math covariate, Table 21 for the language covariate, and Table 22 for the simultaneous reading, math, and language covariates. The two groups, socio-economic status and age differences, were not significantly different on any of the four ANCOVA tests when the covariates were taken individually or simultaneously. There were no significant interaction effects between socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) for each individual covariate.

Table 19

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Age Differences

Covariate: Reading MAT Score

Source	DF	SS	MS	F
Model	5	1.515	.303	1.071 n.s.
A(Socio-Economic Status)	2	.764	.382	1.35 n.s.
B(Age Differences)	1	.202	.202	.71 n.s.
AXB Interaction	2	.549	.275	.91 n.s.
Error	33	9.355	.283	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 20

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Age Differences

Covariate: Math MAT Score

Source	DF	SS	MS	F
Model	5	1.083	.217	.816 n.s.
A(Socio-Economic Status)	2	.376	1.88	.71 n.s.
B(Age Differences)	1	.198	.198	.74 n.s.
AXB Interaction	2	.510	.255	.96 n.s.
Error	33	8.784	.266	
Total	38			

** p≤.01

* p≤.05

Table 21

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Age Differences

Covariate: Language MAT Score

Source	DF	SS	MS	F
Model	5	1.285	.35	1.357 n.s.
A(Socio-Economic Status)	2	.546	.273	1.06 n.s.
B(Age Differences)	1	.334	.334	1.29 n.s.
AXB Interaction	2	.406	.203	.79 n.s.
Error	33	8.529	.258	
Total	38			

** $p \leq .01$

* $p \leq .05$

Table 22

Analysis of Covariance of High School Grade Point Average (HSGPA):

Comparison of Groups on Socio-Economic Status and Age Differences

Covariates: Reading, Math, and Language MAT Scores

Source	DF	SS	MS	F
Model	5	1.918	.384	1.417 n.s.
A(Socio-Economic Status)	2	.314	.157	.58 n.s.
B(Age Differences)	1	.200	.200	.74 n.s.
AXB Interaction	2	.405	.203	.75 n.s.
Error	31	8.415	.271	
Total	36			

** $p \leq .01$

* $p \leq .05$

Summary of Chapter Four

The purpose of this chapter was to discuss the hypotheses in relation to the available descriptive statistics and statistical tests including the test for the homogeneity of regression slopes and the Analysis of Covariance. The discussion on descriptive statistics included: 1) the composition of the sample, 2) the measures of central tendencies and variability, 3) the correlation matrix.

A test for the homogeneity of regression slopes was performed to determine if the scores obtained came from populations with equal variances. Hypotheses 1, 3, 4, and 5 did not violate the assumptions for the homogeneity of regression slopes. Hypothesis 2 indicated a violation of the assumptions; however the ANCOVA was performed to maintain the desired consistency and comprehensiveness. Although statistical control is often introduced by collapsing the cells and reducing the number of cells in order to reduce the possibility of a significant interaction, this was not possible for Hypothesis 2.

The test for the Analysis of Covariance was used to analyze the data since it uses statistical control to remove the effects of a variable that is correlated with the dependent variable. The ANCOVA was used because strict experimental control was impractical. It facilitated the analysis of the portion of the variability of the dependent variable that was not accounted for by the extraneous or concomitant variables. The ANCOVA helped to determine whether there were differences among the groups over and above the differences that could be accounted for by the differences in the students' GPA's. There were no significant differences among the comparison groups of: I) prior language and socio-economic status, 2) prior language and early language proficiency or attainment, 3) prior language and age, 4) socio-economic status and early language proficiency or attainment, and 5) socio-economic status and age.

Chapter Five

Summary, Conclusions, and Recommendations

The purpose of Chapter Five is to provide an explanation of the findings of the study and to summarize and conclude the results as it relates to the conceptual and theoretical framework. Recommendations for future research are also discussed.

Summary

The purpose of this study was to analyze the relationships of particular variables on second language acquisition. The students in the study consisted of forty Vietnamese students who graduated during the 1982, 1983, and 1984 school years. The sample consited of twelve 1982 graduates, thirteen 1983 graduates, and fifteen 1984 graduates. Nineteen of the total group were in the 17-18 year old group and twenty-one were in the 19-20 group at the time of graduation. All of the students were classified as non-English speakers at the time of their arrival with one or two primary languages. The group was composed of 27 Chinese and Vietnamese speakers, and 13 Vietnamese only speakers. The students' socio-economic status' were determined by their fathers' occupations in Vietnam. The students' early language proficiency levels were determined by the students' attainment of a BINL "3" score (oral test score) in their first or second year in the ESL program of a local city high school in Hawaii.

The second language Vietnamese students were analyzed in comparison groups of: l) prior language and socio-economic status, 2) prior language and early language

proficiency or attainment, 3) prior language and age, 4) socio-economic status and early language proficiency or attainment, and 5) socio-economic status and age. These particular variables were selected because the review of literature strongly indicated that a relationship among these factors and language acquisition may exist. The following research questions were investigated.

1. Is there a significant difference between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and socio-economic status (high, middle and low)? Are there any significant interaction effects between prior language acquisition (L_1, L_2) and socio-economic status (high, middle, and low) for each individual covariate?

2. Is there a significant difference between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) based on a BINL 3 score, measuring context imbedded oral usage? Are there any significant interaction effects between prior language acquisition (L_1, L_2) and early language proficiency (first year or second year attainment) for each individual covariate?

3. Is there a significant difference between the adjusted means of GPA's for ESL students with prior language acquisition (L_1, L_2) and age differences (17-18, and 19-20)? Are there any significant interaction effects between prior language acquisition (L_1, L_2) and age differences (17-18, 19-20) for each individual covariate?

4. Is there a difference between the adjusted means of GPA's for ESL students with different socio-economic status' (high, middle, and low) and early language proficiency score, measuring context imbedded oral usage? Are there any interaction effects between socio-economic status' (high, middle, and low) and early language proficiency (first year or second year attainment) for each individual covariate?

5. Is there a significant difference between the adjusted means of GPA's for ESL students with different socio-economic (high, middle, and low) status' and age differences (17-18, 19-20)? Are there any interaction effects between socio-economic status' (high, middle, and low) and age differences (17-18, 19-20) for each individual covariate?

The analysis of the five research questions were answered by the data from several Two-Way Analysis of Covariance tests reflecting high school grade point averages (dependent variable) in comparison groups (independent variables) of: 1) prior language and socio-economic status, 2) prior language and early language proficiency or attainment, 3) prior language and age, 4) socio-economic status and early language proficiency or attainment, and 5) socio-economic status and age. A total of four ANCOVA's were performed for each hypothesis since each hypothesis was examined with the reading, math, and language MAT raw scores as covariates that were taken independently as well as simultaneously. Main effects and interaction effects were examined.

