CHAPTER – 2

REVIEW OF LITERATURE

This chapter aims to draw knowledge from the existing literature. The efforts are towards summarizing the empirical knowledge from studies conducted considering different socio-psychological and varied geographical contexts. The work done by social scientists and health professionals focusing the spectrum of students' achievement, education, health and wellbeing and the methodology used for the same will help to understand the existing knowledge available in the field of education and also explain gaps in the literature. This review of studies is organized under following themes:

Section 2.1: Studies on Intelligence in relation to Academic Achievement specifically Mathematical Scholastic Achievement

Section 2.2: Studies on Socio-Economic factors in relation to Academic Achievement specifically Mathematical Scholastic Achievement

Section 2.1: *Studies on Intelligence in relation to Academic Achievement specifically Mathematical Scholastic Achievement*

Studies concerning Intelligence and Academic Achievement yield contradictory results. Some report a difference between

Intelligent people and not Intelligent people with respect to their Academic Achievement whereas others do not find any significant differences.

Intelligence and Scholastic Achievement in Mathematics Intelligence occupies a peculiar position in the study of school performance of Mathematics. A vast essay of research literature in Education and Psychology has brought it to common knowledge that intelligence as general ability, is an important contributory factor in the school Achievement. The level of intelligence truly makes a dominant difference in school's Achievement. The Intelligence as an inherent unified and stable characteristic unequally found among the individuals. It is supposed that difference in learning outcomes in the Mathematics can be easily accounted for. It has been argued that more intelligent pupil is inherently capable of performing better in the examination and earns higher grades than less intelligent pupils. It is a common notion that students of high intelligence obtain better score in the Mathematics' test.

Bhushan and Sharma (1981), Annamal (1981) and David and Michal (1984), found that the high intelligence group performs better than the low intelligence group in the Mathematics Achievement, specially in the area of computational skill.

Materlis (1970) found that high intelligence made statistically significant gains in Mathematical Understanding than lower Intelligence groups.

Kaliyan (1997) [Abstract Reasoning, Numerical Ability, Space Relation, Substitution of Symbols], Rajput (1984) and Nagialiankin (1991) [Numerical Ability, Abstract Reasoning, Space Relation], Rajyguru (1991), Lalitha (1992) [Numerical Ability, Abstract Reasoning, Non-language Reasoning], Setia Seema (1992), Sumangala (1998) [Numerical Ability, Numerical Reasoning, Ability to use Symbols, Spatial Symbols and Abstract Reasoning], Patel (1997), Whang (1997) [Reasoning Ability], Arrieta (1998), Segars (1995) [Student Ability] Glutting Joseph (2006) [Verbal Comprehension, Perceptual Reasoning, Working Memory and Processing Memory], Fernandez (2011) [Brain Hemisphericity] found positive relationship between the Intelligence and specific areas of the Mathematics Achievement. Similarly, Das (1986), Patel (1997), Kasat (1991) and Abdulmajeed (1992) found positive relationship between the Intelligence and the Mathematics Achievement.

But the long trail of consistent evidence found only a moderate correlation between measured Intelligence and Scholastic Achievement in Mathematics, gradually led to the acceptance of intelligence, as one of the several determinants. The fact is borne out in our everyday experience which shows that some pupils who

impress us as fairly intelligent out of class situations, secure poor marks in the school and college examinations and some who appear dull in such situations, score high in the examinations. Thus although intelligence is a prominent and promising factor for the Achievement, but sometime it may be found that low intelligent or normal intelligent student can secure more marks than the high intelligence students due to some other reasons. Because learning outcome is affected by so many factors e.g. Study habit, home Environment etc.

Wilson's (1978) study found that intelligence has no effect on the Mathematics Achievement of the boys and the girls. It has also been observed that the high intelligence students sometimes fail to recall the formulas of the subject matter and hence they fail in the examination. Although such students have a very good understanding of the principles and they can apply those principles very effectively. On the contrary, it has also been observed that a student having low intelligence can crammed most of the principles of the Mathematics but he cannot apply those principles properly.

Proger et al (1971) studied the relative predictive and construct validation of the Otis-Lennon Mental Ability Test (OL-MAT), The Lorge-Thorndike Intelligence Test (L-TIT), and The Metropolitan Readiness Test (MRT) in grades Two and Four. The sample consisted of 322 students from second grade and 316

students from fourth grade. The relative predictive and construct validities of the Oits-Lennon, Lorge-Thorndike, and Metropolitan readiness tests were investigated by several multivariate analyses: canonical correlation, factor analysis, and stepwise regression. Canonical correlation and principal-components factor analysis were employed to study the factorial construct validity of the O-L MAT, L-TIT, and MRT. The results demonstrated some similarities and differences between the two analytical approaches to construct validation. Further, stepwise multiple regression was used to establish the relative predictive validities of the three tests, in selected verbal and numerical areas. In brief, the O-LMAT appears to be at least as effective a predictor of verbal and numerical achievement, as measured by the Stanford Achievement test (SAT), and the use of teacher rating (TR) as is L-T IT and MRT.

Another research was conducted by Estabrook (1984), under the title “A Canonical correlation Analysis of the Wechsler Intelligence Scale for Children- Revised and the Woodcock-Johnson Tests of Cognitive Ability in a sample referred for Suspected Learning Disabilities”. The sample consisted of 107 boys and 45 girls in grades 1 – 7. A canonical analysis was completed to examine the overlap between the two tests. Three significant canonical correlations were obtained. The redundancy index showed that approximately 28.6% WJSCA subtest variance is predictable from

the linear combination of the WISC-R subtests, and approximately 32.7% of the WISC-R subtest variance is predictable from the EJTCA subtests. Analysis of the structure correlations indicates that the first canonical variants share a general intelligence factor, the second a perceptual speed factor, and the third a numerical memory factor.

The other study carried out by Antonak et al. (1982), is titled Otis-Lennon Mental Ability Test (OLMAT), Stanford Achievement Test (SAT), and Three Demographic Variables (sex, school attended, and years in district) as Predictors of Achievement in Grades 2 and 4. The sample consisted of 91 students from second grade classes in 1977-78, who were also presented as forth grades during the 1979-80 academic year, and 103 students from the second grades in 1979-80. A series of multivariate statistical analysis was used to determine the relationships that exists among these three variables. The results revealed that the best predictor of achievement at either grade 2 or grade 4 was the I.Q. variable alone. The correlations among the OLMAT-IQ and the SAT variables were strong and positive for all pupil samples. The correlation between the OLMAT scores for the sample of 91 students when tested as second graders in 1977-78 and again as fourth graders in 1979-80 was 0.74. The correlations among the SAT subtests led to questions concerning the test's construct validity and its use for differential diagnosis of

educational problems of children. The nonsignificant sex differences in both the mean SAT and OLMAT IQ scores were found. A detailed study of the correlations between the OLMAT and SAT did not support the continued use of the group IQ test as part of the district's comprehensive testing program.

The other study presented by Grossman et al (1983) under the title of "Validity of the Slosson and Otis- Lennon in predicting achievement of gifted students" studied the efficacy of the Slosson Intelligence Test and the Otis-Lennon Mental Ability Test to predict academic achievement, as measured by selected subtests of the Stanford Achievement test (SAT). The sample consisted of 46 children of middle-class origin (24 males and 22 females) from a Midwest, urban public elementary school district. The results of a multivariate multiple regression analysis indicated that the Slosson and Otis-Lennon significantly predict SAT Vocabulary, Reading Comprehension, and Mathematical Concepts subtests, with the Otis-Lennon in comparison with the Slosson accounting for a significantly higher proportion of the variance with SAT scores. Regression equations are provided for determining expected SAT scores, based upon observed Otis-Lennon and Slosson IQs. Implications of the findings with regard to the screening of students for gifted programs are delineated.

Kaeser and Reynolds (1985) examined the II subtests of the Wechsler Preschool and Primary Scale of Intelligences (WPPSI) statistically for evidence of sex differences. The authors used the data gathered for the WPPSI in the early 1960s, which consisted of 600 males and 599 females selected on the basis of age, geographic region, urban- rural residence, race and father's occupation. Results provided fundamental support for previous work with older children showing better female performance on memory and psychomotor tasks and better male performance on spatial tasks, although the distinctions in performance were not as clear as with older children.

Helmes (1987) conducted a study under the title "Concurrent Validation of AH2 as a Brief Measure of Intelligence in Canadian University Students". The purpose of this study was to examine a recently developed British General Ability Test (AH2) and examine the performance of a group of Canadian University students on AH2, and correlating its scores with those from a multiple-choice vocabulary test and a widely used nonverbal test of abstract reasoning. This test was intended for ages 10 and above and covered a wide range of abilities through the use of two different time limits and a steep item difficulty progression. It was composed of three 40-item subsets: verbal (V), numerical (N), and pictorial (P), AH2 thus was designed to provide information on several abilities in a relatively short period of time (approximately 30-45 minutes for the

short time limits) over a wide range of ability. The sample consisted of 130 introductory psychology students (65 males, 65 females) at university of Western Ontario. The results indicated that there was a significant sex difference for the verbal subtest. Correlations with age were modestly significant for all scales except AH2 Numerical. Internal consistency reliabilities (coefficient alpha) were 0.79, 0.87 and 0.83 for AH2 verbal, numerical and perceptual scales respectively. There were no significant differences between the means for the Canadian students and the British students group, although the differences were significant for verbal subtest ($p < .06$).

Cooper and Fraboni, (1988) conducted a study entitled "Relationship between the Wechsler Adult intelligence Scale-Revised and the Wide Range Achievement test-Revised in a Sample of Normal Adults". The Wechsler Adult Intelligence Scale-Revised (WAIS-R) and the wide Range Achievement Test-Revised (WRAT-R) were administered to 121 adults, 80 males and 41 females, and correlations were calculated between WRAT-R subtests and WAIS-R verbal, performance, and full scale IQs, and WAIS-R scaled scores. A Multiple Regression analysis was carried out using the WRAT-R subtests as independent variables and full scale IQ as the dependent variable. The results of the multiple regression analysis indicated that all three WRAT-R subtests were moderate predictors

of WAIS-R full scale IQ than performance IQ. All correlations between IQ and WRAT-R subtests were significant (p = 0.1)

Hyde and Linn (1988), conducted a study entitled “Gender Differences in Verbal Ability: A Meta- Analysis”. They located 165 studies that reported data on gender differences in verbal ability. The weighted mean effect size (d) was + 0.11, indicating a slight female superiority in performance. The differences in verbal ability no longer existed. Analyses of effect sizes for different measures of verbal ability showed almost all to be small in magnitude: for vocabulary, d = 0.02; for analogies, d = - 0.16 (slight male superiority in performance; for reading comprehension, d = 0.03; for speech production, d =0.33 (the largest effect size); for essay writing, d = 0.09; for anagrams, d = 0.22; and for tests of general verbal ability, d =0.20. For the 1985 administration of the Scholastic Aptitude Test-Verbal, d = -0.11, indicating superior male performance. Analysis of tests requiring different cognitive processes involved in verbal ability yielded no evidence of substantial gender differences in any aspect of processing. Similarly, an analysis by age indicated no striking changes in the magnitude of gender differences at different ages, countering some conclusions made by some studies that gender differences in verbal ability emerge around age 11. For studies published in 1973 or earlier, d = 0.23 and for studies published after 1973, d = 0.10, indicating a slight decline in

the magnitude of the gender difference in recent years. The implications of these findings are discussed, including their implications for theories of sex differences in brain lateralization and their relation to changing gender roles.

Lee and Lam, (1988) conducted a study, the purpose of which was to assess the developmental and the cultural invariance of the factor structure of the Wechsler Intelligence Scale for Children Revised (WISC-R). Both the WISC-R and an adapted version of the WISC-R, adapted for use in Hong Kong, called the HK-WISC, were examined by using confirmatory factor analysis. Age groups of children 7, 10, and 13 years old were studied to assess the developmental invariance of the WISC-R and of the HK-WISC. The data was the matrices of correlations between subtests as reported in the WISC-R (Wechsler, 1974) and the HK-WISC (Yung, 1981) manuals. The correlation matrices, averaged over all age groups were examined in the study. The findings of this study suggest that the three-factor model is invariant across the two different cultural groups of American children and Hong Kong Chinese children as well as across three different age groups of 7, 10, and 13 for the HK-WISC. The cross-cultural and cross-age invariance of the factor structure provide strong support for the use of the Wechsler Scale for different age and cultural groups, provided that the test is

properly normed and adapted for use with the particular groups of individuals.

Anderson et al (1989) investigated the temporal stability of WISC-R IQ scores for learning-disabled students (88 males and 25 females) from four school systems in Louisiana. Pearson product moment correlations yielded coefficients that were considerably lower than those previously reported: $r = 0.55$, $p < .001$ for the Verbal IQ; $r = .63$, $p <.001$ for the Performance IQs; and $r = 0.58$, $p < .001$ for the full scale IQs. Results of t-test analyses indicated that only the Verbal IQ scores were significantly different when the initial evaluation ($M = 89.4$) was compared to the reevaluation ($M = 85.3$) $p < .001$. The results suggest that the WISC-R may be less stable for the learning-disabled population than for other groups and that the average 3-year test-retest time lapse was an influential factor in the reduced reliability of this instrument.

Canivez (2000) investigated the predictive and construct validity of the Developing Cognitive Abilities Test (DCAT) in a heterogeneous sample of 863 sixth grade students. Level H of the DCAT was administered during the student's sixth grade year and selected subtests of the Iowa Tests of Basic Skills (ITBS) were administered eight months later during their seventh grade year. Results showed that correlations between the DCAT and Iowa Tests of Basic Skills ranged from 0.50 to 0.74 with a median $r = 0.635$.

Correlations also supported the construct (convergent) validity of the DCAT when compared to the ITBS with the DCAT verbal subtest correlating significantly higher with the ITBS vocabulary reading, and language usage than either the DCAT quantitative or spatial subtests which are not as verbally oriented. The DCAT quantitative subtest was associated with the ITBS mathematics problem solving to a greater extent than either the DCAT verbal or spatial subtests.

Fabregat et al (2000) conducted a study about sex differences in general intelligence defined as 'g' among young adolescents. They studied two independent samples. The samples were a total of 1565 young adolescents (797) girls and (768) boys. The congruence coefficients between the 'g' factors extracted for each sex suggested a near identity, and then the sex difference in 'g' was represented on each of the subtests in terms of a point-biserial correlation. These correlations were included with the full matrix of subtest inter correlations for factor analysis. The results reveal the factor loading of sex on g, which in this study suggest a null sex difference.

Diseth (2002) conducted a study, the purpose of which was to investigate the relationship between intelligence, approaches to learning and academic achievement. The sample consisted of 89 Norwegian undergraduate psychology students. Intelligence was measured by means of three different tests. The WAIS Vocabulary test was used as a measurement of crystallized intelligence, and

Monneslands Verbal Analogies Test was a measure of fluid intelligence and the Sandford/Rybakoff Spatial Test was a measure of spatial intelligence. General intelligence did not correlate significantly with any of the approaches to learning variables or with examination grade. The WAIS vocabulary test appears to be the most relevant measurement of intelligence with respect to academic achievement. In general, the present findings do not give much support to the relationship between intelligence and achievement, as would be expected.

Colom and Lopez (2002) presented a study on sex differences in fluid intelligence (Gf) among high school graduates. The sample consisted of 4072 high school graduates (1772 females and 2300 males). Three measures of Gf were used in this study: The PMA Inductive Reasoning Test, the Advanced Progressive Matrices (APM), and the Culture Fair Intelligence Test (Scale 3). The mean scores obtained by females and males on the three tests, as well as the standardized sex difference (d), the difference in IQ points, and t values as tests of the statistical significance of the differences were obtained. The results reveal that females outperform males in the PMA reasoning test, that males outperform females in the Raven, and that there is no sex difference in the Culture-Fair Test. There is no systematic difference favoring any sex in the measure of Gf, and that there is no sex difference in the best available measure of Gf

(the culture-Fair Test), it is concluded that the sex difference in fluid intelligence is non-existent.

Codorniu-Raga and Vigil-Colet (2003) conducted a study on sex differences in psychometric and chronometric measures of intelligence among young adolescents. The objective of this study was to analysis the effects of sex on psychometric and chronometric measures of intelligence in a sample of 234 secondary school students (149 boys and 94 girls). The intelligence tests administered were the Spanish adaptation of Thurston's Primary Mental Abilities (PMA), and the Spanish adaptation of Cattell's 'g' Factor Test (TEA). They computed the descriptive statistics for all the measures in the study according to age and sex. They performed a multivariate analysis of variance and a univariate analysis of variance for each variable. They found that there was a significant increase in those abilities related to writing and reading speed for the age range from 11 to 14 years. The sex factor showed no significant effects either for the psychometric measures most related to 'g', such as Cattell's factor test or the reasoning scale of the PMA test. Sex did show significant effects on many of the psychometric measures related to specific abilities such as the spatial, word fluency and numerical scales of the PMA. Girls outperformed boys in the word fluency and numerical scales, and boys outperformed girls in the spatial scale.

Lynn, Fergusson and Horwood (2005) conducted a study to find the sex differences on the WISC-R in New Zealand. Sex differences on the WISC-R were examined in a sample of 897 children from 8 and 9 years who were gathered during the course of the Christchurch Health and Development Study (CHDS). The CHDS is a longitudinal study of a birth cohort of 1265 children born in the Christchurch Urban region during mid 1977. The findings revealed that boys scored significantly higher than girls on the subtests of information, vocabulary, block design and object assembly, while girls scored significantly higher on coding. Boys obtained slightly but not significantly higher scores on the verbal, performance and full scale IQs. The results were in general similar to the sex differences in the standardization samples of the WISC-R in Scotland, the Netherlands and the United states.

Indian Studies:

Ramalingaswami (1970) adopted the performance part of the Wechsler Adult Intelligence scale (WAIS) and collected data from 604 literate persons of Delhi belonging to both sexes between 15 to 45 years. The reliability of the total test ranged from 0.89 to 0.91 in the four age groups. Factor analysis of the subtests for the four age groups and for both sexes was done separately. A single common factor identified as spearman ‘g’ was found in each analysis.

Trivedi (1970) standardized a ‘culture-free’ test of mental ability for Assamese high school students. The sample consisted of 1310 students of tenth grade. The battery consists of figure arrangement, similarity location, progressive matrices, analogy-based matrices and pattern perception subtests. Both Percentile and T-score norms were prepared on the basis of data collected from the study sample.

Chatterjee and Mukherjee (1971) constructed and developed a non-language test of verbal intelligence. No significant difference was found between non-language test and the two parts of a verbal test containing letter reasoning and verbal reasoning items. The correlation between letter reasoning and total scores on the non-language test was found to be quite high.

Ahuja (1971) constructed a battery consisting of six tests, namely, analogies, classification, disarranged sentences, opposition series and best answers. The reported test-retest reliabilities as well as certain validity coefficients, appear to be satisfactory. Age norms and class norms have been worked out separately for boys and girls because of significant sex differences.

Deshpande (1971) studied the sex differences on Raven’s matrics test, the sample consisted of boys and girls enrolled in class

IV of primary schools of Nagpur. He found a significant sex difference in the average scores of boys and girls.

Sharma (1972) attempted to measure children's intelligence through bicycle drawings. From a preliminary study of 417 drawings, a 75 point scoring scheme, with items of hierarchical difficulty levels was designed, which showed a self scoring consistency coefficient of 0.96. The test has been standardized on 2,863 children from 30 schools and age-norms have been derived. The test-retest reliability was found to be 0.82, and split-half reliabilities for different age groups ranged from 0.84 to 0.92.

Bhatt (1972) translated the different tests of WISC battery into Gujarati after eliminating or changing some items and administered the battery to 440 students from 12 schools in Ahmedabad. Both split-half and test-retest reliabilities were obtained. The coefficient was found to be high. Validity was established against criteria like scores on the Stanford-Binet Intelligence Test, Desai and Bhatt's Group Test of Intelligence, Shah's Non-verbal Test of Intelligence, school-marks and ratings. Factor analysis was also carried out.

Mohan (1972) studied Raven's Standard Progressive Matrices (PMT) and a verbal test of general mental ability. The two tests were administered to 310 students (165 females and 145 males) of Punjab University. The correlation coefficient between PMT and a

verbal test of general mental ability was 0.654, and the correlations between the two tests for males and females did not show any difference.

Rao and Reddy (1972) conducted a study entitled, “Can Raven’s progressive matrices test be shortened”. They administered the RPM under nine different conditions of testing to 1,260 higher secondary boys from age group of 13 to 17 years. A shortened version of RPM was also scored along with the standard one and it was found that the correlations were very high when the RPM was administered as a power test without any time limitation. On the other hand, administering the test with time limitations as a speed test yielded significantly lower correlations when compared to the above.

Maniam and Feroze (1973) developed a verbal reasoning test in Tamil for high school students which has parts. The first part consists of eclectic reasoning, mathematical reasoning, syllogistic reasoning and abstract reasoning tests. The second part comprised of scientific reasoning test, indirect test, and synthetic test. The split-half reliability of the total scores was found to be 0.74 and validity coefficient was 0.60 against school marks. Boys were found to be better in reasoning ability than girls.

Faroqi (1974) conducted a series of five studies using the progressive matrices test PMT and found that group testing yielded high scores on the average than the scores under individual condition. The shortened version of PMT calling for about half the time required for the standard version, yielded almost as useful an estimate of child's intelligence level as the standard one. Sex differences on the PMT were found to increase with increasing age.

Dolke (1975) studied various psychometric properties of progressive matrices test PMT on the basis of data collected from 512 employees of four textile mills. The test-retest reliability after one month was found to be 0.80. The internal consistency (KR-20) and split-half reliabilities were 0.67 and 0.73 respectively. The concurrent validity coefficient of PMT against scores on the GATB was found to be 0.55. The correlation between PMT and the criterion of occupational success based on merit rating turned out to be 0.62. Some age-wise norms and occupational-norms were also derived.

Dolke (1976) conducted an investigation into certain psychometric properties of Raven's Standard Progressive Matrices Test (PMT). An attempt was made to report the work on item analysis, factor analysis, reliability and validity of PMT. The sample included employees from technical and clerical occupations and university students. Their mean score on PMT was 34.15 with a standard deviation of 12.60. For the purpose of item analysis 370

subjects were randomly selected from the total sample of 521. The results revealed that most of the items in PMT were of medium and low difficulty. Many items had poor discrimination. On scaling the test on linear scale it was found that items were not properly spaced in terms of their difficulty. Factor analysis of the test showed that it does not have a relatively simple structure: it measures some other factors along with 'g'. Reliability and validity coefficients of the test are statistically significant but not very high.

Pillai (1978) constructed and standardized a test in Tamil to measure the intelligence of children in the age group of 10+ to 15+. The study was also designed to relate intelligence to age, sex, grade, residence and the socio-economic status of pupils. For the final administration, 5,000 pupils were selected from thirty-four schools of one of the fourteen districts of Tamil Nadu, using stratified proportionate sampling. The test included seven subtests: synonyms, antonyms, analogy, classification, mixed words, reasoning (verbal), and reasoning (numerical). The test-retest reliability was found to be 0.84 and the split-half reliability was 0.88. The content validity was considered on the basis of the various types of behaviors assessed by the subtests. Norms were determined for the total sample, grades and age groups.

Mishra (1978) conducted the study to assess factor-structure invariance of the Wechsler Adult Intelligence Scales (WAIS) across

two developmental age groups, 18-19 and 25-34, in an ideal factor analytic condition. The WAIS, Differential Aptitude Tests, Culture Fair Intelligence Test, and Advanced Progressive Matrices were administered to 200 subjects (100 subjects in each group). Inter-correlation matrices of the twenty-four variables of both the age groups were subjected to principal component analysis and varimax rotations. Eight factors in each age group were retained following the criterion of positive generalizability. The retained factors in the 18-19 age group were identified as perceptual organization, perceptual inductive reasoning, language usage, associative thinking, conceptual verbalization, verbal reasoning, memory and speed of perceptual thinking. The factors in 25-34 age group were interpreted as language usage, associative thinking, perceptual inductive reasoning, memory, perceptual organization, speed and verbal comprehension. Identical or similar factors were matched across the age groups. Horn's corrected version of pattern correlation was computed between the factor loadings of each matched factor pair for an invariance analysis. Seven of the eight factors could be matched and the one unmatched factors pair considered to be the most dissimilar was excluded from the invariance analysis. Marker variables helped for the emergence of certain new factors and raised the magnitudes of WAIS communalities. The invariance analysis revealed that structural

invariance could be established for a verbal factor pair (conceptual verbalization of 18-19 age group and verbal comprehension of 25-34 age groups). A complete non-invariance was evident for the memory factor; lack of structural invariance was found for the remaining six factors.

Puhan (1979) conducted a study intended to examine WAIS factor structures across 18-19 and 25- 35 age groups. The WAIS sub scores of one hundred 18- 19 and one hundred 25- 34 year olds were taken (Puhan, 1974). The raw scores of all the WAIS scales were correlated, and principal component factors were found and rotated to Varimax solutions. In the 18-19 age groups the rotated factors were identified as Verbal Comprehension, Freedom-from-distractibility, Perceptual Assembly, and Symbolic Reasoning. In the 25-34 age group they were interpreted as Perceptual Organization, Verbal Reasoning, and Concentration Speed. The invariance analyses were then performed to examine the structural stabilities of the similar factors. The structure of the Verbal Comprehension factor showed a striking similarity across the age groups. The structure of the Freedom-from-distractibility factor was found lacking invariance requirements. The rest were found as dissimilar factors. The results were discussed in the light of past observations.

Chakraborty (1979) also did the study with the major objective of providing an instrument to measure the general mental ability of

children of age groups six to ten (studying in Classes I to V) for solving the problems related to school admission, classification of pupils into homogeneous groups, class promotion, diagnosis, prognosis, educational guidance and research. A battery consists of six tests, stringing Bead Pattern, Picture Sequence, Picture Assembly, Object Profile, Block Design and Symbol Substitution. The standardization sample consisting of 1,000 children (200 from each grade level comprising 100 boys and 100 girls) was selected from 84 percent of the total subdivisions of Manipur. The reliability coefficients of the battery and its tests were estimated by K-R formula and test-retest method. The reliability coefficients obtained were found to range from 0.66 to 0.91. From factorial analysis it was found that the battery contained only one factor in the six tests studied. The 'g' factor loadings and centroid factor loadings of the test varied from 0.75 to 0.87 and 0.76 to 0.87, respectively. The coefficients of correlation between the scores on the battery and scholastic achievement in English, Mathematics and Science were found to range between 0.40 and 0.56. The coefficients of correlation between the battery scores and the scores obtained by the students on WISC and Performance Test of Intelligence were 0.78 and 0.63, respectively. The content, concurrent, factorial, cross and predictive validities of the battery were satisfactory. Grade and age norms were established separately for boys and girls. Grade percentiles for

different classes (from I to V), and age percentiles for different age levels (from six to ten) were computed for boys and girls separately.

Sheth (1979), adapted the Wecheler Adult Intelligence scale for Gujarati population by making changes in the items of WAIS, wherever necessary, and standardized on the population of Ahmedabad city. Six subtests were verbal and five subtests were performance tests. The various subtests were about general information, general comprehension, arithmetical reasoning, similarities, digit span, vocabulary, digit symbol, picture completion, block design, picture arrangement and object assembly. The sample comprised of 400 adults including women. The raw scores of each test were converted into scaled scores using M = 10 and SD = 3. Reliability of the test was checked by test-retest and split-half methods, and were found to be very high. Validity of the test was determined by comparing its IQs with IQs on Desai- Bhatt, Cattell Culture- Fair tests and Raven's Standard Progressive Matrices, and the correlations ranged from 0.37 to 0.90. The correlations of the subtests were factor analyzed by Hottelling's principal axis method and centroid method and eight factors were extracted, the first of them being "g".

Thakur (1979) designed the study, where the major objective was to construct and standardize a test to measure the general mental ability of students studying in Classes V to VIII of Assamese

Medium high and higher secondary schools of Upper Assam. Seven subtests – logical selections, analogies, number series, synonyms-antonyms, proverbs, classifications and best answers – were included in the test. The final version of the test was administered to 3,039 boys and 2,243 girls, selected from classes V to VIII, by adopting the stratified random sampling technique. The reliability coefficients obtained by test-retest, split-half and rational equivalence methods for the entire sample and for different classes of boys and girls separately were found to range from 0.89 to 0.97). Content, construct and concurrent avidity were established and the obtained coefficients were found to range from 0.41 to 0.88. Class norms and percentile norms were fixed for different grades of boys and girls together as well as separately; norms were also fixed for the entire sample irrespective of grades. Coefficients of correlation between intelligence and academic achievement were found to range from 0.41 to 0.50 for Classes V to VIII.

Desai (1980) conducted the study with the main objective of comparing the performance of different sub-cultures of Gujarat on Raven's Standard Progressive Matrices, Cattell's Culture Fair Scale 3, Desai-Bhatt Verbal Group Test of Intelligence and Bavasar Non-verbal Group Test of Intelligence. The sub-cultures were 'big urban, small urban, semi urban, rural advanced, rural backward, rural muslim, tribal, and tribal institutional'. Eight schools, one from

each sub-culture, were selected and one division of Standard VIII was selected from each school randomly. The sample consisted of 338 pupils, and the four tests mentioned earlier were the tools used for this purpose. Product moment coefficient of correlation and factor analysis by the principal factor method along with varimax rotation were the statistical techniques used for data analysis. Girls' average scores in all sub-cultures were lower than those of boys in the respective sub-cultures but on Cattell's Culture Fair Scale 3, they were not much different. The mean scores of boys and girls showed progressive decrease from more urban to semi urban, rural and tribal sub-cultures with only one exception that the rural advanced sub-culture showed better averages than the semi-urban group. Because of low norms on the Cattell's Culture Fair Scale 3, the scope of comparability among various samples reduced to a great extent. Thus, the Cattell's culture fair scale 3 did not prove more useful than the verbal and non verbal tests used in the investigation. The differences in the average scores of the verbal test of intelligence were found to be more pronounced than those on Raven's and Cattell's tests. This supports Cattell's finding that crystallized intelligence assessed by verbal tests shows greater cultural difference than fluid intelligence assessed by culture fair tests. Five factors were identified, "g" factor, verbal factor, deeper

reasoning, perception of relationship, and manipulation of correlates.

Jehan and Ahmad (1980) evaluated the effect of advantaged and disadvantaged class on intelligence. Fifty advantaged and fifty disadvantaged children were identified on the basis of Kuppuswamy's socio-economic status scale. They belonged to the age range of 5-9 years and grade level upto 3rd. Seguin Form Board test of intelligence was administered on each of the Ss individually. The result revealed that the mean I.Q. of the advantaged group of children was much higher (107.1) than the disadvantaged group of children (82.7). Parental education, occupation, income and the living condition of the child plays a significant and important role in the intellectual development of a child.

Nayar (1980) carried out the study to construct and standardize a test for assessing the social intelligence of adults. Test items were constructed in multiple choice form with four to six responses likely to be made by the central figure in the situations. The test consisted of two forms, M and N. The final forms, M and N were administered to a representative sample of 1,200 and 600, respectively, belonging to different age groups ranging from 20-40 years and above for purposes of validation. The coefficients of reliability calculated by the split-half method and the Spearman-Brown prophecy formula for Forms M and N were 0.82 and 0.74,

0.90 and 0.85, respectively. The reliability coefficient between the forms M and N was 0.73.

Patel (1981) conducted the investigation with the main objective to develop a non-reading test of general mental ability for Gujarati speaking students of the higher secondary schools of Gujarat State. The standardization sample consisted of 5,725 students studying in the higher secondary schools of Gujarat State. The coefficient of reliability ranged between 0.71 and 0.87 by different methods. The test gave coefficients of validity against teachers' ratings as 0.59, against examination marks as 0.52, against other tests of intelligence as 0.68 and 0.79. Factor loadings revealed that the test was heavily loaded with "g" factor. Age norms and grade norms were established and deviation-IQs and percentiles for the test were computed.