The variables originated as individual characteristics influenced by environmental or contextual situations. The ad hoc considerations were based on observed or existing contextual conditions in the environment. Because of the emphasis of the internal and external environment on the learner variables, a conceptual model based on a complex

systems model was used to depict the relationships of the input, output, and feedback to the second language acquisition process. The conceptual model was transposed into the theoretical framework which illustrated the direction the results of the hypotheses would flow.

The hypotheses helped to formulate the constructs supporting the theoretical base. These constructs helped to identify the needs and problems that were necessary for the setting of goals and objectives for the programing of ESL students. The establishment of the needs and problems, and the setting of goals and objectives were part of the feedback mechanism. The feedback was intended as information to be used in decisions concerning the redirection or continuation of the program delivery based on the various second language acquisition assumptions.

Conclusions

The Vietnamese and the Chinese/Vietnamese bilingual students were ideal subjects for the study because of their diverse language capacities prior to receiving English instruction. The comparability of these different groups from similar backgrounds and environments enabled one to formulate the hypotheses (1, 2, and 3) that tested for the effects of cognitive transfer when acquiring English as a second or third language. The socio-economic status when grouped with early language proficiency or attainment and age generated two other hypotheses (hypotheses 4 and 5).

There were no significant differences at the $p=\leq.05$ for all of the five hypotheses. The four factors--prior language acquisition, socio-economic status, early language proficiency, and age--at their various levels did not indicate any significant differences, therefore, it was not possible to reject any of the null hypotheses.

The following conclusions were derived: 1) there were no significant differences in the GPA's of each of the three groups dealing with prior language, hence the belief that language acquisition is enhanced by prior bilingualism is not supported in this study, 2) there was no supporting evidence that prior bilingualism impeded language acquisition because of cognitive confusion, 3) there were no significant effects on the students' GPA's when SES, early language proficiency or attainment, and age factors were grouped with prior language, and 4) there were no significant differences among the groups' GPA's when the outputs of the Complex Systems Model were examined.

An important observation based on the analysis of the correlation matrix under descriptive statistics is that there were significant correlational relationships noted between the MAT covariates and the dependent variable, the students' high school grade point averages. All of the MAT scores were also highly correlated with each other. Based on the results, one could conclude that the MAT scores are considerably more predictive of high school grade point averages than the variables tested in the hypotheses.

Discussion of the Significance of the Study

A complex systems model was incorporated to identify the influences of certain external and internal environmental variables and their significances when transposed into a theoretical decision-making framework. The selected hypotheses were derived from the literature available suggesting strong relationships among certain variables and rates of language acquisition.

The literature dealing with language acquisition revealed: 1) a transference of cognitive abilities with greater flexibility when the student's primary language (L_1) was sufficiently developed, 2) a high correlation between family economic status or

socio-economic status and academic achievement, 3) a more significant relationship between a high rate of written language (context reduced) acquisition and achievement than between a high rate of oral language (context embedded) acquisition and achievement, and 4) a high correlation between age or acquired years of education in the primary language and academic achievement.

The hypotheses based on the literature were tested, however, this study found no significant differences among the variables suggested in the literature and rates of language acquisition.

It should be noted that the references made to other studies in the literature, such as those conducted by Cummins were representative of other populations (such as French and English bilinguals), therefore, it is not the intention of this study to refute the findings of earlier research. An extention of the assumptions as they may apply to different representative groups like the Vietnamese and English bilinguals and the Vietnamese, Chinese, and English trilinguals was the intention of this study. This study compared the oral language skills and written skills between bilinguals and trilinguals.

Another differentiating factor from other studies was the use of different measures (the BINL and the MAT) which may not have been as sensitive as other instruments. The ex post facto correlational design was based on an assessment program instituted by the Department of Education in the State of Hawaii. The issue of the sensitivity of the BINL may have limited the differentiation of the comparison groups. Enhanced oral language skills or early language acquisition among the bilingual and trilingual students did not produce any significant differences among the groups when written skills were measured through the MAT and GPA's. Because of the lack of sensitivity of the measures,

administrators should remain cautious and refrain from a dependency on a single assessment tool that does not reflect both the oral and written skills.

Recommendations

Since there were no significant differences among the variables examined--prior language, socio-economic status, early language proficiency, age--several recommendations could follow:

1. The MAT test should be relied on more heavily in predicting the performance of high school students' achievement as it relates to high school grade point averages. The literature review which supports the need to rely more heavily on specific content area tests that are similar to the objectives of the school curriculum in determining readiness or mainstream and exit criteria coincides with the results of this study. Because the nature of the MAT in the three content areas (reading, math, and language) resembles more closely the demands of the school curriculum expectations, the prediction of the students' success in the curriculum is more closely related to their performance in these areas of the standardized test.
2. Although prior language, socio-economic status, early language proficiency (oral), and age may have some relationship to the students' learning experiences, the differences are not significant enough to conclude that these considerations should take precedence over the utilization of standardized measurements when predicting success or performance in the actual school curriculum. As mentioned earlier, however, the more one is aware of individual differences, the more one is able to utilize various criteria with which to make assessments.

3. Further research is recommended in the area of second language acquisition. There are very few studies that deal with the Vietnamese population and their rate of second language acquisition.

Administrative Implications and Recommendations

The major emphasis of this study is on the effect of specific variables on second language acquisition and their implications for educational administration. The effects of prior language, socio-economic status, oral language proficiency rate, and age on second language acquisition are important to administrators who are required to identify the needs of particular second language groups for effective delivery and programming. Many legal responsibilities and compliance regulations must be addressed when providing equal educational opportunities to second language minority students. Policy decisions dealing with the delivery of a feasible and effective program therefore must encompass knowledge of specific language acquisition theories and administration principles.

Many of the assumptions dealing with second language learner variables require further investigation. This study examined certain language acquisition theories in the form of assumptions by identifying them as variables that are derived from the internal and external environments. In order to test the assumptions, hypotheses were formulated and the results were reported as constructs that would aid administrators in the decision-making process. The constructs will help to establish the needs and problems that need to be understood prior to the setting of goals and objectives for programming. Because of this approach, a conceptual framework identified as the Complex Systems Model integrated the selected variables in the hypotheses from the internal and external environments into an input, output, and feedback mechanism. The conceptual systems

framework was transposed into a theoretical language acquisition framework in order to show the relationship between the systems model and the theoretical decision-making model. The results of the research may help administrators to justify their programs or to alter their programs to be in consonance with the findings of the research. Since there are no significant differences among the groups, individualized programs or heterogeneous groupings according to ability may not be warranted. Information from the feedback stage would reinforce or recommend intervention in the form of variable inputs, reflecting modified goals and objectives.