Shah (1981) constructed and standardized a spiral omnibus type group non verbal test of intelligence for Grades VIII to XII, and the test was meant for the age group of 13 to 17 years. It included six types of nonverbal intelligence tests, namely, similarities, classification, analogies, series, conditions and matrices. The sample of the population of Gujarat was selected by including in it one school from an urban area and one school from a semi urban area from each district of Gujarat except the Danges. From the schools 3,612 pupils were selected by the method of random

sampling. The reliability of the test estimated by test-retest method for different age groups ranged from 0.80 to 0.95. The test retest reliability for separate tests ranged from 0.60 to 0.80, the split-half reliability for different age groups ranged between 0.80 and 0.87. The validity of the test was obtained by correlating the test with Bhavsar Non-verbal Test, Desai-Bhatt Verbal Test, school examination marks and teachers' opinions, which were 0.88, 0.90, 0.57 and 0.78, respectively. Factor analysis of the test was carried out by Hottelling's principal axis method and seven factors were obtained, the first factor being common to all the six tests and hence was thought to be the "g" factor.

Banker (1981) constructed and standardized an abstract reasoning test. The final test was administered on 5,277 students of ninety-one different schools of fifty nine different places of Saurashtra. Reliability of the test was established by test-retest method (0.81), split-half method (0.94), Rulon formula (0.94), and Kuder - Richardson formula (0.95). The three types of validity established were congruent validity (r = 0.84), concurrent validity (r = 0.63) and predictive validity ranging from 0.62 to 0.72. Separate norms were established for boys and girls of Grades VIII and IX, in the form of percentile ranks, standard scores, T scores, Stanines and letter grades.

Joshi (1982) adapted the Wechsler Preschool and Primary Scale of Intelligence for the children of Ahmedabad city in Gujarat. The original Wechsler scale consists of six verbal subtests, namely, information, vocabulary, arithmetic, similarities, comprehension and sentences, and five performance subtests, namely, animal house, picture completion, mazes, geometric design and block design. In the adaptation, some changes were made to suit the tests to Gujarati children. The tests were administered to thirty-seven children of age group four to six and a half years for item analysis, fixation of time limit and development of the scoring scheme. One hundred and eighty boys and 180 girls were tested with the Gujarati adaptations of WPPSI and their verbal performance and total scale IQs were calculated. Conversion tables for all these were prepared. The reliability of the scale was determined by split-half technique for all different age groups and also for individual tests which ranged from 0.28 to 0.94, by the test-retest method, the reliability ranged from 0.63 to 0.93. The validity of the scale was determined by correlating the WPPSI IQs with the Stanford-Binet IQs, Draw-a-Man Test IQs, school marks and teachers' ratings which ranged from 0.26 to 0.96. The scoring key and the tables of conversion of raw scores into scaled scores and then to IQs were presented in the manual.

Chatterji (1983) made a study which aimed at finding the academic group differences in intelligence among intermediate college students. Jalota's (1976) Hindi version of the Group Test of General Mental Ability (1972) was administered to a sample of 760 students of class XII belonging to four academic groups viz., Arts, Science, Commerce and Agriculture. The study revealed that students of Science group stood highest on the intelligence scale and students from Arts faculty were at the lowest end. There was no significant difference between the intelligence level of commerce and Agriculture groups, but each of them was significantly more intelligent than Arts Group.

Mohan and Bhatia (1985) conducted a study, where the purpose was to study psychomotor performance in children as a function of intelligence and sex. Two simple psychomotor tasks- Backward Figure Writing (BFW) and Tapping were used on 60 children belonging to the age group of 10 to 14 Years. Three levels of intelligence; gifted, normal and mentally retarded were taken, each group consisting of 20 children (10 boys and 10 girls). Each subject worked for 5 minutes in the pre-rest period, rested for 1 minute and again worked for 2 minutes in the post-rest period on both the psychomotor tasks. Results indicated that in both the pre-rest and the post-rest periods, the subjects with higher intelligence consistently showed a better performance on BFW and tapping. Sex

emerged to be a significant determiner in pre-rest BFW, pre-rest and post-rest tapping.

Chatterji (1986) developed a non-verbal intelligence test for the children from the age level 13 to 15 years of class IX and class X. The test consisted of items presented through geometrical figures and was of the multiple choice type. Both the difficulty and discrimination indices of the items were calculated. Most of the items included in the test were within the satisfactory range of difficulty values and had sufficiently high discrimination. Split-half reliability, after correction was 0.95. Concurrent validity with external criterion was 0.62.

Rangari (1987) studied the intelligence of the tribal and the non-tribal students of eleventh and twelfth standards. The sample consisted of 217 tribal and 255 non-tribal students selected from Arts, Science and Commerce colleges in Aurangabad city in Maharashtra State. Nafde's Non-Verbal Test of intelligence was used to measure the subjects' intelligence. The results indicated that the non-tribal students as a total group were significantly higher in intelligence than the tribal students. Moreover, the non-tribal males and the non-tribal urban students were higher in intelligence than their tribal counterparts. But, the non-tribal females and the non-tribal rural students did not differ significantly from their tribal counterparts.

Shamshada (1988) attempted to compare boys and girls with regard to intelligence, neuroticism, scholastic achievement and need achievement. The sample comprised of 1,008 students covering equal number of boys and girls, who were drawn from Srinagar, Sopore, Baramullah and Anantang. The relevant data was collected using Tandon's Group Test of General Mental Ability, Dadherjee's Incomplete Sentences Blank and Annual Examination Marks. The collected data was treated using mean, SD and 't' test. The major finding was that girls were superior to boys in intelligence and scholastic achievement.

Mahnaz (1994) studied intelligence and an academic achievement of tenth Grade students of east and west part of Pune city with particular reference to the socio-economic background. The sample consisted of 1946 students from 39 schools, and the Kulman –Anderson intelligence test was used to measure the intellectual level of the students. The ANOVA test results indicate that there is not much difference in intellectual abilities of students of different type of schools. The results show that there is a negligible difference in IQ mean scores of boys and Girls. The correlation results show a low and insignificant correlation between academic achievement and IQ (r = 0.26).

Section 2.2: *Studies on Socio-Economic factors in relation to Academic Achievement specifically Mathematical Scholastic Achievement*

- **Parental Educational Attainment and Student Academic Achievement**

Dornbusch, Ritter, Leiderman, Roberts, and Fraleigh (1987) purport that parental education level affects parenting style which, in turn, affects children's academic success. Dombrusch et al. added that families with higher educational levels are likely to be more permissive and less strict in parenting. According to Mullis and Jenkins (1990) and White (1982), parental education shows a strong correlation to students' academic achievement.

Other researchers have debated the correlation of parents' educational attainment and students' academic achievement. DeBaryshe, Patterson, and Capaldi (1993) argued that parental education is directly related to styles of parenting and not student's academic performance. In their study, parents with lower educational attainment used coercive strategies for discipline which, in turn, predisposed their children to antisocial and abnormal behaviors. Such children performed poorly in the lower grades (DeBaryshe et al.).

Melby and Conger (1996) found that a mother's and father's educational attainment link positively to parenting and adolescents' academic performance. Stevenson and Baker (1987) reported that well-educated mothers who have a predisposition to information about school are more likely than less educated mothers to discuss their child's school performance. The same study showed that well-educated mothers' expectation levels are higher and they have more demands of academic achievement for their children.

Smith (1989) examined the difference between paternal and maternal influence on students' academic performance and educational goals, and concluded that 6th, 8th, 10th grade students were greatly impacted by parental educational attainment. A parent's educational level influenced the realistic expectation and the ideal educational aspiration of the student. The results of this study found that paternal education had an effect only on students' educational expectation.

Other studies indicate that a father's educational attainment has a direct bearing on children and a mother's attainment has an indirect effect. Oh-Hwang (1994) found that fathers' educational attainment levels had a significant relationship with intelligence and achievement scores in American and Korean samples. Other significant results were that fathers who had higher educational levels had children who were more intelligent and higher achievers.

Conclusions drawn from the study were that high levels of achievement are indicators for children who had highly educated fathers. On the other hand, mothers' educational levels were not as influential to students' academic achievement. In fact, the results indicated that mothers' educational attainment levels did not affect students' academic achievement. On the other hand, the educational attainment indirectly affected the psychosocial maturity of adolescents and children of American and Korean samples.

Well-educated mothers were more involved in their children's activities, and their involvement led their students to be more self-reliant. Although Oh-Hwang's (1994) cross-cultural study found that mothers' educational attainment levels did not have an impact on student academic achievement, educational attainment indirectly affected the psychosocial maturity of the student, which in turn determined levels of achievement. Parents who attended college had children who also attended college.

In a study of nearly 25,000 8th graders, Lee and Peng (1994) found that students whose parents only attained high school diplomas where five times more likely than their peers to drop out of high school by the 10th grade. Authors such as Hudson (1991), and Staats, Bowman, and York-Anderson (1991) noted that the influence of parental education and income has an impact on the college experience of their children. Parents who have college degrees tend

to have higher incomes and higher educational attainment, and their children attend selective colleges more frequently than their first-generation college peers. Hudson (1991) and Staats et al. (1991) agree that parental educational attainment has long-term influences on student educational attainment. Students whose parents have degrees are often predisposed to environments of academic preparation and achievement which reinforce the retention of first-year college students. The studies by Hudson (1991) and Staats et al. (1991) also revealed that first-year academic performance is closely related to academic preparation, whereas retention to graduation is associated with friends and family.

Parental education also affects standardized test scores. According to The College Board (1992), Standard Aptitude Test (SAT) scores are strongly linked to parental educational levels. The results of this study indicated that the higher the academic degree earned by parents, the higher the students' test scores. Other findings revealed the correlation between family income and test scores. Those students from families with high incomes and high educational attainment had the highest SAT scores.

Gruca et al. (1989) and MacDermott et al. (1987) noted that first-generation college students were likely to choose less selective colleges. Thus, the current researcher concludes that, because first-generation college students do not have parental collegiate

experience to help them, either in preparing for college or in preparing for the academic challenges that lie ahead during their college career, they are not as likely to succeed. If universities are serious about meeting the needs of first-generation college students, they must probe what differentiates first generation college students from second-generation college students. Research should be conducted to determine the differences in their academic preparation, aspirations, and first-year academic performance when compared with other college freshmen.

A study was conducted by Riehl (1994) at Indiana State University to determine the academic preparation, aspirations, and academic achievement of first-year college students. As a result of this study, six null hypotheses were formulated:

1. There is no significant difference in the mean SAT scores of first generation students and the mean SAT scores of other freshmen; 2. There is no significance in the mean high school class rank of first-generation students and the mean high school class rank of other freshmen; 3. There is no significant difference in the self-prediction of first-generation college students and the academic degree aspiration of other freshmen; and 4. There is no significant difference in the freshman-year academic performance of first generation students and the academic performance of other freshmen.

The population sample in Riehl's (1994) study consisted of 2,190 freshmen who participated in the fall 1992 New Student Advisement and Registration Program at Indiana State University. It represented 93% of the entering freshmen class who were identified through responses to a questionnaire. Question 19 on the Student Information Questionnaire prompted students to answer the highest educational level for each parent. Of the 2,190 students, 774 responded that neither parent had attended college. The questionnaire also included questions regarding family background, choice of college, and college plans. By using a method known as the static group comparisons design, the study grouped first-generation college students with others based on a series of responses. Academic achievement and performance was measured by comparing the statistics of first semester dropouts, first semester grade point averages, and those students returning for the second year. Group differences in mean test scores, grade point averages, and class ranks were measured using two-tailed, pooled t tests and chi-square analysis. Based on the results of the study, five of the six null hypotheses were rejected. There were obvious differences in the means of SAT scores, grade point averages and class ranks between first-generation college students and other freshmen. First-generation college students had significantly lower SAT scores and high school and first-semester college grades. There were no

significant differences in high school rank. Based on these results, first generation students were found to have significantly lower test scores and grade point averages than students whose families had at least one parent who attended college (Riehl, 1994).

Prior research indicated that first-generation college students have weaker academic preparation and lower degree aspiration. Riehl's (1994) study validates and supports the literature in the field. Thus, it is not surprising to note that first generation college students in Riehl's study were also less successful academically during their first semester of college. Programs are currently being designed to help first-generation students with special needs such as advising, study skills, and orientation programs. Thus, the current researcher concludes that it is imperative that universities across the nation address the needs of first-generation students so that faculty, staff, and administrators can meet their special needs.

Are there significant differences in the academic preparation and college success of first-generation students? Current research indicates that there are differences, and programming for this growing population will increase the rates of retention and provide better academic experiences for these students (Riehl, 1994).

Hushak (1973) studied several factors that have a major impact on learning inputs and student achievement. Among the

inputs studied, it was discovered that lower-achieving students depend more on teachers than higher-achieving students because they have less-educated parents and limited access to other learning inputs. This is indicative of why low- achieving students study more and obtain more help from their less-educated parents. To these students, the teacher is the primary skilled teaching input rather than the parent.

The parent's educational attainment level was used as a basis to determine the educational atmosphere of home environments. In this regard the parent is the educator in the home, and since students spend the majority of their time at home, their parents are the primary learning inputs for these students. The findings state that parents who have at least a bachelor's degree are private teachers to their children, and are better qualified in one or more subjects of knowledge than any of the teachers in the school (Hushak, 1973). In such an environment, a student is less dependent on the ability of the teacher than a student with less educated parents. Information was gathered from both mother and father concerning highest educational attainment level. In this study, the father's education was used because the results showed a stronger statistical relationship than with the mother's educational level academic achievement.

The results of the study by Hushak (1973) clearly showed that the father's education variable has the greatest effect on student success. Highly-educated parents provide more or higher-quality teaching input for their children. A child with less-educated parents does not have access to alternative skilled teaching inputs, and the teacher is the most skilled teaching input to which the child has access regardless of the teacher's qualification. Other results also indicate that the father's educational level is the leading determinant of the high quality of the teaching input.

Thus, children with well-educated parents are not as dependent on school inputs, nor do they spend much time studying outside of school. The correlations between study time and father's education, and between study time and achievement test scores, are consistent with this finding. Less-educated parents tend to compensate by providing more help in terms of time, but the children of less-educated parents are still more dependent on the teacher as their primary skilled input.

Based on studies by LeVine (1980), Stevenson and Baker (1987), and Youniss and Smollar (1985), the education of the mother affects many areas of the child's educational endeavors. First, educated mothers are more likely to adopt parental investment strategies designed to maximize the life chances of the student, such as their probability of survival, health, and economic

success. Second, a well educated mother might be more concerned and knowledgeable about obtaining educational credentials for her children by supervising their school attendance, transferring them to better schools, and providing supplementary tutoring when necessary. Third, more educated women might be more likely to choose husbands who share some of the tendencies mentioned above. Their spouses may also be wealthier and, therefore, would be better able to provide the resources needed to attain their children's education goals. Finally, the more educated mother can provide her child with more useful forms of instruction, self-perception, encouragement, interaction, and exposure, thus transmitting skills and shaping his or her psychological development in distinctive ways (Majoribanks, 1979).

Laosa (1975, 1977, 1982) found that mothers who are well-educated affect the cognitive abilities of children more regardless of their occupation. When socioeconomics is compared to maternal education, it becomes a salient family determinant of students' scholastic and academic achievement. A mother's praise or verbal approval of a child's activity is linked directly to her schooling. Hannan and Luster (1993) cited that maternal education has both a direct and indirect effect on student educational attainment.

Stevenson and Baker (1987) found that educated mothers tend to manage their children's school career from elementary

school through the high school years. This becomes very important at the high school level, when the mother aids in the selection of college preparatory courses. The researchers also found that maternal education, more than employment, was related to the academic achievement of children.

Cultural backgrounds also add an interesting dynamic to parental education and a student's success. Educational attainment among Latinos has increased, but academic success continues to remain low, compared to non-Latinos. According to the 1990 Census, only 1 in 2 Latinos completed high school. In contrast, non-Latinos have an 80% high school graduation rate. Within the Latino community, the Mexican-origin subgroup had the lowest graduation rate (44%), and other groups of Hispanics had the highest graduation rate (69%) (Chapa & Valencia, 1993). Only 9% of adults aged 25 or older attained a four-year college degree, as compared to 22% of non-Hispanics. Among Hispanics, Mexicans or Mexican-Americans had the lowest college graduation rate (5%) and Cubans had the highest (20%). Historically, Latinos have been the most undereducated group in the U.S. Despite a gradual rise, based on statistics from the Bureau of the Census (U.S. Department of Commerce, 1991, 1996), as compared to Blacks and Whites, Hispanics and Latinos have had the lowest levels of educational attainment, highest dropout rates, and highest illiteracy rates.

These differences have persisted overtime. For example, in 1940 the median number of years of education completed by the largest Latino group in the U.S., Hispanics aged 25 to 64 who lived in California, was 7.5 years, compared to 10.5 years completed by Whites (Chapa, 1988). The proportions of high school and college graduates have doubled despite the gap between Latinos and Hispanics.