Specific administrative implications and recommendations can be summarized as follows:

1) Although the literature indicated the need to differentiate program objectives for different types of ESL students with specific needs, this study did not support all of the literature. The administrative task of implementing variable programming strategies for these students based on the differences of the various levels of achievement along the factors of prior language, early language proficiency or attainment, socio-economic status, and age is not warranted. Program diversity may prove impractical according to the findings of this study, and a non-graded sequential curriculum may satisfactorily meet the needs of the students.

Recommendation: It is recommended that more heterogeneous groups be researched in the future to denote the possibility of individual differences that may affect the high school grade point averages of Vietnamese students.

2. The assumption that bilingual children had an expanded awareness of their linguistic operations because of their potential for incipient contrastive linguistic

capabilities that could compare the syntax and vocabulary of their languages (Cummins, 1981c, p. 38) was not verified in this study when the transfer was examined by comparing Vietnamese students who were learning English as a second or third language.

Recommendation: Administrators should not expect greater gains from the students who are already bilingual prior to learning English. Their programming should follow the entry level criteria with advancement based on actual achievement scores.

3. The ability to apply context reduced cognitive skills appears necessary for achievement in L_2 or L_3 (second or third languages)as was emphasized by Cummins (Cummins, 1982, p. 6), and is supported by the findings of this study.

Recommendation: Administrators should rely on standardize achievement scores rather than the oral BINL scores to assess cognitive growth or readiness of high school students.

4. The variables dealing with prior language, SES, early language attainment or proficiency, and age did not affect the cumulative GPA's of the second language students. The MAT raw scores were used as the covariates which adjusted for initial differences, and the ANCOVA's indicated that no significant differences in the GPA's of the students were evident. The MAT is a context reduced measurement which tests the students' ability to perform in specific content skill areas that are paralleled with the subjects offered in the curriculum. The students' GPA's are also reflective of the curricula objectives.

Recommendation: Administrators should be less concerned with the effects of the prior bilingual versus monolingual backgrounds of the students upon learning English than on specific skill mastery in the content areas.

5. SES amongst the high, middle, and low classifications did not indicate any significant differences amongst the GPA's of the students, therefore, this research cannot support the belief by Coleman, Jencks, and L.W. Fillmore that SES influences achievement in the majority or dominant language.

Recommendation: Administrators should not attempt special groupings for initial remediation or prevention programs in anticipation of specific needs and problems prior to treatment.

6. The effects of minimal age differences (17-18, 19-20) among students who have full cognitive development in at least one or more native languages on GPA's were not significant according to this study. Perhaps if the students' groups represented larger age difference where cognitive development (Cummins) may not have been achieved by one particular group, significant differences may have been evident. However, because the students in this study represented the secondary level where intial cognitive development in their first languages were recognized, the variations were perhaps too slight to have depicted significant differences. In other words, the homogeneity of the groups could not discriminate the effects of this factor on GPA's or overall school performance.

Recommendation: Administrators should not be concerned with grade norming the students in the initial stages of language instruction. A non-graded curriculum

should suffice until context reduced achievement testing indicates a need to stratify the curriculum goals and objectives.

7. The learning rate of students with one primary (L_1) language versus two primary (L_1 and L_2) languages who are exposed to a new dominant language (L_3), such as English has been analyzed with the help of the BINL. This research has failed to support the belief that second language students who attain a BINL 3 or oral proficiency earlier would perform significantly better in the curriculum based on their cumulative GPA's when compared with students who take an additional year to attain oral proficiency.

Recommendation: Administrators should not anticipate quicker rates of oral language proficiency or attainment as being indicative of overall success in the total curriculum because the students who acquired oral skills at a slower rate in the second year performed equally well in the curriculum based on cumulative GPA's with those who attained proficiency in their first year.

8. Because of the high correlations ($p=\leq.01$) among the math and language MAT raw scores and GPA's, skills tested by the MAT have a closer relationship with the overall curriculum than those skills tested by the BINL, which depends on an oral measurement scale. This supports the literature (Cummins, L. W. Fillmore) that context reduced measures are necessary to determine language proficiency.

Recommendation 1: Administrators should be more cognizant of integrating the objectives of the oral and written skills required of the total curriculum. There is also a close relationship or correlation amongst all of the three areas of the MAT (reading, math, and language) which also stresses the

interrelationship and importance of developing a skills oriented approach rather than a purely language experience approach. Future goals and objectives should not rely on the rate of oral language acquisition as a precedence for the development and exposure of higher level skills. Early language attainment or proficiency (based on the BINL) should not be used for student assessment if it will determine readiness for reading and writing or for mainstreaming criteria. It should not be used to anticipate student capabilities or potential for learning as well.

Recommendation 2: Administrators should realize that since there are no significant differences between the comparison groups of a BINL 3 attainment in the first year and in the second year, differentiating the program objectives of the first year group from the second year group would not necessarily increase student growth or performance. The students may learn different skills at different rates, however, the end product may remain the same with or without intervention.

9. Research dealing with the appropriate times of introduction of particular skills and their effects on the overall performance of students with individual differences should be pursued in the future. This latter point indicates the need to understand variability amongst second language students and readiness factors, specifically as it relates to language acquisition. Assessment needs, however, are foremost in order to make the kinds of decisions about program directions, goals, and objectives as mentioned.

Recommendation: Administrators are recommended to conduct needs assessment based on the environmental factors of diverse language groups and to investigate the relationships of the characteristic variables with the learning outcomes of the various

groups. After further understanding is attained at this level, inquiries into the effectiveness of specific programming for the various groups should follow.

This study was based on context assessment because of the lack of understanding of second language learners and the effects of prior language, socio-economic status, oral language proficiency rate, and age on second language acquisition. The variables studied were part of the external and internal environments of the Complex Systems Model. The model was transposed into a theoretical framework to be used by administrators in their decision-making process. It is hoped that the hypotheses outcomes will formulate constructs that will feed back into the systems model to influence future goals and objectives dealing with second language students and second language acquisition programs.