Latinos and Hispanics continue to lag behind their non-Latino counterparts in college admission and college graduation. The number of Hispanic high school graduates going on to college peaked at 36% in 1976, but Hispanic enrollment has been less than 36% since then (American Council Education, 1990). Why is there a lack of interest in graduating from high school and going on to college among Hispanics and Latinos? According to Nieves-Squires (1991), Hispanic or Latinos who go to college experience a tremendous amount of pressure from their family due to cultural expectations. Melendez and Petrovich (1989) reported that the values on which most universities and colleges build their mission and culture are at odds with Hispanic culture and values. Melendez and Petrovich (1989) found several cultural attributes that may affect the academic achievement of Hispanics the most. In the Latino culture, tolerance of differing thoughts and philosophies is welcomed and accepted by Latino students, but challenging points

of view could be seen as controversial. Hispanic students, thus, may be seen as reluctant to participate in free exchange of thought and dialogue. Most faculties would misconstrue such behavior as being not interested or as a lack of independent thinking. Academia produces an environment that is conducive to competitiveness and individualism, which is in direct conflict with Hispanic cultural values of cooperation and group cohesiveness. For Hispanics to be successful, they must learn to adapt to the academic environment.

Major studies have shown that cognitive factors (intellectual ability and scholastic aptitude) and psychosocial factors (attachment, locus of control, optimism, androgen, and self-esteem) are significant predictors of academic achievement at all levels of education. These factors and others predict the vast majority of academic achievement, as do other factors like parental education and family socioeconomic status. All tend to influence students' academic success.

The research also suggests that the more educated one's parents are, the more likely they are to support and encourage their children's educational endeavors (Brown & Robinson Kurpius, 1997; Lin, 1990; Winfield, 1991). Finn and Rock (1997) found parents' educational attainment is one of several factors that contribute to academic resilience among minority students from low-income homes.

Researchers have reported that students who come from environments where both parents have degrees have fears of failure and disgrace if they were unable to graduate from college (Peng, 1994).

Parents' employment also dictates internalized values related to academic performance (Bank, Slavings, & Biddle,1990). Family income is a significant variable of academic achievement (Finn & Rock, 1997), but low-income families with parents who have little or no education may create a less enthusiastic atmosphere concerning education and children's futures (Bell et al.,1996; Galambos & Silbereisen, 1987). A parent's educational attainment is often reflected in the offspring's academic achievement. A Louisiana study by Williams (1963) found that there was an inverse correlation between parents' years of education and the dropout rate of their children. The higher the parents' education, the lower their children's dropout rate. Other studies support this finding. One study in Maryland showed that most dropouts' parents (70% of the mothers and 80% of the fathers) never finished high school (Williams). Among these parents, 25% of the mothers and 30% of the fathers had never completed sixth grade. The parents were asked to give their opinions about the importance of a high school education. More than 90% of the parents of in-school students thought that it was a great disadvantage for students not to finish

high school, while only 60% of the parents of dropouts had the same view.

- **Parental Influence and Student Achievement**

Much interest has been generated regarding the relationship between social interaction and cognitive development (Miller, 1988). Based on extensive study of parent belief and cognition, Miller concluded that the primary concern in the relationship is what parents value as well as their general knowledge.

Do parents' beliefs affect the way they treat their children? It is significant in terms of cultural norms and in terms of how those ideals do or do not affect adolescent educational attainment. Hill (1979) cited that understanding parent/child interaction promotes the most essential insight with regard to the continuity of cultural tradition. The majority of western theories of child development are usually based upon research with suburban White middle class families (Garcia Coll, 1996; Gottfried & Gottfried, 1984; Hewlett, 1992; Laosa, 1977; Ogbu, 1988; Sternberg, 1988). Applying Western theories to other cultures can be problematic because levels and stages in student development are not universal (Dixon, Tronick, Keefer, & Brazelton, 1992; Hewlett, 1992; Sternberg, 1988). Keeping this in mind, it is important to realize the differences between

minority and cross-cultural groups and to research this topic with caution.

Interaction between parent and child starts long before the child emerges from the mother's womb (Garbarino, 1982). All children, regardless of color, ethnicity, or socioeconomic background, need to know they are loved (Field & Widmayer, 1981; Garbarino, 1982). There are variations in the kinds of interactions between parent and child. Research suggests that the parents' own experience in the social system is reflective in parent-child interactions (Hoffman, 1984). Those interactions are also based on culture.

In the American culture, mothers see their children as being totally dependent on their parents to make them independent. On the other hand, Japanese mothers believe that their children are independent biological beings that have to be incorporated into the culture and made interdependent (Dixon et al., 1981). The actual time that the parent spends with the child is the process by which a child develops a sense of herself/himself as an individual within the family and culture (Kohut, 1971; Whiting & Whiting, 1975). Values and beliefs are infused by interactions with parents and family (Caudill & Weinstein, 1969).

Child development from infancy is also important in academic success later in life. Parents work toward developing a relationship with their new infant. During this time of discovery, both parent and infant make discoveries about one another. The infant strictly relies on parents for care and nurturing. The infant is quickly socialized to send messages when in need of food or a diaper change, and the parent eventually learns to communicate (Garbarino, 1982). As the infant develops into childhood, the role of the parent becomes intricate. Parents have to help children develop a sense of self-worth, acceptance, independence, and a positive identity while enforcing reprimands and discipline (Collins, 1990).

Adolescence is marked by variations in interaction and modes of communication. During this time, adolescents go through personal and biological changes. Students become more independent, and challenge the values and morals that were innately theirs. The three stages of adolescence (young adolescents, middle adolescents, and late adolescents) are stages that lead to an evaluation of self and the meaning of adulthood (Garbarino, 1982).

The majority of the studies conducted regarding adolescents and their families have included white, middle-class families. Little is known about Asian, African American, Native American, or Latino families and their relationships (Hill,1979). Until recently most subjects involved in similar studies had been middleclass White

Americans (Carter & Middlemiss, 1992; Laosa, 1977). The reasons noted by Carter and Middlemiss (1992) were ethnocentric biases by researchers as well as a statistical concern regarding the homogeneity of the sample.

An added element to the developmental process of adolescents from ethnic minority groups is their acculturation into mainstream society. Ethnicity is an important element because one's social identity is derived from the culture to which the person belongs. This gives an individual a sense of clanship in an ethnic group. That clanship is made of self-identification, feelings of belonging, and commitment to that group. Identifiers that link an individual are language, food, traditional customs, and religion.

Development of identity is included in family and community variables for adolescents. These influences often validate and assure ethnic group membership. According to Garcia Coll et al. (1996) and Phinney and Rosenthal (1992), a strong sense of ethnic identity is correlated with high self-esteem and positive self-concept. This could contribute to higher levels of academic achievement for minority adolescents.

According to data acquired by Findley and Cooper (1983), there is no significant difference in relation to the cognitive and non-cognitive variables by ethnicity. The averages for the locus of control

are significantly different among the different ethnic groups and are consistent with current literature (Findley & Cooper). This is inconsistent with the findings of a recent study by Zea, Jamara, and Bianchi (1995), which found Latinos and African Americans to be more internal than their White counterparts. Among the ethnic groups, Hispanics or Latinos were the most internal of all the groups. Surprisingly, from this study, Asian Americans were less internal than the other ethnic groups.

In other studies, these results would have been contrary to current literature that implies that individuals from certain cultures that emphasize collectivism over autonomy would display higher levels of attachment (Harrison, Wilson, Pine, Chan, & Buriel, 1990). Two conclusions were made by Liang and Bogat, 1994: (1) The Asian American sample was small, and therefore may not be generalizable to the Asian population; and (2) Asian students' reliance on acclamation strategies may have lessened their need for support.

The results of the study by Liang and Bogat (1994) reinforce the notion that parental educational attainment levels influence students' levels of achievement (Lin, 1990; Peng, 1994; Winfield, 1991). The findings on father's educational levels and mother's educational levels showed minor differences among the ethnic groups. The educational level of both mother and father was significant, but only between the High-High Group and the Low-

High Group. Based on the results of Liang and Bogat's (1994) study, these students are the children of parents who attained high levels of educational success as exhibited by their high school graduation rates and high rates of attending college. Explanation for the variance of college grade-point averages could lend itself to the parental education attainment levels, which could be a subtle influence on this group of students. Parental educational attainment levels were a factor that protected weakly attached students from academic downfalls. In the low-low group's means for mother's educational attainment was the fourth highest (m=14.08). The female composition of the group was an important factor which may have led to the influence of modeling the mother's academic achievement/ attainment.

Many studies have shown that parental influence exerts a much more powerful impact on the importance of students' academic achievement when compared to the influence of their peers. In a study by Spenner and Featherman (1978), academic achievement is encouraged more strongly by parents and peers than by any other factor. These influences are said to overweigh one's scholastic attitude or previous academic achievement.

Davies and Kandel (1981) found that even though parental and peer influence was a factor in the overall academic performance of the student, parental influence was greater for adolescents at all

ages. They also found that as the adolescents aged, parental influence grew stronger, particularly with boys' goals and ambitions. Conclusions from the results indicated that a high correlation between parental influences and boy's goals and objectives may be due to a greater lack of achievement responsibility among boys, leaving this area wide open for parental encouragement. The findings also may have indicated that educational plans and parental expectations simply show a wider variation for boys than for girls.

Research has reported that parental encouragement impacts the educational endeavors of their children more than the student's direct social origins (White, 1982). The research also concluded that actual academic achievement is more highly correlated with family characteristics, such as "home environment," than with family income, which is more closely related to academic achievement than to parental occupations (White).

Nowicki and Segal (1974) examined the correlations of locus of control for 162 white 12th graders from lower middle-class family backgrounds who live in a suburban area of a large city in the southeastern United States. The students were asked to complete a Nowicki-Strickland scale that measures students' perceived control over the outcome of academic achievement in school. The

correlation between students' locus of control and the perceived locus of control of their parents were significant.

Two important questions lend themselves to continuous research on the topic of parental expectation and student academic achievement. Do intelligent students affect parents' achievement expectations, or vice-versa? Do parental expectations create a motivation in students to achieve? This cross-lagged panel analysis investigated the relationship between home environment and cognitive development (Bradley, Caldwell, & Elardo, 1979). From the findings, the main environmental measure was maternal involvement. Mothers and children from low -to middle-class backgrounds where studied when their children were ages 6, 12, and 24 months. The mothers' encouragement toward their intellectual and social development wasrecorded. Children were administered the Bayley Scales of Infant Development as a measure of cognitive development.

The Bradley et al. study (1979) also found that bright children at 6 months influenced maternal involvement at 12 months (rather than the reverse) and that maternal involvement at 12 months led to brighter children at 24 months. The correlations of the measurements between 6 and 12 months and 12 months to 24 months were high, but all were below .33. The researchers suggested that a study using a larger sample of children would have

provided a clearer connection between achievement and expectations.

It is still unclear whether parents' expectations are in any way dependent upon the child's early achievement or whether the home environment is influential. A study by Jackson (1983) studied 21 preschoolers from lower-income black families living in New York City. They were observed in their homes and their verbal interactions were tape-recorded. Fourteen of the 21 children had been the subjects of home observation at 24 to 42 months. The researchers observed the reading achievement of 1st and 2nd graders and found that the successful ones differed from the unsuccessful ones in their preschool IQ. They had participated in more verbal interactions with their families as preschoolers. They also noticed more encouragement and less discouragement accompanied their verbal initiations. Parts the study indicated that it did not examine parental attributes such as reading preferences or intelligence. Such entities as the literacy of parents may create an atmosphere that is conducive to literate children, or it could be that children of literate parents would be literate regardless of variation in verbal stimulation.

- **Family Structure and Academic Achievement**

For the purpose of this research, family structure may be defined as the internal make-up of a family unit, which may include a parent and/or parents, a child or children and other family members who interact as a part of the unit, such as a live-in relative(s) (i.e., grandparent(s), uncle(s), cousin(s), etc. Bloom (1964) concluded that most children's basic intellectual development is completed before school age attendance, which stimulates the search from similar features in the home environment that facilitate intellectual performance. Wolf (1964) was able to postulate a number of environmental process variables on the basis of his findings. In his investigation, Wolf (1964) found a multiple correlation of .79 between environmental measures and academic achievement. Meanwhile, Wolf (1964) found a multiple R of .80 for the relationship between environmental process measures and IQ.

Because these results were replicated with highly consistent results, one variable remained clear in both findings. The achievement element refers to the goals and aspirations parents hold for themselves and for their children. It involves the academic achievement standards they hold and their standards of reward for educational achievement. Parental involvement is reflected in the kinds of concrete knowledge they have of the developmental or educational status of their student and the specific plans and

preparations they have made to ensure that the educational goals they hold for their student can be attained. Another variable considered to impact academic achievement is the educational and occupational level attained by close friends and relatives.

It often has been hypothesized that parents who provide stimulating environments produce bright students. Research also has founded that students who are raised in stimulating environments learn intellectual skills that enable them to profit from instruction in school to a greater degree than is true for students from less active homes. In some situations, parents influence students to value the kinds of learning activities that are provided at school. Other researchers support the notion that the educational level of the parent or parents shows the highest relationship (Bradley, Caldwell, & Elardo, 1977), and that Mexican-American/Anglo- American differences in mother-child interaction styles disappear when the level of formal education is controlled. The more parents have been exposed to the culture of higher learning, the more they transmit it to their students. Therefore, it is possible that educated parents go further in school and also pass their ability on to their students through heredity.

Based on the number of theories and hypotheses about environmental factors and intellectual development, none can give a clear and accurate answer to which one factor causes academic

achievement. During the 1960s, the popular interpretation was that a stimulating home environment produced mental acumen. It was also assumed that the homes of lower socioeconomic status and poor minority students were unable to provide the kinds of experiences required to activate intellectual growth. This was indicative of the assumption that socialization practices of disadvantaged families were seen as contributors to intellectual deficits in their students.

Much research has been generated about the positive parental guidance that contributes to the fostering of academic achievement across the entire educational spectrum in both high-and low-risk samples. Most current literature emphasizes the positive parental support that promotes higher grade point averages, high educational attainment, and academic persistence among children, early adolescents, and late adolescents (Bell, Allen, Mauser, & O'Conner, 1996; Clark, 1983; Finn & Rock, 1997; Gloria & Robinson, 1994; Hoffman & Weiss, 1987; Kobak & Sceery, 1988; Peng, 1994).

Cutrona et al. (1994) found that parental support can be used to predict college grade point averages among first-year and second-year university students who are not in daily contact with their parents. In two independent samples, parental support was a dominant factor in college grade point average. In their study, parental support accounted for a large proportion of the total

variance in academic achievement. It was a determining factor of grade point averages. Other factors like social support from friends or romantic partners were not significant predictors of college grade point averages. The authors believed that parents who encouraged and coached their student's abilities directly were able to use adaptive behaviors in the academic arena.

In contrast to positive parental support linking to academic achievement, negative or no attachment to parental support has been found to exacerbate the academic risk for some adolescents. Several factors have been identified to examine the facets of parent-child interactions as vital signs for poor academic performance. Students who have poor relationships and communication with their parents about feelings and thoughts (Eskstrom, Goertz, Pollack, & Rock, 1986; Finn 1989), have parents with low educational expectations (Dornbusch et al., 1987) and lack of encouragement from parents to persist in academics (Bean & Metzner, 1985; Okun, Benin, & Brandt-Williams, 1996). They have all factors in place to be at risk for poor academic outcomes.

Lopez (1991) examined how students classified themselves. Students categorized themselves in one of four alignments (non-coalition, mother-coalition, father-coalition, or triangulation) where different scores were taken to measure college acclimation including academic adjustment. Significant results among the four groups

were found for personal adjustment and academic adjustment. The findings indicated that a triangulated family alignment, which occurs when a child is conflicted and dependent on both parents, may place the student at a higher risk for poor academic adjustment.

It is well noted that supportive parents are an important predictor of academic achievement among students, but there are other types of conceptual family dynamics that impede the academic success of the student. As recent research as shown, non-involvement by the parent is a risk factor for adverse outcomes among both children and adolescents (Cowan, Cowan, & Schulz, 1996).