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Appendix A

Programming Requirements and Service Recommendations

INTENSIVE LANGUAGE SERVICES FOR GRADES K-12
CRITICAL LANGUAGE/LANGUAGE [illegible] 3, 4, 5

Grade	Instructional Services and Time Allocation	Mode	Instructional Area
K-8	Transitional Bilingual (450 min./wk.) and ESL (150 min./wk.)	l Bilingual . daily)	Bilingual assistance through tutorials in content area where underachieving Multicultural awareness activities
9-12	Transitional Bilingual (250 min./wk.) and ESL (250 min./wk.)	daily) ry Language er core areas y)	Basic communication skills using a second language approach Tutorials in English: Reading Writing Oral communication (as needed) Other required courses (as needed) Multicultural awareness activities
	ESL (250 OR min./wk.) and Native Language Assistance (1 to 3 pds. daily)*	einforce- ily)	Supplemental assistance in area of need: Reading Writing Mathematics Science Social Studies Multicultural awareness activities
	ESL (250 OR min./wk.) and ESL in content areas (1 to 3 pds. daily)*		

ed English Proficiency:

PROGRAMMING REQUIREMENTS FOR SLEP STUDENTS

Appendix A

Figure 11

Honolulu District

STUDENTS OF LIMITED ENGLISH PROFICIENCY (SLEP) PROGRAM

LANGUAGE SERVICE RECOMMENDATIONS FOR LDR 1/2 STUDENTS
October, 1981

GRADE	CRITICAL/ NON-CRITICAL	BINL LEVEL	HAT*			INSTRUCTIONAL SERVICES AND CONTACT TIME
			LANGUAGE	READING	MATH	
9-12	Critical	1,2	NA	NA	NA	OPTION 1 Transitional Bilingual (250 min/week) AND ESL (250 min/week)
	Critical OR Non-Critical	1,2	NA	NA	NA	OPTION 2 ESL (250 min/week) AND ESL in Content Areas (LDR 1 - 3 periods, LDR 2 - 2 periods) Note: ESL in Content Areas may be reduced to 1 period after completion of 1 grading period and attainment of a grade of "C" or better in any of the content areas.

* HAT (NA = Not Applicable, YES = 25 Percentile or more, NO = Less than 25 Percentile)

Figure 11 (cont.)

Honolulu District

STUDENTS OF LIMITED ENGLISH PROFICIENCY (SLEP) PROGRAM

LANGUAGE SERVICE RECOMMENDATIONS FOR LDR 1/2 STUDENTS
October, 1981

GRADE	CRITICAL/ NON-CRITICAL	BINL LEVEL	MAT*			INSTRUCTIONAL SERVICES AND CONTACT TIME
			LANGUAGE	READING	MATH	
9-12	Critical OR Non-Critical	1,2	NA	NA	NA	OPTION 3 ESL (250 min/week) AND Native Language Assistance in Content Areas (LDR 1 - 3 periods LDR 2 - 2 periods) Note: Native Language Assistance in Content Areas may be reduced to 1 period after completion of 1 grading period and attainment of a grade of "C" or better in any of the content areas.
	Critical OR Non-Critical	3,4	NO	NO	NO	Same as for LDR 1,2/BINL 1,2 students. Option 1; Option 2; Option 3

* MAT (NA = Not Applicable, YES = 25 Percentile or more, NO = Less than 25 Percentile)

Figure 12

Honolulu District

STUDENTS OF LIMITED ENGLISH PROFICIENCY (SLEP) PROGRAM

LANGUAGE SERVICE RECOMMENDATIONS FOR LOR 1/2 STUDENTS

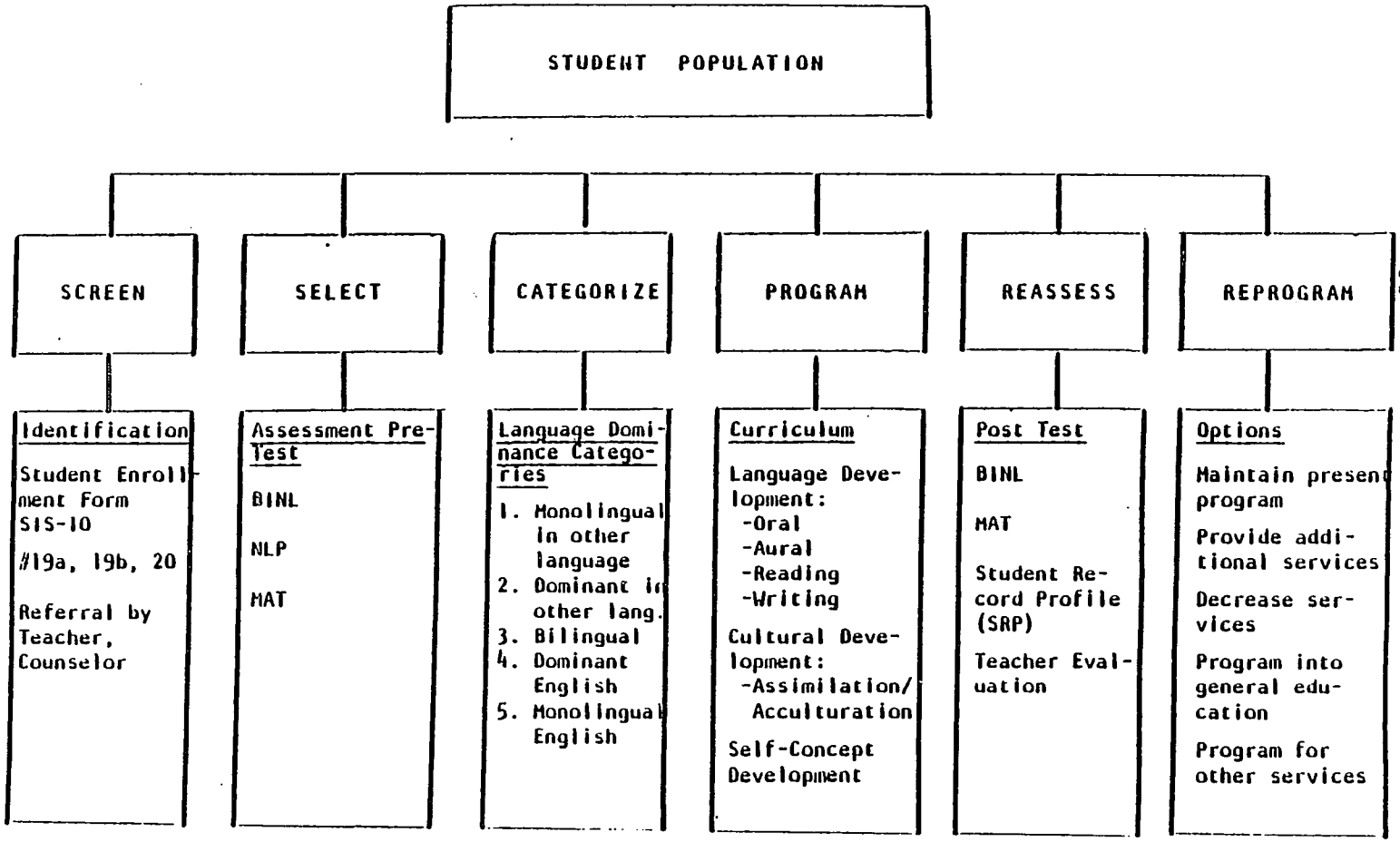
October, 1981

GRADE	CRITICAL/ NON-CRITICAL	BINL LEVEL	HAT*			INSTRUCTIONAL SERVICES AND CONTACT TIME
			LANGUAGE	READING	MATH	
9 - 12	Critical	3,4	NO	NO	YES	Transitional Bilingual AND ESL (Combined Total of 450 min/week)
	Critical	3,4	NO YES YES	YES NO YES	YES YES NO	Transitional Bilingual AND ESL (Combined Total of 300 min/week)
	Critical	3,4	NO YES YES	YES NO YES	YES YES NO	Transitional Bilingual (150 min/week)
	Critical OR Non-Critical	3,4	NO	NO	YES	ESL in the Content Areas AND ESL (Combined Total of 450 min/week)

GRADE	CRITICAL/ NON-CRITICAL	BINL LEVEL	HAT*			INSTRUCTIONAL SERVICES AND CONTACT TIME
			LANGUAGE	READING	MATH	
9 - 12	Critical OR Non-Critical	3,4	YES NO	NO YES	NO NO	ESL in the Content Areas AND ESL (Combined Total of 300 min/week)
	Critical OR Non-Critical	3,4	NO YES YES	YES NO YES	YES YES NO	ESL in the Content Areas (150 min/week)

* HAT (NA = Not Applicable, YES = 25 Percentile or more, NO = Less than 25 Percentile)

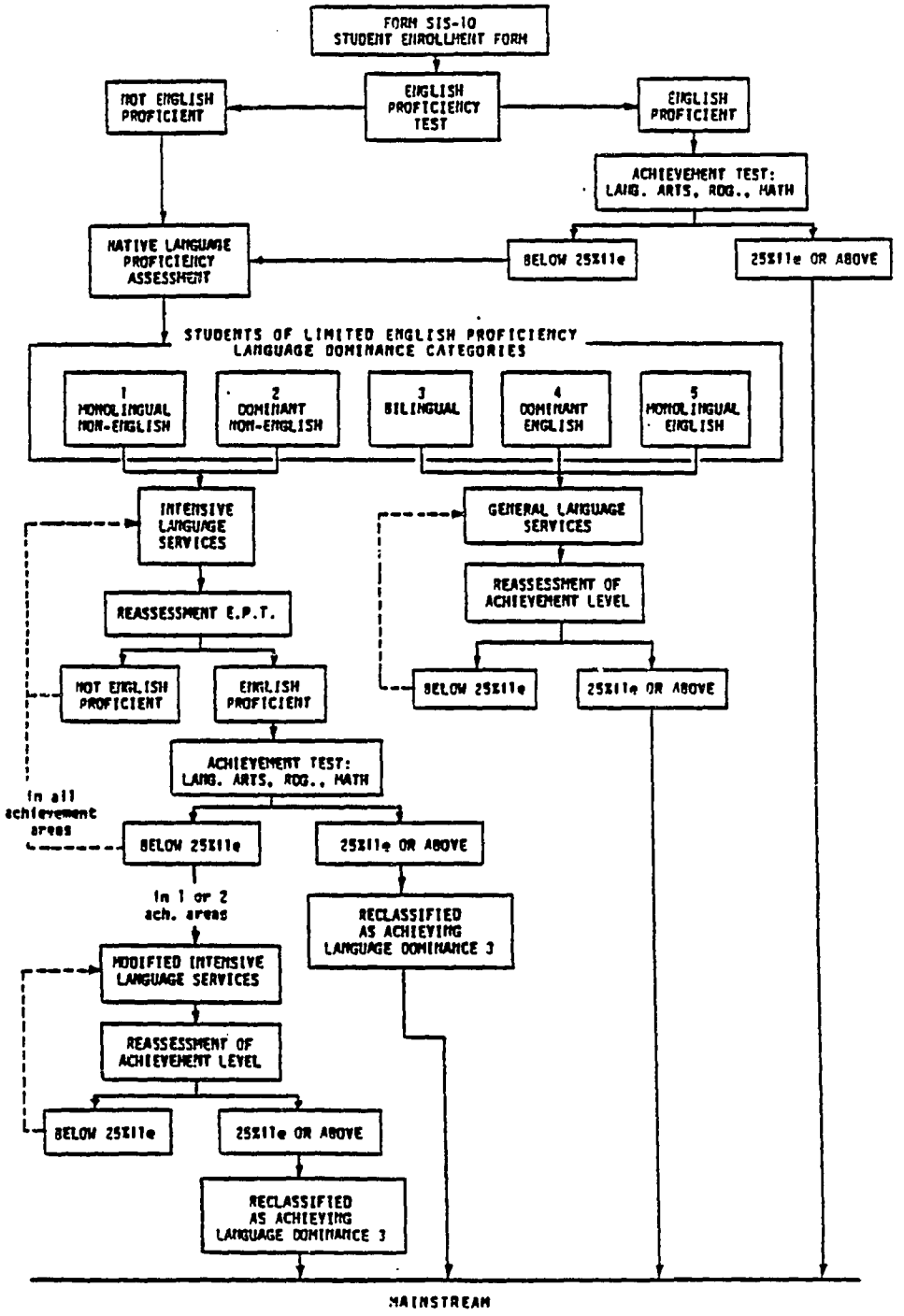
SYSTEMATIC PROCEDURE FOR IDENTIFICATION, SELECTION, PROGRAMMING AND ASSESSMENT



Appendix C

FLOW CHART: IAPS FOR STUDENTS OF LIMITED ENGLISH PROFICIENCY

GRADES K-12



Appendix D

Hawaii's Plan

Hawaii's Students of Lilmited English Proficiency (SLEP) program is comprehensive in meeting the federal guidelines established in providing services to meet the needs of second language students. The State of Hawaii's plan presently takes into consideration the Lau remedies which Hawaii did not comply with under Title VI prior to 1970. The Office of Civil Rights, U.S. Department of Health, Education, and Welfare provided the guidelines for non-complying schools on May 25, 1970. The district is obligated to serve any student whose primary or home language is other than English.