Recent studies have indicated that the quality of the interactions between parent and student is vital to the student's success. Studies of family relationships of bright, high-achievement versus low-achieving high school students show that the high achievers more than low achievers describe their parents as sharing, understanding, approving, trusting, affectionate, and encouraging with respect to achievement. In the study, matched pairs of white students revealed some interesting facts about successful graduates who had different family lives than dropouts. The majority of the dropouts saw their family members as failing to accept each other and failing to accept and understand them. Meanwhile, the majority

of the graduates saw their family members as accepting and understanding each member as a complete person. The dropouts received less encouragement from their families in their educational and career plans than the graduates (Rice, 1978). A number of studies have found that the quality of interaction in the student's family of orientation has the greatest impact on school behavior. In all cases, dropouts ranked significantly lower than their peers. Out of 84% of the dropouts, 18% reported "very little" or "little" intrafamily understanding and acceptance. Eighty-one percent of the dropouts had "very infrequent" or "infrequent" communication within the home, while only 20% of the graduates fell into these categories (Cervantes, 1965). Another important variable in small group interaction is the degree of consensus among members concerning behavior expectation. The degree of intrafamily consensus is significantly related to the academic success of boys. Boys who were well-adjusted in school came from families with high consensus (Myerhoff & Larson, 1965).

There are strong correlations between family size and achievement motivation (Hetherington, 1992). Students from larger families consistently displayed lower achievement motivation than did children of smaller families. Evidence suggests that since large families are typically of lower-income status, they have low expectations for educational success. These studies have revealed

that larger families produce lower achievement motivation in their children.

Family structure also plays a vital role in the achievement of students (Hetherington, 1992). Broken homes are strongly related to students dropping out of school. Students whose parents are divorced or separated are twice as likely to leave high school earlier than their peers from two-parent households.

The question of how family influences to which students are exposed seems to be convoluted with many intervening variables. Researchers have argued how family impacts children. Researchers such as Hetherington (1992), Bronfenbrenner and Crouter (1983), and Steinberg (1990) have examined the different effects of family status, while others investigated the importance of family process (Featherstone, Cundick, & Jensen, 1992; Walters, 1998). When such researchers examine families, they often refer to their conditions, family structure, ethnic background, socioeconomic status, and size.

Hetherington (1992) examined the effects of family status adopts a social address paradigm. This paradigm is an environmental label indicating the ecological niche, or atmosphere, in which the student is raised. Because the social address paradigm has limitations, many researchers have shifted their focus from the

study of family status to the family process. This process refers to behavior or interaction that occurs between family members, such as parenting styles, parental discipline, and parental involvement in the education of their children.

In the family process paradigm, researchers focus on the impact of various family processes on a child's development. Family process and family status are variables that cannot be independent of each other. It is also important to incorporate both sets of factors in family research. To view family status and family process as polarized influences would not be meaningful unless we combined both paradigms together for analysis. Both paradigms combined would provide a more powerful analysis of the affects of family status and process on student academic achievement.

In contemporary America, single-parent households have become a phenomenon. Hetherington (1992) cites statistically that half of American couples married after 1970 will divorce. Recent U.S. Census Bureau figures report nearly one-fourth of children under 18 years old live with only one parent, typically their mother (Walters, 1988). Because the traditional family structure is eroding and no longer homogenous, it is important for educators to understand the complexities of family structures and its monumental impact on a student's academic performance.

Subsequently, after divorce, lifestyles change and families headed by single mothers descend into poverty. U.S. Department of Commerce, Bureau of the Census (1991) reported that 37.2% of single-parent families live below the poverty level, compared with 12% of all families with children.

The correlation between socioeconomic background and student's academic achievement gets the attention of many researchers (White, 1982). However, researchers need to look at how factors affect student academic achievement in a new perspective. As examined previously, the social address paradigm was considered by researchers to be the way to study student development in context (Bronfenbrenner & Crouter, 1983). Using this primitive paradigm, researchers compared the academic performance of students living at different social classes or in different environments. Bronfenbrenner and Crouter (1983) argue that this paradigm has limitations. No consideration has been given to intervening variables that might affect the development of children.

Examining the effects of family structure or socioeconomic status on students' academic achievement is often indicative of the mechanisms and factors that might affect academic performance. Using the social address paradigm, researchers argued and found ambiguous differences in academic achievement among students

from different family structures and socioeconomic levels (e.g., Featherstone et al., 1992; Eagle, 1989).

When other factors like family characteristics and children's achievement are included in observations, achievement-related family processes are reduced. The British Psychological Society (1986) reported that material circumstances and social position are not important compared to what may be referred to as family climate.

Family climate includes parents' aspirations and attitudes and the family's support and encouragement for a child's school. The weakness of the social address paradigm convinced Dornbrusch and Wood (1989) to argue for a shift from the examination of social address to the study of family process. The argument is that if focus is put on family status such as family structure, parental educational level, ethnicity, and socioeconomic status, other factors will be overlooked. Factors that may be overlooked are the acquired intellectual advantages that fall within lines by class, ethnicity and household structure. Dornbrusch and Wood (1989) note that family processes are far more important than family status. They suggest that more research should be done to identify specific family processes that produce differences in educational achievement. If these processes are identified, the results may suggest alternative ways of relating to students that will foster academic achievement.

Because family status has been a litmus test for student success in previous literature, Dornbrusch and Wood (1989) suggest setting aside family status and identifying elements of family processes. Dornbrusch and Wood (1989) have examined the dynamic relationships between environmental factors and student, academic achievement. Halsey (1975) reveals that in much of the family research the concept of social status is minimal because parental attitudes are conceived as separate factors rather than an integral part of work and children's environment condition. Kohn (1979) points out that American parents' values and child-rearing practices can be seen in terms of the realities parents face. Family processes are conducive to educational experiences that are usually not independent of the effects of family status.

Researchers such as Milne (1989) purport that neither family status nor process factors should be excluded from future research models. The interactive effects of family status and family processes on the student should be incorporated to involve both sets of variables in any study. Instead of studying a social address paradigm or a family process paradigm separately, both need to be integrated to study the effects of family factors on student academic achievement (Lam, 1997).

It is important to distinguish the treatment of family processes as mediators, from the use of moderator variables in social science.

A moderator "partitions" a focal independent variable into subgroups that establish its domain of maximal effectiveness in regard to a given dependent variable (Baron & Kenny, 1986).

Steinberg, Mounts, Lamborn, and Dornbusch (1991) used socioeconomic status, family structure, and ethnicity to partition 10,000 high school students into 16 subgroups. The authors found authoritative parenting to be linked with better academic achievement among children across all subgroups. This means that SES, family structure, and ethnicity did not moderate the influence of authoritative parenting on students' achievement. The difference between moderating influence and mediator influences is that a mediator represents the generative mechanism through which the focal independent variable is able to influence the dependent variable of interest (Baron & Kenny, 1986). For example, Milne et al. (1986) used parental expectations, other processes, and SES as mediators to explain the effects of family structure on children's academic achievement that decreased significantly when these mediators were taken into consideration.

Because there are interactive effects of family status on student academic achievement, there is a desperate need to investigate how much of the effect of family status on students' academic achievement is mediated by family processes (Steinberg, 1990). There is a need to shift from exclusively using family status

as a moderating variable to incorporating family processes as mediating variables. There are three questions that need to be answered:

1. Are there mediating affects of a specific family process that will influence how family status affects students' academic performance?

2. Are there direct effects of a specific family status on student's academic achievement?

3. Are there indirect effects of a specific family status through specific family processes on student's academic achievement?

Steinberg (1990) examined the effects of the family on students' academic achievement with each of the three research paradigms. He examined family influences first with a social address paradigm and then with a family process paradigm. An integrated paradigm that incorporates both social addresses and family process paradigms will be implemented. Both processes will be included in the current study. Family status variables included in the current study are family structure and socioeconomic status.

Steinberg (1990) is interested in the comparison between intact families and single-mother families. The family variables Steinberg studied included three dimensions of authoritative parenting style: (1) parental monitoring/supervision; (2) parental

supportiveness and warmth; and (3) psychological autonomy. These three dimensions are incorporated as mediating variables. Parental monitoring, parental supportiveness, and psychological autonomy granting mediated the affects of socioeconomic status and family structure on students' academic performance.

Bronfenbrenner and Crouter (1983) showed that the century-old social address paradigm continues to characterize the majority of contemporary research on this topic. They observed this in many studies of children from single-parent families. A study of children from intact versus non-intact families (Amber & Saucier, 1984) is a representative example of studies based on the social address paradigm.

The researchers surveyed a large sample of Montreal teenagers and found that students from separated/divorced families were less successful in school, liked school less, and expected to drop-out of school earlier than students from intact families. The weakness of the study was that there was a lack of control for socioeconomic or ethnic factors. It is not known if the findings were influenced by these factors or due to family structure, as the authors suspected. Studies that are based on the social address paradigm have varied considerably in controlling confounding variables.

The most common form of statistical control in existing literature is to have social class, race, grade level, or age controlled. In a recent study by Featherstone et al. (1992), school behavior and achievement were compared among students from intact, reconstituted, and single-parent families. Using race, grade, and age as covariates in the analysis, they found that students from intact two-parent families had better attendance, higher grade point averages, and fewer negative and more positive behavioral ratings by their teachers than did students from reconstituted and single-parent families.

A weakness in the Featherstone et al. (1992) study is that socioeconomic status was not considered as a distinctive confounding variable. Walters (1988), notes that family structure and socioeconomic status are closely related. The median income of single-mother households is one-third that of two-parent households. One-fourth of White single-parent families and nearly one-half of Black single-parent families live in poverty. Herzog and Sudia (1973) concluded that the effects of a father's absence on juvenile delinquency and academic achievement outlines the importance of controlling for SES in research dealing with the effects of father absence. Viewing the restrictions, they found that father absence in itself had a lower correlation with poor school

achievement if SES and type of fatherlessness were controlled (Herzog & Sudia, 1973).

Other researchers such as Mueller and Cooper (1986), and Acock and Kiecolt (1989) investigated the long-term effects of family structure during adolescence on adult adjustment. When SES was not controlled, both men and women who lived in intact families at age 16 scored significantly higher than students from single-parent families on all aspects of adjustment.

When examining single-parent families, it cannot be generalized that all single-parent families are homogenous. There is a need to consider all subtypes of single-parent families in student's achievement research. Zimiles and Lee (1991) compared students from three different types of families (intact, single-parent, and step families) with respect to high school grades and educational persistence.

Based on a sample size of 13,532 from a national data set (High School and Beyond Study), Zimiles and Lee found that differences among the three groups with regard to achievement test scores and high school grades were slight but statistically significant.

Students from both single-parent and step families lagged behind students from intact families but were unrecognizable from

each other. This trend continued after SES was taken into account. Group differences were found in educational persistence and dropout behavior in Zimiles and Lees' (1991) study. What was most interesting was that students from single-parent and step-family households were three times as likely to leave high school before graduation as those from intact families. Other striking findings were that adolescents who lived in single parent homes were likely to dropout when they had an unlike-gender custodial parent. A similar pattern of interaction was found among stepfamilies, but the pattern was reversed. Students who lived with their same gender custodial parent were more prone to drop out.

With the understanding of the effects of family structure on students, we need to understand the processes or mechanisms responsible in different environments for the academic performance of students. Milne et al. (1986) introduced processes in the study of the educational achievement of students from single-parent families.

While accessing two national databases (Sustaining Effects Study of Title, and High School and Beyond), Milne et al. investigated the effects of living in a one-parent not only family on children's academic achievement. Their findings examined the effects of SES, race, and age, but also the effects of many variables including their custodial mother's educational expectations, number

of books in the home, homework monitoring, and time spent at home.

Milne et al. (1986) found that parents' educational expectations for students were significant mediators of the effect of family structure. They also found that students from two-parent families had higher scores on reading and math achievement tests than children from one-parent homes. They found that the effects of family structure were almost entirely mediated by other variables, particularly income. Because this factor was isolated, the direct effects of family structure were much smaller. Results also revealed that parents' educational expectations for students were significant mediators of the effect of family structure.

Based on the non significant effects of family structure on academic achievement, Milne et al. concluded that the effects of living in a one-parent family work primarily through other variables, such as SES and parent's educational expectation.

Reviewing data from the High School and Beyond study, Milne et al. (1986) found that students who lived with single parents or step parents during adolescence received less encouragement and less assistance with schoolwork than did students who lived with both natural parents. They also found that parental involvement had positive effects on students' school achievement.

Blum, Boyle, and Offord (1988) found that children of single-parent families were more at-risk for student psychiatric disorders and poor school performance.

Amato and Keith (1991) also studied family and academic success. They conducted a meta-analysis on 92 studies about parental divorce and the well-being of children. The researchers found that students of divorced families scored lower than students in intact families across a variety of outcomes. Their findings from the meta-analysis revealed that family conflict strongly influences the relation between family structure and the well being of students.

A study by Dornbusch et al. (1985) found that adolescents in single-parent families were more likely to make decisions without direct parental input and were more likely to exhibit deviant behavior than were students from intact families. This behavior crosses over into the academic setting.

- **Socioeconomic Status and Family Structure**

There is much evidence to support the conclusion that poverty has an effect on children and families, and that impression is usually a devastating one. Poverty often is linked to employment, mental, and physical health, and education. There are also other ways that poverty touches people's lives. According to Brooks-Gunn, Klebanov, Liaw, and Duncan (1985) because poverty is used as a

measure, it is unrealized if poverty is permanent or temporary (McLeod & Shanahan, 1993).

Mcleod and Shanahan (1993) defined persistent poverty as the percentage of years of life during which the student lived in poverty. Current poverty is defined as poverty that occurs as a result of immediate financial problems (e.g., unemployed or without a job). McLoyd (1990) suggests that greater attention should be focused on family processes in the study of poverty outcomes in order to understand what variables mediate the effects of poverty.

According to statistics, it is estimated that by the year 2000 the population of the U.S. will grow to 275 million, and that by the middle of the 21st century the population will reach 375 million (Fitzgerald, Lester, & Zuckerman, 1995). In 1991, the Census Bureau reported that 35.7 million people (roughly 14% of the population of the United States) had incomes below the federally defined poverty level. By the end of the century the number of people living in poverty will be 38.5 million, and by 2050 it will surpass 50 million (Fitzgerald et al., 1995). The National Center for Children in Poverty (1990) reported that 14 million of America's poor are children, with approximately 5 million under six years old. The 10 worst cities for children under age six in 1989 had poverty rates ranging from 52.4% (Detroit, Michigan) to 44.8% (Laredo, Texas). In 1990, The National Center for Children in Poverty statistics estimate

that among minority children living in large metropolitan areas 42.1% of Blacks, 35.3% of Latinos, 34.4% of Native Americans, and 22.9% of Asian American were poor. According to NCCP, Erie, Pennsylvania, ranked first among the 10 worst cities in the U.S. for poverty among African American children (62.0%) and for Latino children (68.5%).

Several factors have contributed to the causes of increased poverty rates among children. Some of those increases include but are not limited to: (a) fiscal changes in the economy, that may include elimination of unskilled and semi-skilled jobs, stagnation, recession or inflation of the economy, job migration from inner cities to the suburbs; (b) budgetary constraints on federal programs like AFDC, continued increases in inequalities between the affluent and the poor; and (c) shifts in the number of children born out of wedlock, increases in the rates of divorce and single parent households, and increase in maternal employment without the possibility of quality child care (Chase-Lansdale, Lindsay, & Brooks-Gunn, 1995; Danziger & Weinberg, 1986)

Children from Latino or Hispanic backgrounds are much more likely to grow up in poor families, with rates double or triple that of non-minority families (Chapa & Valencia, 1993; Rivera-Batiz & Santiago, 1994). These statistics are alarming when compared to the life situations of White, African American, and Hispanic American

children. In 1991, the poverty rate for Hispanic children was 40% compared to 17% of White children (U.S. Bureau of the Census, 1991).

Poverty is devastating for all those who experience it, but for Hispanics or Latinos the effects of poverty on developmental outcomes could be mediated or moderated by other variables present in Hispanic culture that might exacerbate or change the effects of poverty (Garcia Coll, 1996; Vazquez Garcia, 1995). Cultural attributes interfere with the socioeconomic variables and complicate pinpointing the direct affects of poverty.

According to Pallas (1989), there are factors associated with a student's exposure to inadequate or inappropriate education resources and experiences. Because these factors do not in any way suggest that a student is automatically doomed to failure, the probability increases if one or more of these factors are present.