The following guidelines provide the rationale for Hawaii's Identification, Assessment, and Programming System:

Step I: Identification of Student's Primary or Home Language

The primary or home language is other than English if it meets at least one of the following descriptions:

A. The student's first acquired language is other than English.

B. The language most often spoken by the student is other than English.

C. The language most often spoken in the student's home is other than English, regardless of the language spoken by the student.

The assessments of the native language must be made by persons who can speak and understand the student's language. The degree of linguistic function or ability determines the category the student belongs to:

I. Monolingual speaker of the language other than English (speaks the language other than English exclusively).

2. Predominantly speaks the language other than English (speaks mostly the language other than English, but speaks some English).
3. Bilingual (speaks both the language other than English and English with equal ease).
4. Predominantly speaks English (speaks mostly English, but some of the language other than English)
5. Monolingual speaker of English (speaks English exclusively).

Step 2: Diagnostic/Prescriptive Approach

The nature and extent of the student's needs must be identified. An educational program utilizing the most effective teaching style to satisfy the diagnosed educational needs must be prescribed.The determination of the appropriate style requires a review of both the cognitive and affective domains. The assessment of the responsiveness of students to different types of cognitive learning styles, motivational strategies, and content area problems is necessary to diagnose needs. Aside from diagnostic measures, prescriptive measures must serve to bring the linguistically/culturally different student(s) to the performance levels that are expected by the Local Education Agency (LEA) and State of nonminority students. According to the OCR guidelines, a program designed for students of limited English speaking ability must "not be operated in a maner so as to solely satisfy a set of objectives divorced or isolated from those educational objectives established for students in the regular school program."

Step 3: Educational Program Selection

The district must implement the appropriate type(s) of educational program(s), dependent upon the degree of linguistic proficiency of the students in question.

A. The monolingual speaker of the language other than English

1. At the Intermediate Levels, any one or a combination of the following programs is acceptable:

   a. Transitional Bilingual Educational Program(TBE),

   b. Bilingual/Bicultural Program, and

   c. Multilingual/Multicultural Program.

   When TBE is used, the district must provide predictive data which show that such student(s) are ready to make the transition into English and will succeed educationally in content areas and in the educational program(s) in which he/she is to be placed.

   This is meant to avoid the premature placement of the linguistically/culturally different student who is not ready to participate effectively in an English language curriculum in the regular school.

2. Secondary Level options:

   a. Such students may receive instruction in subject matter in the native language(s) and receive ESL as a class component.

   b. Such students may receive required and elective subject matter in the native language(s) and bridge into English while combining English with the native language as appropriate (learning English as a first language, in a natural setting).

c. Such students may receive ESL or High Intensive Langauge Training (HILT) in English until they are fully functional in English (can operate equally successfully in school in English) then bridge into the school program fro all other students.

TBE, Bilingual/Bicultural, or Multilingual/Multicultural programs may be utilized in lieu of the three options. However, if the necessary prerequisite skills in the native languages have not been taught, some form of compensatory education in the native language must be provided. In any case, the students must receive instruction in an expeditious manner so that the student will be able to participate to the greatest extent possible in the regular school program as soon as possible. At no time can a program be selected for the students if the method of instruction will result in a substantial delay in providing those students with the necessary English skills needed by or required of other students at the time of graduation.

B. Predominant Speaker of the language other than English (speaks mostly the language other than English, but speaks some English):

1. Intermediate and High School Levels:

The district must provide data relative to the student's academic achievement and identify those students who have been in the school system for less than a year. If the student(s) who have been in the school for less than a year are achievieng at grade level or better, the district is not required to provide additional educational programs. If these students are underachieving (below grade level), the district must submit a plan to remedy the situation. Remedies may include: I) smaller class size and/or 2) enrichment

materials in addition to any one or combination of the following: ESL, TBE, Bilingual/Bicultural Program, or Multilingual/ Multicultural. However, such students may not be placed in situations where all instruction is conducted in the native language as may be prescribed for the monolingual speaker of a langauge other than English, if the prerequisite skills in the native language have not been taught. In this case, a form of compensatory education in the native language must be provided.

C. Bilingual Speaker (speaks both the language other than English and English with equal ease): The district must provide data relative to the student's academic achievement. In this case, the programming (IAPS) is the same at the elementary, intermediate, and secondary levels; and differs only in terms of underachievers and those students achieving at grade level or better.

   1. For the students in this category who are underachieving, the program corresponds to the regular program requiements for all racially/ethnically identifiable classes or tracks composed of students who are underachieving, regardless of their language background.
   2. For the students in this category who are achieving at grade level or better, the district is not required to provide additional educational programs.

D. Predominant speaker of English (speaks mostly English, but some of the language other than English): The program for these students is the same for that of the bilingual speaker above.

E. Monolingual speaker of English (speaks English exclusively): The treatment for these students is the same for that of the bilingual speaker above.

Step 4: Required and Elective Courses

The district must show that the required and elective courses are not designed to have a discriminatory effect. There is a prima facie case of discrimination if courses are racially/ethnically identifiable.

Step 5: Instructional Personnel Requirements

The instructional personnel teaching the students must be linguistically, culturally familiar with the background of the students. The student/teacher ratio for such programs should equal or be less than the student/teacher ratio for the district. However, no corrective action is required if the number of students in the programs are no more than five greater per teacher than the student/teacher ratio for the district. If instructional staffing is inadequate to implement the program requirements, inservice training, directly related to improving student performance, is acceptable as an immediate and temporary response. Another temporary alternative is the utilization of para- professional persons with the necessary language(s) and cultural background(s).

Step 6: Racial/Ethnic Isolation and/or Identifiability of Schools and Classes

A. Racially/Ethnically isolated and/or identifiable schools--It is not educationally necessary nor legally permissible to create racially/ethnically identifiable schools in order to respond to student language characteristics as specified in the programs described herein.

B. Racially/Ethnically isolated and/or identifiable classes--The implementation of the aforementioned educational models do not justify the existence of racially/ethnically isolated or identifiable classes, per se. Since there is no conflict in this area as related to the application of the Emergency School Aid Act

(ESAA) and existing Title VI regulations, standard application of those regulations is effective.

Step 7: Evaluation

A "product and process" evaluation is required in the plan. Therefore, the product (end result) must be stated along with the process evaluation (periodic evaluation throughout the implementation stage). A description of the "evaluation design" is essential. For the first three years, following the implementation of a plan, the district must submit to the OCR Regional Office at the close of sixty days after school starts, a "progress report" which will show the steps which have been completed. These guidelines described by the Office for Civil Rights, U.S. Department of Health, Education, and Welfare are intended for school districts found not to be compliance with the May 25, 1970 memorandum, and are not generally disseminated to all districts. What is essential in appraising any English as a second language program is the assessment requirement that becomes instrumental in identifying and placing students in the proper kinds of programs. It is clearly evident that different kinds of assessment instruments are necessary for different purposes, and that predictive data must be obtained in the implementation of a successful program. Other concerns relating to the guidelines deal with the insufficient numbers of bilingual instructors who are adequately trained, and the lack of funds to hire the necessary or para professionals.

Administrative Concerns--Planning and Evaluation

Although all of the steps in the Identification, Assessment, and Programming System (IAPS) are important concerns of administrators, Step 2--Diagnostic/Prescriptive Approach--and Step 7--Evaluation--require further research. Step 2 resembles

context evaluation because it is the phase at which the nature and needs of the students must be identified. The identification of needs and individual differences is important in the decision making process because it determines the kind of programming that should be implemented. The input, process, and product evaluations mentioned in Step 7 are meaningful only in so far as the goals and objectives defined by Step 2 are met. Measurement must be purposeful with consideration given to individual differences and influencing variables.

The following questions are major concerns of administrators: What factors affect the success that can be administratively controlled? Would better understanding of assessment scores help administrators make wiser decisions? Are some of the factors measured controllable? To what extent are these factors meaningful in increasing achievement gains? How much achievement is relegated to individual differences rather than the program itself? Of these differences, how much can be relegated to prior learning experiences and prior socio-economic environmental factors? If initial differences are adjusted, are learning styles and prior language acquisition significant in second language acquisition? If significant differences based on prior experiences and prior socio-economic experiences exist, then variables dealing with program differences may not be as significant as one would otherwise expect.

Based on the analysis of differences among students with variable backgrounds and learning styles who participate in a controlled program, one may find a relationship in the rate of success or achievement that may be attributed to factors other than the immediate learning environment. An analysis of various programs would be meaningful only if there are no significant differences among the isolated background variables. Administrators, therefore, must understand the variables that affect the learner before applying

recommendations about the effectiveness of present programming. The rationale for the synthesis of a compiex systems model into the theoretical framework is based on an awareness of the external and internal variables that formulate constructs and provide feedback to aid in administrative decision making. This contention is further explained in the theoretical framework. Research must deal with the learner prior to the intervention of programmatic experimentation. The use of covariates that adjust the obtained scores to compensate for the initial differences which may confound the final interpretations of data dealing with outcomes or program effectiveness is a recommended means of analyzing differences. If significant differences based on isolated variables are recognized, the overall conclusion will be altered since programs may be effective only in so far as the initial factors are readily present to yield a favorable result. If significant differences are not recognized, then the effectiveness of particular programs can justifiably be attributed to the kind of program being implemented and their means of implementation.

Administrators must understand the pre-existing differences of learner variables before determining the effectiveness of programs. These variables must therefore be identified prior to any program analysis. Administrators must use achievement scores to analyze individual differences and to isolate the variables that are responsible for these differences. After understanding the learner and his pattern of development which becomes attributable to his success in learning, then program variations and their effects can be made more meaningful. Decisions about the proper kinds of programs matched with the learning variable or need of the learners would then be possible. Perhaps the results would lead to variable learning strategies for variable learning styles and backgrounds, or a single program strategy with a preferred approach for all second language students.

Hawaii's Comprehensive SLEP Program

The total numbers of students serviced by Hawaii's SLEP Program between the 1982 to 1985 years are: 1982-1983, 12,240; 1983-1984, 11,211; and 1984-1985, 11,466. In addition to these figures, approximately 700 students were identified as receiving special education services. The target population of the SLEP program included all students who have a home language or acquired language other than English. These students were also not proficient in English according to the measurements on the Basic Inventory of Natural Language (BINL) test and/or not achieving above the 25% criteria in reading, language arts, and mathematics as measured by the Metropolitan Achievement Test (MAT).

Working with a large number of students requiring SLEP services and assessment for proper programming is a demanding enterprise. In addition to structuring the IAPS procedures, the SLEP Comprehensive Plan is designed as an integral part of the State's general goals and objectives (i.e., Master Plan, Foundation Program Objectives, Instructional Areas, Performance Expectations, and Essential Competencies). The program utilizes the district's psycholinguistic philosophy and whole language in the teaching of the oral/aural communication skills.

The goals and objectives of the SLEP program are clearly expressed in the State of Hawaii, Honolulu District Students of Limited English Proficiency Handbook (1985), Section V. The goals are:

1. To identify and provide services to all SLEP students.
2. To evaluate the extent to which pupil needs are met.
3. To comply with the federal and state guidelines.
4. To provide administrative and curriculum leadership.

5. To conduct inservice training for SLEP administration and instructional personnel and parents.

6. To provide support services for parent involvement.

7. To disseminate information about the SLEP Program to parents and community.

The learner objectives are:

1. Students with proficiency scores of levels 1 and 2 on the Basic Inventory of Natural Language (BINL) test, will make significant normal curve equivalent (NCE) gains in oral language as measured by the BINL test.

2. Students with proficiency scores of levels 3, 4, and 5 in the BINL test will make significant NCE gains in reading , language arts, and math as measured by the Metropolitan Achievement Test (MAT).

3. Students will be able to adjust to the school and community as measured by the Student Record Profile (SRP).

4. Students will be able to exit from the SLEP Program using the MAT in reading, language arts, and math at the twenty-fifth percentile or higher.

The program objectives are:

1. By the end of each school year, one hundred percent of the SLEP schools will have conducted a minimum of two meetings with their parents.

2. Eighty percent of the SLEP schools will be in one hundred percent compliance with the OCR requirements.

These goals and objectives are delivered according to the student's needs identified by the Language Dominance Rating (LDR) scale of one to five based on the Native Language Proficiency (NLP) test and the BINL test scores. The State of Hawaii has adopted the Transitional Bilingual Approach as the means of delivery of the objectives. The students'

native languages and cultural factors in instruction are used initially to bridge the transition between the primary and secondary language. Depending on the number of critical language students (20) requiring bilingual services, however, as well as the accessibility of bilingual instructors, alternative instructional programs may be acceptable to the district. The restrictions also vary according to the grade levels of the students and their language dominances.