One factor is poverty. Poverty is an indicator of why students perform poorly in school. Others are race, ethnicity, and single-family composition. Race and ethnicity often indicate that Black and Hispanic students frequently score lower on tests than whites and are more likely to drop out of school. Family composition makes a difference, too. Many children who come from single-parent homes live in poverty. Students affected by these factors tend to score lower

on tests than do children living in two-parent homes (Natriello, McDill, & Pallas, in press).

Other indicators are the mother's educational level and language background. When a mother's educational level is high, she will provide her students with more educational resources than will less educated mothers. Language background can be a strong indicator, particularly for refugees from other countries whose primary language is not English. Much research has been conducted on familial processes and how they affect academic achievement, but very few investigations have been done regarding specific populations such African Americans, Hispanics, Native Americans, and immigrants. Because many ethnic groups have come to the U.S. and prospered despite language and culture barriers and maintained a strong ethnic identity, Hispanics and African Americans have to be studied while considering historical, social, and discriminatory issues. These issues are paramount to the foundation of ethnic identity and self-identification (Phinney & Rosenthal, 1992).

Minority groups are not homogenous. Substantial differences are seen in the number of Latino families and subgroups who live in poverty. Approximately 17% of Cubans live in poverty, compared to 41% of Puerto Ricans (Garcia Coll, 1996; Meyer, & Brillon 1995). It is important to know that common characteristics exist between

Hispanic and Latinos, but generalizations cannot be made on the basis of ethnicity. There are some basic generalizations to be made, however.

Martin and VanOss Marin (1991) suggest that culture and not demographic traits are shared among subgroups. This is what makes it possible to generalize certain phenomena. Certain factors that affect the interpretation of most studies involving culture and ethnicity are familialism and simpatia. These are typical extraneous variables that interfere with the accuracy of the findings. Familialism emphasizes a strong affiliation of loyalty, reciprocity, and solidarity among members of the family. Simpatia serves as a way of promoting empathy, conformity and pleasant social relationship (Marin & VanOss Marin, 1991).

It is important to understand the socialization processes of minority children (Alvarez, 1986; Delgado-Gaitan, 1983; Gallimore & Goldenberg, 1993; Goldenberg, 1987; Vasquez, 1990). Research shows that the family ecology of ethnic minority families is different from mainstream culture (Harrison et al., 1990; Slaughter- DaFoe, Makagawa, Takanishi, & Johnson 1990). As a prime example, the interaction style or rules for interacting with adults are taught through socialization at home. At home, that child teams expectations and how to behave toward adults. For example,

researchers study how the child responds to an examiner or a teacher during a typical testing situation in school.

Unfortunately, how a child is socialized at home is not a part of measuring a child's competence. Instead, a child's test scores are used to only measure competence. According to Getzel (1974), most researchers argue that performance and competence are synonymous, but they are not. Performance in any given situation is determined by a number of factors, including socialization variables that children learn in the home.

According to Laosa (1977, 1982, 1984), a mother's teaching principles has a positive influence on the child's learning development. This provides credence that a mother's level of educational attainment will have a bearing on her child's academic success. She influences how her child responds to the instructional strategies found in traditional school settings and helps to determine if her child will adapt easily to the familiar environment.

Researchers have proven that successful achievement also depends on an intact family (Astone & McLanahan, 1991). Aston and McLanahan (1991) found that when families were intact completion of high school more likely compared to non-intact families where children were less supervised or monitored. This also may prove that there may be other factors that contribute to

academic achievement besides economic security or family structure.

Current research purports that successful academic achievement depends on an intact family and on economic stability (Astone & McLanahan, 1991). Astone and McLanahan (1991) found that family structure and home life were an important variable when studying high school completion. They found that the educational expectations of students from non-intact families were lower. Students also received less coaching on their schoolwork and overall received less supervision than children from intact families. Considerations must be taken for other reasons beside economic security or family structure, which could affect the results of the study.

Other researchers contributed interesting studies about educational attainment, poverty, and family structure. Mines (1992) found that being poor was not a predisposition to low academic achievement. Nines' study of gifted Puerto Rican children proved that although families had low educational attainment, they were able to provide support and encouragement, which led them to excel in school.

Researchers such as McLoyd (1990) believed that family structure and poverty should be considered as a distal influence

and a not primary effect on low academic achievement. McLoyd (1990) argued that the negative effects of poverty should be viewed as a weak variable and is dominated by the support and assistance students received from parents. It is believed that this fosters parental nurturing and stability, which guides the student to function well emotionally and academically.

Bronfenbrenner (1979) constructed a conceptual framework model that is beneficial in examining the relative contribution of proximal and distal variables to the academic achievement of Hispanic and Latino students. When viewing Bronfenbrenner's model, it is important to understand the student's behavior by learning how the student perceives the activities, roles, and interpersonal relationships that exist in his or her environment. To support the argument of what affects distal and proximal variables, analyses were done that compared the interfamilial processes of African American, Hispanic, and White families with adolescents. According to the framework model, the processes of maternal intelligence, maternal education, maternal employment, and poverty would apply to all three groups equally. Differences in interfamilial processes are due to like culture, socialization and interaction within the home environment.

Bradley and Caldwell, (1984) and Bradley et al. (1977), concluded that specific environmental processes are more accurate

variables of quality of the home environment than one socioeconomic status or family structure. The variance related to environmental processes was so significant that SES and family structure had very little influence on the findings. The findings indicated that in SES is confounded with race and that there are significant differences in child-rearing practices among various ethnic groups. As a vehicle of socialization, family heavily influences the educational attainment of children, along with other forms of support.

Vygotsky (1978) emphasized the parent-child relationship in the socialization of cognitive development. Vygotsky (1978) suggested that learning should take place for children when tutoring occurs in the "zone of proximal development." These zones are found in stages where the student is not yet able to perform tasks autonomously with success, but is able to perform units of the task with direct support and guidance from the adult. This zone of proximal development occurs when parents support students' learning through interventions that provide information for that task at different levels and abilities.

According to Sewell and Mauser (1975), Hill (1979), and Rollins and Thomas (1979), parents affect their child's academic goals and achievement. Parents promote higher academic success and educational goals by serving as role models of achievement (Hill,

1979; Rumberger, 1983; Shaw, 1982) and concretely defining specific objectives for the student (Cohen, 1987; Sewell & Hauser, 1975). By reinforcing with praise (Rollins & Thomas, 1979), importance of achievement and performance are validated to the child.

Similar results reported by Forehand, Long, Brady, and Fauber (1986) showed that the relationships between parent and child are influential and are indicators of performance and achievement. Hess and Halloway (1984) found five unique processes regarding family and school achievement based on the findings of the study of preschool, elementary, and middle-school children: (1) verbal interaction between mothers and children; (2) parents' expectation for achievement; (3) positive affective relationships between parents and children; (4) parental beliefs and attribution about the student; and (5) discipline and control strategies. Interestingly, among these five processes, discipline and control strategies appeared to have a primary influence on school achievement (Baumrind, 1991; Hess & McDewitt, 1984).

A study by Watson, Brown, and Swick (1983) found that parents' physical and mental contributions made a great significance to their children's school performance. The factors that contribute greatly to this finding are the amount of support given to a child by the parents and the child's performance in early school

years. This study also revealed the kind of interaction that must take place for some degree of success to happen.

Stevenson and Baker (1987) also noted that students' school performance was enhanced by parental involvement in their schooling. Based on the significant results of the study, parental involvement in school activities influenced students' academic achievement and encouraged success explicitly and implicitly. In essence, students whose parents are more involved in their education earn higher grades in school (Stevenson & Baker, 1987).

Other studies also contribute to the literature about how parental involvement influences a child's academic success. Evidence from research has supported how higher levels of student achievement are associated with greater parental encouragement (Seginer, 1983). Sewell and Hauser (1980) state that parental support and encouragement is the primary mediator between social class and student performance. This study also suggests that for adolescents, high achievement during the adolescent years is associated with higher identification with parents (Weinhert & Trieber, 1982). As students become acclimated from elementary school to high school, their readiness to work hard becomes an important indicator of academic achievement (Eccles & Midgley, 1989). Research has shown that parental influence is one of the

factors that strongly affect students' achievement, and that the degree of readiness is influenced by parental involvement.

Naylor (1986) argues that there are two lines of research dealing with family influences on achievement in early adolescence. The first line of research deals with parent-child relationships. The second line of research emphasizes the influence of parental achievement related attitudes and beliefs on their student's attitudes and beliefs.

According to Naylor (1986) the topic of family influence on occupational and educational attainment has been of great interest to career educators and researchers. Based on Otto and Call (1985), researchers in such diverse fields as child development, sociology, demography, and career development have recognized that parental influence on employment and education drives the majority of decisions by students. Splete and Freeman-George (1985) show seven factors that influence the decisions of students educationally and vocationally: (1) geographic; (2) genetic inheritance; (3) family backgrounds; (4) socioeconomic status; (5) family composition; (6) parenting style; and (7) and parent work-related attitudes. The first four factors have an impact on the student's physical and mental abilities. The last three have a monumental effect on a student's personality type, interpersonal style, work ethic, and the pursuit of nontraditional careers.

Parents play an important role in the educational process of their children. Because students spend more time at home than school, parents know their children intimately and interact with them on a one-on- one basis. Therefore, there are times when "teachable moments" happen that some teachers wished they had the insight to create. Children whose parents are involved in their student's formal education have better grades, test scores and, long-term academic achievement than do children with disinterested mothers and fathers (Henderson, 1988). Numerous studies have noted that parents' participation in education is very closely related to student achievement. Henderson (1988) reported that a Stanford University study revealed that when parents serve as tutors for their children, their children's IQs increase significantly.

- **Socioeconomic Status and Student Development**

Since 1980, there has been an onset of interest in how the development of students is affected by socioeconomic factors at the family level. Researchers have emphasized that socioeconomic status, in contrast to income status, is multidimensional (e.g., parental education, occupation, income). There is a distinction between socioeconomic status and income status. Both are imperative to studying a student's development (Duncan, Yeung, Brooks-Gunn & Smith, in press).

Researchers have found that poverty and income status affect a student's development and that their effects are independent of and stronger than the effects of parental education (Duncan et al., 1994). In White's (1982) meta-analysis study, approximately 100 studies indicated family income is a stronger indication of academic achievement than either parental occupation or parental education. The study also states that measurements of socioeconomic status that combine income and occupation, or education and occupation, or all three components, are highly correlated with academic achievement than is income alone.

- **Socioeconomic Status and Cognitive Development**

Socioeconomic status has affected students cognitively in a detrimental way. There are factors that mediate the effects of poverty on development. Based on demographic data and SES, the majority of poor children in the United States are of European ancestry, while the rates of childhood poverty among African American children are two to three times that of non-Latino, White children (U.S. Bureau of the Census, 1996).

In an analysis of longitudinal data from the 1968 to 1982, Duncan and Rogers (1988) gathered results from the Panel Study of Income Dynamics (PSID). They found that African American children, who accounted for 90% of all children studied, were poor

for 10 to 15 years of their lives. It was also discovered that persistent poverty consistently had more detrimental effects on cognitive development, academic achievement, and socioemotional functioning than transitory poverty (Duncan & Brooks-Gunn, 1997; McLoyd, 1998).

The subject of whether race differences exist during childhood poverty remains convoluted particularly when race is a factor. According to data from the PSID, Duncan et al. (1994) found that poverty during the first five years of life was far more influential on years of completed schooling than was poverty during middle childhood and adolescence. This period was particularly pronounced among African Americans, compared to whites. Other findings indicated that timing of poverty appeared to have no effects on achievement scores (Smith et al., 1997) or classroom placement (Pagani, Boulerice, & Tremblay, 1997).

- **Socioeconomic Status and Academic Achievement**

During the late 1960s, state, federal, and local governments made many efforts to offset the effects of economic and social disadvantages of students entering the public education system. The purpose of these programs is to prepare preschool children of lower socioeconomic backgrounds for the social and scholastic experiences that they will encounter. Other programs were designed

to help already at-risk students who fall in the category of low-SES and who are struggling in schools that lack the educational resources to help these students with special needs. The underlining scope of these programs is to equip, educate, and transform these students beyond their poverty level to productive, working adults.

In the United States, the number of children living in poverty is increasing at alarming rates. The United States is the largest nation to have higher incidents of children living in poverty (Cohen, 1993). Young people in this country account for more than 25% of the population. Children represent 40% of citizens categorized as poor. Statistically, most of the children in poverty are Black (43.1%) or Hispanic (39.6%) (McCormick, 1989). In 1987, 31% of children who lived in poverty under six-year-old lived in large cities (National Center for Children in Poverty, 1990).

According to Renchler (1993), the circumstances by which these children pay for being poor are devastating. Carter (1991) reports several sources that support the conclusion that students who are socially and economically disadvantaged are more likely than children from higher income backgrounds to be damaged educationally.

This factor puts low-SES students at-risk for obtaining substandard levels of achievement. Consequently, low-SES students

drop out of school far more frequently than their higher SES counterparts. One million at-risk students drop out of school each year (McCormick, 1989).

Some conservatives argue that spending on social programs is wasteful, but the cost of not acting to assist low-income students is enormous. According to one statistic, the lifetime personal income lost as a result of dropping out of school ranges from $20,000 to $200,000 per person. The total cumulative lost income as a result of dropping out of high school is staggering. For example, in 1981, the high school dropouts had lost income estimated at more than $238 billion, with lost tax revenues of $68 billion. The benefits of keeping economically disadvantaged students in school, according to financial experts, are well worth the human investment. Programs that will keep at-risk students in school and graduate them will yield a long-term savings of $4.75 for every dollar spent (McCormick 1989).

According to Drazen (1992), data were collected between 1972 and 1988 by the National Longitudinal Studies Program to examine the changes in the link between student achievement levels in reading and math and other factors like SES, family income, and community. Drazen found that few changes happened regarding the correlation between academic achievement and family income over the 16 years of the study. In a sample of 900 children born with low

birth weights (Duncan, G., & Brooks-Gunn, 1997) found that those who lived in poverty during their first five years had IQs averaging 9.1 points lower than the IQs of the children in the sample whose families were not in poverty (Duncan & Brooks-Gunn).

Students from lower-income levels do not realize how much they are disadvantaged. They generally attend schools that are grossly underfunded, while their counterparts attend schools that receive substantially more funding and higher amounts of tax-based dollars per pupil (Hanushek, 1989).

Legislators and policy makers are urging that financial restructuring take place to help low-income students overcome the disadvantages that are currently exist in the infrastructure of school finance (Harp, 1993). It is evident that if low income students attend poorly-funded schools they will not have the same opportunities to achieve as their high-income counterparts who attend better-funded schools (Renchler, 1993).

In a recent study, rural students are vulnerable to inadequate schooling and lower educational goals. The correlation between socioeconomic status and academic achievement has been documented in educational and psychological literature. The impact of this relationship is more imperative than school locality or school size (Marion, Mirochnik, McCaul, & McIntire, 1991; Center for

Research and Evaluation, 1991). Wherever students go to school, students from low-income families have lower aspiration than do their high-income peers.

The poverty rate among rural communities is higher than it is anywhere else. According to O'Hara (1988), even rural families with two parents working are falling into poverty at a high rate. Because of tuition increases and low wages, college is an unrealistic choice for many rural students. Another circumstance that influences the goals of rural students is the educational attainment of both parents. High school seniors attending schools in urban and metropolitan areas are 1.5 times more likely than non-metropolitan area students to have a parent with at least a bachelor's degree than non-metropolitan area students (Pollard & O'Hare, 1990).

These circumstances are unlikely to change since students who stay in rural areas have the lowest educational aspiration of America's youth and are more likely than those who leave to earn less education (Cobb, McIntire, & Pratt, 1989). Higher education and higher earning potential have drawn many young people out of rural areas. The lack of quality jobs will keep young people in rural settings. During the past 25 years, job requirements for managerial and technical positions have required college degrees and have shifted job location to urban and suburban areas (McGranahan, 1988).

College represents only one aspiration for rural students. The analysis of data from the High School and Beyond Study (McCaul, 1989) revealed that rural dropouts as well as urban and suburban dropouts had several things in common.

Like dropouts from urban and suburban schools, rural students made lower grades and scored lower on achievement tests than peers who graduated. Other findings concluded that rural students had low self-esteem and lacked self-actualization as compared to peers who stayed in school. The rural students who dropped out cited job offers, economic duress of family structure, or personal problems like pregnancy, marriage, and illness, or incorrigible behavior at school as reasons. McCaul (1989) also found that a higher proportion of minority rural students dropped out of school more than did rural white students, specifically Hispanics. Approximately half of rural dropouts were from the bottom quartile of the socioeconomic scale.