The guidelines specify that: students in grades nine to twelve may receive either bilingual and/or ESL instruction. The programming requirements for older SLEP students as portrayed in the IAPS manual indicate greater flexibility and less stringent demands on bilingual coverage (Appendix A). The Systematic Procedure for Identification, Selection, Programming and Assessment" (Appendix B) provides the framework for the screening, selection, categorization, programming, reassessing, and reprogramming of the target population. The Flowchart IAPS for Students of Limited English Proficiency (Appendix C) outlines the progressive service required and the exit criteria for SLEP.

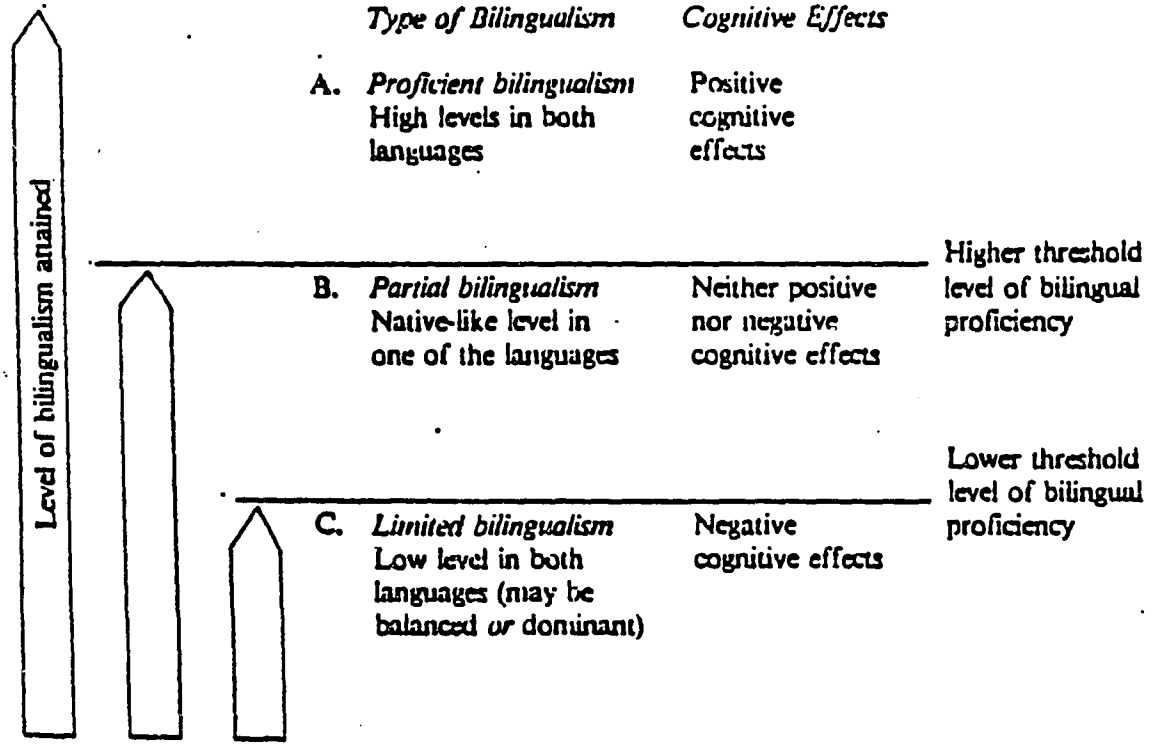
Because of the large student population requiring service, a demand on the available resources has been increasing. In addition to the SLEP resources, schools may utilize other resources to develop their programs: 3-on-2 positions, special needs, "J" designated classes, etc. SLEP resources include: State Bilingual and ESL, Indochinese Refugee Children's Transition Act, Bilingual/Bicultural Title VII, Special School Projects, and Outside Agencies. When examining the State General Funds, Federal Funds, and other Support Programs, the following total expenditures have been noted for the 1983 through 1986 years: 1983-1984, $5,446,176; 1984-1985, $5,759,064; 1985-1986, $6,250,871 (State of Hawaii, Annual Budget Document, 1983-1986). The figures indicate that an average of approximately $5,818,704 have been spent on an average of

indicate that an average of approximately $5,818,704 have been spent on an average of approximately 11,639 SLEP students over the last three years. These expenditures have incurred beyond the regular instruction funds that have been allocated for all public school students. The evaluations of the existing programs are therefore necessary to substantiate the expenditures in conjunction with the specific needs of the students beyond the need to demonstrate equity of treatment in the school system. If the needs of the students are being met to the extent that the second language students are self-sufficient and less dependent on future welfare assistance, the cost-benefit effectiveness of the programs can be substantiated. At the present time, however, insufficient research makes it difficult to make definitive statements about the expenditures.

The criterion for number two under the goals and objectives of the SLEP program which is "to evaluate the extent to which pupil needs are met" is vague. It introduces a major limitation in the Hawaii plan. The post hoc evaluation on student achievement does not address the fact that the criteria for the determination of student expectations and needs to be met have not been predetermined. A definite lack of contextual data about the target population is at a deficit. Decision making is limited by the lack of necessary data to determine the needs and problems of second language students. It is difficult to problem solve if expectations and "what ought to be" are not clearly defined. The nature of individual differences amongst a large second language population magnifies the problem when different language categories are already represented. Administrators must understand the influences that the external and internal environmental variables have on second language acquisition.

Appendix E

COGNITIVE EFFECTS OF DIFFERENT TYPES OF BILINGUALISM*



Cummins, 1981c, p. 39.

Appendix F

Socio-Economic Status Based on Father's Occupation and Income in Vietnam

The following table indicates the various occupations, the average income categories, and their transcriptions into socio-economic status levels that were reflective of the Vietnamese economic system during the 1970-1975 years when 500$ piasters were equal to $1 in American currency. The transcriptions and identifications of the students' reported socio-economic status' were derived by Mr. Chuong Hua, a former military officer during the 1965-1969 years and a former labor union leader (Federation of Dock Workers--Longshoreman) during the 1970-1975 years in Vietnam. Mr. Chuong Hua was also employed by the Department of Education in Hawaii as a part-time temporary teacher. He worked at several city schools in Hawaii including Roosevelt High School.

Table of the Vietnamese Socio-Economic Status

Income Levels	Occupations	Salary Ranges	
		Piasters	Dollars
High Income	Silversmith Business	400,000$	$200
Middle Income	Officer Secretary Watch Repairman Truck Driver Pharmacist Dentist Optometrist Mechanic	50,000$	$100
Low Income	Fisherman Helmsman Taxi Driver	30,000$	$60

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