There is a considerable amount of literature regarding the differential affects of school inputs on student achievement. There are conditions that determine that educational inputs weigh more heavily than socioeconomic factors on student achievement, and in these cases environmental cultural variables are present.

Studies that focus on the educational inputs on academic achievement in other educational systems are scarce. Different variables are considered when determining what affects students academically in Latin America and the Caribbean.

The countries have made great strides to improve their educational systems by the year 2000. During a decentralization process in 1978, Mexico's school system used academic achievement scores to streamline public school graduates who were applying to public secondary education in the Mexico City metropolitan area. Based on the standardized achievement scores, students were allowed to choose the school shift of their choice, which naturally meets supply and demand. The majority of students with higher achievement scores preferred the morning shift. So, under this policy students with higher scores attended morning shift school and students with lower scores attended the afternoon shift. This procedure was implemented in large metropolitan areas in 14 states. Between 1991 and 1992 tests were administered to more than 352,000 secondary freshman applicants, 32% of whom were applying to enter first grade in federally financed secondary schools nationwide.

A questionnaire was distributed with information about the student's educational and family background, including gender, age, the number of elementary grades attended, size of the household,

the educational attainment of both parents, and the shift of the public primary schools attended. According the section that the student attended, this variable was indicative of the type of students attending the morning shift. These students tended to be from a higher socioeconomic status and were higher achievers than their peers who attended the afternoon shift. As expected, there was a positive significant ($p<.001$) correlation of father's ($r=.275$) and mother's ($r=.287$) education with the day school shift. When certain variables were controlled in this study, males had a significant advantage in ability while older students at the time of primary completion displayed lower ability.

Mother's education was more significant than father's education as a component of ability. Students who live in two-parent homes attained a better ability score, but students from large families received lower scores. School inputs like preschool attendance and day school shift and locality were closely, but not significantly, related with ability.

The educational attainment of both parents was correlated with student achievement. Parents' income is used as a variable to determine socioeconomic levels that are strongly related to student cognitive achievement. Family structure was found to have a strong correlation with student achievement with less time far and exposure to parental simulation possible in large families.

In the 1960s researchers wanted to take an in-depth look at why there was a high percentage of minority students performing poorly in the school system. It was assumed that there was a deficiency in these children (Garcia Coll. et al., 1996; Laosa, 1977). It was believed that minority children could not learn as a result of a genetic deficiency. They were labeled as being incapable of performing. Laosa (1977) and Lopez (1991) concluded that minority children's difficulty in learning was due to the middle orientation of the school system, which contributed to the negative perceptions an ethnic minority child had of school. Other findings indicated that there were differences between minority and non-minority children and among and within sub-culture communities (Laosa, 1977; 1980). It also was noted that as the student progressed through the school system, results did not completely eliminate cultural differences (Okagaki & Sternberg, 1996).

Current literature concludes that minority parents are to blame for their children's poor performance. Parents are supposed to be responsible for helping to educate their children. Instead, their children are not motivated and dedicated enough to make the system work for them (Dunn, 1987). Studies have reported that the lower socioeconomic status (SES) minority parents view their student's teachers as pedagogical experts and are unlikely to confront, question, or interfere in what they view as the teacher's

domain (Carasquillo, 1994). Complacency of the parent often results in a misleading interpretation by the teacher that minority parents are not concerned about their children's education. In reality, these families are highly concerned and willing to help their children succeed in school, but they are unsure how to help (Delgado-Gaitan; 1990; Goldenberg, 1993; Goldenberg & Gallimore, 1991).

In contrast to low-income families, Mines (1992) found that families of high achieving minority students provided a strong family support system for their students. This support often is displayed during informal conversations related to everyday events, family decision-making policies, monitoring and supervising free time, parental explanation and counseling, and helping the children establish and reach long term objectives.

SES serves as a measure for the home environment and is closely linked to intellectual development (Gottfried & Gottfried, 1984). Factors that are included in the SES measure are parental occupation, parental education, and family income.

Significant limitations of socioeconomic status being used as a measure for home environments have been noted (Bloom, 1964). Socioeconomic factors predict a family's social standing as well as other demographic information but, there is not a strong relationship between home environments and cognitive development

(Bloom, 1964; Garcia Coll et al., 1996; Laosa, 1982). Velez (1989) found that Hispanics from lower-SES often force tend to drop-out of school most often as well as economic constraints forcing them out of school. He states further that the higher the SES, the richer the cognitive environment. However, this is always not the case.

Gottfried and Gottfried (1984) found that students from middle class backgrounds did not ensure or promote cognitive growth. In other studies, specific income levels such as middle class status have resulted in variability in student development.

Trotman (1977) found that in past studies, Blacks were categorized as inferior in SES positions. This was based on the assumption that traditional variables like occupation, source of income, and neighborhood, represent for Blacks and Whites, factors of home environments, that are positively related to intelligence test scores and academic achievement. What is overlooked in most studies is the presence of significant environmental and attitudinal differences that are not present in traditional socioeconomic indices, but are reflected in the performance of Blacks on tests and in educational institution (Trotman, 1977). Trotman (1977) stated that Blacks' and Whites' cultural differences, home experiences, parent-child interactions, and income levels might explain the differences in intelligence test performance by members of both groups. This

supports and reiterates the findings from Gottried and Gottfried's (1984) study.

Laosa (1979, 1984) found that each environment has its own set of characteristics and a student's achievement or failure depends on the degree of competencies required to negotiate in those environments. To understand the relationship between specific family environments and intellectual achievement among populations whose members are disproportionately represented among low achievers on intelligence and achievement measures, one must examine the discrepancies between the competencies minority students acquire in their homes and those valued in the school.

Education has always been used as a means of upward mobility especially for the disadvantaged (Rivera-Baitz & Santigo, 1994; Smith, 1995). Minority students are more likely to be at an educational disadvantage as compared to whites for several reasons, including high chances of poverty and low educational attainment levels of parents.

Many factors have pinpointed dropout rates among ethnic minority groups. The socioeconomic variable is a complex factor that usually contributes to much of all circumstances. Researchers have continued to argue that low socioeconomic status of families is the primary cause of low academic achievement in children

(Hetherington, Camara, & Featherman, 1983; Shinn, 1978; White, 1982). In most cases, it is assumed that children from middle SES families are participants in the learning process, as compared to being passive vessels of direct knowledge (Harwood et al., 1996; Menaghan & Parcel, 1991). These differences, cited by Harwood et al. (1996), are more indicative to social competence among the middleclass compared to lower-class children.

Other researchers purport that SES be viewed as a distal influence on academic outcomes (Bronfenbrenner, 1986; Felner & Felner, 1989; McLoyd, 1990).

Distal factors are variables that do not directly describe the life conditions and demands that result from those variables, nor the processes they require (DuBois, Eitel, & Felner, 1994). Several studies have found that aspects of distal variables of the family process were closely linked to school adjustment, even though there were controls for duplicates between family type variables and socioeconomic status or family structure (Dornbusch et al.,1987).

Other researchers believe that the greater emphasis should be placed on proximal variables. They are interpersonal systematic processes that define daily experiences of students within the context of the family (Bronfenbrenner, 1986; Felner & Felner, 1989; McLoyd, 1990). Laosa (1980) and LeVine (1980) state that mothers

in their day-to-day interactions with their children function teacher whether they care to take on this role or not. Bronfenbrenner (1979) cites that it's important to consider the influence of the family environment on the success of children when the home is the major ecological setting. Many families, especially first-generation U.S. citizens, consider successful integration of children into mainstream culture as their measure of success as parents (Garcia Coll et al., 1996; Zayas & Palleja, 1988). Acculturation may be represented in various ways (i.e., higher social status through employment and or education).

Luster and McAdoo (1994) found that family characteristics and processes of high-achieving African American students are different from those of their low achieving peers. Based on many studies, most of which have negative results found that poverty and maternal education were not imperative to a student's cognitive outcomes and that the quality of the home environment served to mediate the effect of poverty.

Extraneous variables are important because socioeconomic factors are often used in many studies that do not have the same meaning across entire populations and sub-culture populations. Volk (1994) discovered that many families who were considered working class were able to offer support and encouragement to their children.

A conglomerate of research has substantiated that there's a strong correlation between family relationships and the intellectual, occupational, and economic attainments of those individuals as adults. Scarr and Weinberg (1978) concluded that family backgrounds have an effect on scholastic achievement and economic accomplishment into adulthood. Many researchers have tried to pinpoint the exact functional element in this relationship. Some have attributed it to educational and occupational attainment and family elements such as family size, birth order, and spacing intervals between siblings. Still others find explanation for the differential academic performance among children in socioeconomic status, while others favor the behavioral-genetic interpretations (Henderson, 1981).

Since 1929, social scientists have been researching the various ways in which social stratification influences American life. Population studies have been conducted to demonstrate the ways in which students from different socioeconomic status levels receive differential treatment in school and institutions of higher learning (Brophy & Good, 1974). The question of how social class membership influences the socialization and development of students has captured the interest of social scientists everywhere. Measures of socioeconomic status are gross and undifferentiated, but research consistently has shown that socioeconomic status

accounts for between 6 and 25% of the variance in IQ and academic achievement measures (Lavin, 1965; Miner, 1957).

A predictive element in the measurement of socioeconomic status is attributed to a variety of variables, attitudes, and motives relating to academic performance (Lavin, 1965). Among the proposed predictive elements are the neighborhood of residence, value placed on education, typical leisure-time activities, amount of reading done, and the nature of reading material (Deutsch, 1973).

The difficulty in using socioeconomic status as a standalone variable is that it limits the explanation of the construct itself. For example, several characteristics such as formal education and occupation may appear to summarize a number of important life-style variables, but may obstruct the variation among these characteristics in a general socioeconomic status level. For lower-class adolescents, the view of "masculine values" leads students to reject the middle-class norm of respecting authority and middle-class achievement orientation. The lack of success among lower-class students does not necessarily mean low IQ's. According to Hollingshead's, *Elmtown's Youth,* academic failure of lower class students was viewed in this way: bias of the educational institution, that deliberately or inadvertently showed more attention to higher ability students.

According to Cicourel and Kitsuse (1963), academic development and interest of the pupil is significantly influenced by counselors, who spend more time and effort helping students go on to college. The students' parents also supported this plan and frequently asked about their children's progress. These parents tended to belong exclusively to the middle and upper social classes.

Other conditions are present among lower-class living. Feelings of anti-intellectualism and antic-abstractionism are pervasive in this social class. This is a disadvantage because most institutions' efforts are aimed at middle-class views and beliefs. Upon these values this system makes high demands to individuals who cannot meet its requirements. As an example, linguistics among the lower class has been examined. Based on a number of research studies, the lack of abstract reasoning is noticeable in of verbal functioning. Without measuring relative intelligence, the lower class student is characterized as intellectually retarded in the abstract dimension of verbal functioning.

Montague (1964) observed the social class condition concerning the ability to think in abstract terms. The research highlights the differences that socioeconomic backgrounds make on kindergartners' arithmetic concepts. Eighty-two pupils from four kindergarten classes were divided into socioeconomic categories and were subjected to a number of tests. As a result, a significant

difference of .01 a level was found between the children from low and those from high socioeconomic backgrounds. A study of similar hypothesis selected three groups of students and paired them based on age, gender, grade placement, and experimental variables.

Racial and regional factors were included, too. It was found that white students scored higher than African American students and that Northern African Americans scored higher than Southern African Americans, which was indicative of the educational climate.

Abstractness plays a crucial role between social classes. Its link to motivation and academic achievement can stem from influences of material gain or symbolic orientation. The examination of both social classes and their level of motivation is paramount to this study.

Some individuals are gratified primarily from material wealth, while others strive for symbolic attainment and others seek both forms of gratification. Most research studies have found that lower and higher socioeconomic classes differ with respect to the values they seek in personal achievement. The study noted that middle-class parents rear their children with the notion of value of individual achievement. As a result of this reverence, achievement becomes a value for its own sake and often loses its meaning. As an example, the middle-class students seek to master their curriculum

subject regardless of whether it leads to practical application or material wealth. The actual mastery of the subject is viewed as success in itself and may give the student both the motivation to embark on the academic process and great satisfaction if he/she succeeds. This concept is abstract since the attainment may not be associated with material or concrete gains of any kind. Lower-class students tend not be abstractly oriented. The effort for the sake of achievement as a concept is a foreign idea that is oblivious to students in this category. Motivation for students of this social class often is based on the promise of material or concrete things.

Douvan (1966), wanted to prove her assumptions that a high level of concreteness is needed to motivate lower class students, and that middle class students would be less likely to change their levels of aspiration with immediate rewards. High school students in both social classes were asked to complete a series of anagrams and motor tests under two different reward conditions. In the first condition, a reward was limited to the feeling of having accomplished a norm. In the second condition, a material reward of money was the prize for the greatest number of correct answers. As a part of the experiment, all students were told they had failed. At that point, Douvan assumed failure aroused achievement want, a reaction correlated with achievement motivation. Then McClelland's Achievement Test, and a projective Thematic Aperception Test (TAT)

were given. Douvan's (1966) results supported the original hypothesis. Both groups responded to the material reward condition, but the lower class participants striving for material wealth dropped drastically when the material reward was absent, while the motivated upper middle class participants remained at the same level.

From this study, achievement motivations of middle-class students were significantly more generalizable, consistent, and abstract-proof. Many researchers have omitted the factor of abstractness from their research and have focused mainly on motivation and aspiration instead. Sewell, Mailer and Straus (1957) sampled more than 4,000 high school seniors in Wisconsin, to explore the relationship between socioeconomic status and students' educational and occupational aspiration levels. As a result, the study yielded a high correlation between social class and aspiration for both sexes. The researchers could not overlook other variables that may have played an important part in the study, but they were confident that the socioeconomic status of the student's family made an independent contribution to their aspiration level. Looking at those factors that played an important role in the aspiration level of the participants, these variables are intervening variables that compound the results of the study.

Polk (1965) examined the Lane County Youth Project in Eugene, Oregon, to explore the relationship between social class and academic aspirations and discovered a varied amount of variables that offer a more in-depth and accurate prediction of a student's success level than the simple class-and-aspiration correlation. It was discovered that teenagers' categorization as either the college bound or non-college-bound type functioned as a more persuasive factor than socioeconomic status. Once a student is classified as college bound, more attention, counseling, and encouragement are provided to reinforce his/her plans, which then and stimulates continuous effort to work toward the academic goal. Though out the world (e.g., the United States, England, West Germany, Italy, and Mexico), studies have found that parental dominance is a strong factor in the student's desire to achieve. Parental dominance has been found to be a stronger influence on students' achievement than socioeconomic status. Reissman (1953) found that even though a person may belong to the middle class, which encourages academic achievement, the student may not exhibit a high motivational level if his reference group does not stress high achievement.

A number of studies concluded that the socioeconomic factor plays a heavy role in the well-being of the student. It has been shown that students of underpaid or unemployed families may

suffer a loss in peer group status. Children often look for the support of a family to play an active role in their lives, but in many situations the family income cause those wishes to deteriorate among students. These situations are characteristic of family members being unavailable to their students for moral and psychological support. Without fully recognizing the total effects of socioeconomic factors and their relationship to parents' financial resources, students lose both a measure of security and leadership. They have little or no desire for ambition and commitment.

The student's schoolwork suffers, and according to Eisenberg and Lazarsfeld (1983) the younger students suffer more than the older, probably because they are more dependent on their parents and have had less opportunity to build up resistance to devastating situations. For the older student, a crumbling parental situation may occur at a time when parental assistance could have meant a decision about what major to choose in college or what occupational career to pursue. For students to take a first-hand look at the financial perplexities that their family experiences and, at the same time strive for material wealth, could exasperate the students' future endeavors.

Elder (1974) found that middle-class families that lost substantial income during the Great Depression had children who started experiencing behavioral problems like stealing and

destructiveness. The socioeconomic change affected the boys at a more significant rate than girls. The findings indicated that because the father was the head of family during the Great Depression lower income status jeopardized the boys' view of their primary role model. This may have had a greater effect on boys' social development and occupational aspirations than on girls. Boys from deprived, destitute backgrounds fared worse than did those from middle-and upper-middle class background.

The influence of economic arrangement and responsibilities has been an interesting topic for most researchers. What perceptions do students have in regard to their parents' economic situation? Does a student's predisposition to poverty expose him/her to greater risk of failure? Several studies have indicated that students of all ages are not always aware or knowledgeable of the plights of economic hardships that others have experienced unless they're predisposed to such an environment.

During adolescent years, there's an understanding of social structure, fairness, and balance of rights among individuals in society (Turiel, 1983). As children grow older, particularly males, there's a slow decline for the concern of others, which may lead to a male adolescent perception of economic arrangements focused on an individualistic. Hoffman (1975), the pressure of males to achieve and succeed often conflicts with concerns for the welfare of others. Boys

are socialized to model their fathers and fit the traditional sex-role toward career pursuits and achievement. What if boys expressed the desire to be more like their mothers instead of their fathers? Would they have a different attitude toward occupational success and achievement?

In the Winocur and Siegal (1982) study, some questions were addressed to two age groups of middle-class Australian adolescents, aged 13 and 16-18 years. They were asked to allocate rewards between make-believe male and female workers in four separate cases. In one case, a male with no children was contrasted with a female with three kids. In the second case, a male with three kids was contrasted with a female who had none. In the third and fourth cases, both male and female had no children and both had two children.

For each case, participants in the study were asked to divide a pile of twelve $50 monopoly bills between the two workers. The total of $600 was fixed so that if it was divided evenly, each worked would receive $50 above the industry standard wage for males, which was $250 at the time of the study. The findings of the study were as expected. The concern for financial need declined with age. Older adolescents were more likely than younger ones to base their allocation of money on the norm for equal work for equal pay, ignoring the family needs of individuals.

McClelland (1975) and McClelland and Pilon (1983) concluded that if the father is the breadwinner and the primary agent in his son's life the boy will experience what is known as imperial power syndrome, a high need to achieve and a low need for support from others. According to Bern (1974), boys and girls with fathers that possess masculine attributes rather than androgynous or feminine ones are determined, according to the Bern Sex-Role Inventory, as socially and cognitively competent. McClelland (1975), found a correlation between the imperial motivational pattern in men and a self-reported dislike of childcare and enjoyment of work. This explains the male's orientation toward a morality of separateness and individual rights and principles whereas females move toward a morality of interdependence.

In a typical family setting, perceptions of a powerful father will entice children to achieve. Tesser (1980) concludes that when fathers' achievements are seen as good and are relevant to the son's self-definition, comparison processes occur. This often causes the relationship between father and son to be strained because closeness between the two will be seen as threatening to self-esteem. The son will be motivated to decrease closeness with the father.

Biographical information was taken from eminent scientists and compared to that of their fathers. Scientists indicated that the closeness between their fathers was strained because of similarities

in occupations. Based on this observation of successful sons and their fathers, boys who are oriented toward serious academic and economic success perceive their fathers as a powerful masculine image that is consistent with society's image.

Research continues to provide evidence that ready acceptance and active involvement in society is influenced by one's socioeconomic background. It has been found that social leadership scores of children in middle-class schools are higher than scores of children in working-class schools. The average scores for aggressive, maladjusted students are lower in middle-class than in working-class schools.

Middle-and upper-middle-class students are more involved often than are in attending athletic events, dances, plays, and musical activities those from lower socioeconomic backgrounds. This, however, does not mean that every student from lower socioeconomic backgrounds will become social rejects. Research has shown that students whose fathers are college graduates are far more likely to be successful than students whose fathers have only a high school diploma.

Subcultures of the collegiate realm are often divided into groups based on their socioeconomic status. Children of middle-and upper-middle-class families often are interested in the college world

of football, Greek letter societies, cars, drinking, dates, and card parties, than courses and professors. Students in this subculture are not insensitive to college life, but this is characteristic of middle and upper- middle-class students in this group. The vocational sub culture are children of parents who are classified in a low socioeconomic status and live in the urban centers of the United States. Their children attend urban colleges and universities and tend to be married students putting themselves through college. The academic subculture is usually children of parents who are upper-middle-class and are heavily involved in their academic pursuit of a college of education. Their achievement goes strictly beyond passing a course or graduation. Their views are linked closely with their college and faculty.

The nonconformist subculture includes children of all socioeconomic levels. These are intellectual, radical, anarchist protester type, scholarly, but social rebel, deviant, longhaired, but peaceful, isolationist students. When students fall in this category, their political, social, and cultural norms are at odds with their teachers, parents, and school. They form their own nonconformist cultures (Rice, 1978).

Research consistently reveals that being of low socioeconomic status is correlated with early withdrawal from school. Students from these families are more likely to lack positive parental

influences and role models. In many cases, one will find that parents want their children to have more education than they completed. If a parent finished the fifth grade, maybe their goal for their son or daughter will be to finish high school. This sentiment often breeds drop-out students. In other cases, parents discourage their children from attending school.

Other variables enter into the picture when dealing with lower-class students. Schoolteachers often show prejudice against students from lower socioeconomic backgrounds. They show preferential treatment to students from middle and upper middle class backgrounds. Students from these classes generally are chosen to run errands, monitor, and chair committees, while students from lower classes receive more than their share of discipline and are labeled learning disabled. Because teachers are from the same middle-class strata, they often find it difficult to understand and accept the goals, values, and behaviors of students from other economic levels. In effect, this is indicative of their ethnic and social biases, which prevents them from treating and teaching every student equally. Instead, teachers expect less from lower-class students, making them resent differential treatment and to feel inferior. These students received fewer rewards for doing well and for staying in school than did students from higher-status families.

Rewards are in the form of academic grades, favor by teachers, social acceptance by peers, and offices held.

Lower-class students receive fewer rewards than higher status peers do. They're not recognized for their academic performance and do not enjoy the social acceptance and prestige of their peers (Rice, 1978).

In the past, the focus of achievement has been centered on reinforcement and attributions for past performances rather than others' expectation for the future.

Students' perceptions on economic justice have been perceived as cognitive developmental stages. Their opinions and ideas have been overlooked.

Siegal (1985) notes there is a shift away from examining constructs dealing with children's self-definition, identification, and perceptions of others. Researchers have gone as far as saying the current generation of parents is not as concerned as their parents were about increasing quality child care. Instead, parents are more concerned with developing themselves. Bronfenbrenner (1985) concluded that children are raised by television instead of by their parents.

Parenthood today has become more difficult. Students now place physical and emotional demands on parents. Time and

financial restrictions make it difficult for husband and wife relationships, which is not a new concept. Bronfenbrenner (1985) points out that today's student expect to possess more material goods. Financially unstable parents cannot meet the expectations of their child easily. From an early age, children are accosted with values and interests that potentially could collide with the parents' own values, morals, and beliefs. As family size has decreased, adults are unaware of what it means to raise children because they had no younger siblings to help raise, which was common for large families.

A person's reference group impacts the relationships between social class, background, and aspiration level, which operate as an intervening variable.

Generally, a student's reference group tends to be of the same or similar socioeconomic status as that of his/her family. It is also possible that a student can identify with certain aspects of a reference group of a different socioeconomic status. Merton and Kitt (1950) argue that each social class is characterized by a different value system that emphasized different beliefs, morals and motivations for success. A student who identifies with morals and values of a different reference group will adopt the same characteristics of that group as his own, even if he does not belong to that group. This process is called anticipatory socialization and it

implies the acclamation of norms and behavior traits of a higher stratum.

Anticipatory socialization is an exception and can be attributed to a student's socioeconomic background as a foundation for the building of aspiration levels.

According to Richard Whitmire (1999) SAT and ACT scores lag behind that of Whites, the performance level of black and Latino middle-class high school students. The performance gap among middle-class minorities was highlighted when a College Board task force reported in most school districts middle-class Black and Latino students performed about the same as whites who grew up in poverty.

Because the Black middle class is ever increasing, there will be continuous debates over admission policies as more Black and Latino students seek four-year degrees and compete with White and Asian students who have higher SAT and ACT scores.

In a study to boost minority achievement, places like Evanston, IL, and Chapel Hill, NC, experimented with a network of fifteen school districts with a sizable middleclass Black population. Preliminary findings indicated that African American students exceeded state and national norms for African American students, but the disparity between Whites and Blacks and Latinos is

substantial. In 1997, the average ACT score in Evanston for Whites was 26.2% and 18.7 for Blacks. In 1998, the year's graduating class, 20 of the 100 top ranked students were minorities. Suggestions were to improve academic achievement among minority students by creating ACT prep classes specifically for Black and Latinos a new pre-calculus course; and a program specifically designed to build college-bound minority students' motivational and organizational skills.

Much of the research has linked socioeconomic status to student academic achievement. It also has been linked to academic failure across all levels of educational standing. A family's social condition has been associated with dropouts on all levels. Dropouts from lower the socioeconomic strata make up a significantly higher proportion of dropouts than do middle-and upper-class student.

Hollingshead's (1949) study of high school youth found a correlation between socioeconomic background and school adjustment, academic achievement, college orientation, and dropout rate. Hollinghead (1949) found that regardless of relative intelligence, one-third of students from lower classes received failing grades, as opposed to only 5% of the combined middle-and lower-class students.

Toby (1957) found that the social class status of the family has an impact in patterning a student's basic orientation to education and that the middle-class student has a definite advantage over her lower-class peer group in academic achievement. The student's parents are better educated, and therefore are more capable of helping him/her with schoolwork.

With parental involvement in his or her education, parents are more enthusiastic about making schoolwork meaningful to him/her by indicating explicitly the career or occupational application to life. Verbal skills which he/she acquires as a part of child training on the middle-class level prepare the student for academic training and give her an initial advantage over lower-class students in a classroom situation. The pressure of family, parents, friends, and neighbors reinforces his motivation for academic achievement and increases the probability of success.

Based on a study conducted in Louisiana, 77% of farm youth remaining in high school had fathers who were laborers. Forty-eight percent of the dropouts among rural students had fathers who operated or owned a farm, while 52% had fathers who were laborers. Among the students with non-farm or laborer backgrounds, 30% had fathers who were businessmen or professionals, and 70% had fathers who were wage laborers. Of the dropouts with no farm background, 100% had fathers who were wage laborers. This finding

has been validated by the Minnesota Multiphasic Personality Inventory, which is an effective measurement of personal and social characteristics. Hathaway and Monachesi (1963) constructed a research design that used more than 15,000 Minnesota high school students in a follow-up study lasting through several high school generations. The findings indicated that among laborer families, 38% of the boys and 32% of the girls dropped out of school, while among professional families only 5% of the boys and 5% of the girls left before graduating.

There have been well-established links between socioeconomic status and students' achievement (Blau & Duncan, 1967; Flanangan et al., 1971; Eagle, 1989).

In a sample of more than 20,000 males between the ages of 20 and 64, Blau and Duncan (1967) found that the educational level and occupation of the father accounted for 28% of the variance in years of education. Flanagan et al. (1971) cited that the probability of a student from the lower SES quartile entering college within five years of high school graduation was 0.32 for males and 0.18 for females.

Meanwhile, the probability for students from the highest quartile was .86 for males and 0.78 for females. In a study where social class was defined by the income, occupation, and educational

level of the parents, Eagle (1989) concluded that students from the 90th percentile in social class distribution may be expected to receive over four and a half more years of education than students from the 10th percentile.

The data from the National Center for Education Statistics provide support for the association between socioeconomic status and educational attainment. In this study, approximately 45% of high school seniors from high-SES backgrounds completed postsecondary education, while only 15% of high school seniors from low-SES backgrounds completed college. When scholastic scores rather than college entrance scores are used as outcome measures, SES accounts for less of the variance. Parental social background accounted for 6% of the variance on math, slightly more than 16% of the variance on working knowledge, and 13% on word comprehension.

In a study of 868 Black and White elementary school children from two-parent and single-mother families, Paterson, Kupersmidt, and Vaden (1990) discovered that income level and ethnicity were better overall predictors than gender or family structure of children's academic achievement. White (1982) challenges evidence that supports the association between SES and academic achievement.

White (1982) conducted a meta-analysis of 200 studies that investigated the relationship between SES and academic achievement. He found that income, education, and occupation of the head of the household defined SES. When individual students were the unit of analysis, SES and academic achievement were only weakly correlated (r=.22).

White (1982) also found that when an aggregated unit (such as school or district, in which all students were given the same SES and achievement rating) was the unit of analysis, the correlation between SES and academic achievement increased drastically to .73. White (1982) also discovered inconsistencies in the various measures of SES used in the studies he reviewed. With the traditional measures of SES, of income, education, and occupation income was found to be the highest single correlate of academic achievement.

White (1982) found that measures of SES that integrate two or more indicators were more highly correlated with academic achievement than was any single indicator. In the past, defining SES by family process has been a controversial issue, but White found that when SES was defined by measures of home environment, such as parents assisting children with homework, SES correlated much higher with academic achievement than when it was defined by single or combined groups of the traditional

indicators. White (1982) indicated that in addition to parental education, occupation, and income level, there were many other characteristics of families that could affect the academic performance of students.

Other researchers, like Clark (1983), supported White's (1982) conclusions. Clark found that sponsored independence, high support, high expectations, close supervision, and respect for their student's intellectual achievement identified poor black parents of high scholastic achievers. There is a need to go beyond the SES and to look into how SES should be ignored.

Halsey (1975) points out that socioeconomic class should not be thought of as a single factor independent of family processes. He perceives there are complicated interactive relationships between SES, family processes, and students' achievement.

Kohn (1979), a pioneering researcher who discovered the effects of social class on family process, believed that the higher a parent's social class, the more likely he or she was to value characteristics indicative of self-direction. He or she is also less likely to value characteristics indicative of conformity to external authority.

Kohn concluded that this pattern was linked to the variety of conditions of life faced by parents in different socioeconomic

circumstances. Parents with high socioeconomic status were more independent, free from close supervision, more likely to work at non-routine tasks, and did more complex work than parents with low SES.

A longitudinal study by Majoribanks (1988) found that parents' aspirations had differential linear and curvilinear associations with the educational and occupational outcomes of young adults from different social-status groups. Young adults living in middle social-status families had parental aspirations that were not related to their educational attainment. On the other hand, subjects in lower-social status families had parental aspirations that had curvilinear association with educational attainment until a level of aspiration was attained.

Datcher-Loury (1988) attempted to link SES and family processes with school achievement of students. Based on data from the ETS Head Start Longitudinal Study, it was discovered that parental behavior and attitudes such as reading to children several times a week, attending PTA or Head Start groups, and having high educational expectations had important long-term effects on students' academic performance. It is also noted that these achievement-related actions of parents are usually associated with SES.

Eagle (1989) cited that among high school seniors, the advantageous home environment in high school, parents reading to the student during early childhood, and having a special place in the household for the student to study, were more common in higher-than in low-SES households. These results are consistent with that of a qualitative study on family-school relationships by Lareau (1987). She discovered that social class status provided parents with unequal resources to comply with teachers requests for parental participation. With this mind, middleclass and working-class students had more differences in the ways they encouraged educational success than in their educational values. Lower-working-class parents gave their responsibility for education to teachers, but middle-class parents did not. Middle-class parents had capital (i.e., educational skills, occupational prestige, and the necessary economic resources, to manage child, transportation, and time needs required to meet with teachers) to facilitate compliance with teachers' requests for parental participation.

To what extent does an individual's achievement depend on factors other than her ability, aspiration, and effort? In this country, individuals are paid for their performance of an occupational role and not for some extrinsic considerations. Are there other factors that can be identified as having an influence on earnings and may

account for the wide discrepancies in earnings among the members of any particular social group?

Does an individual's social background provide favorable or unfavorable conditions for future employment? Why? Based on the history of humankind, it has been assumed that people from higher-status backgrounds achieve more because they possess superior God-given capacities because of either natural-born or learned talent, a biological inheritance, or both. It is a highly complex subject that should be explored and then understood by all. How does one's social origin influence capacities and achievements in educational, occupational, and economic arenas?

The answer may lie in examining individuals and their different characteristics. Numerous studies report that individuals with higher- status origins on average score higher on ability and achievement tests, earn better grades in school, have higher educational and occupational aspirations, are likely to obtain the education that will make them eligible for demanding, high prestige occupations, and will earn more income.

It is believed that much of the impact of social background on earnings and socioeconomic achievement is due to the superior cognitive and motivational environment provided in the homes of higher-status parents. It is also believed to be due to the advantages

in schooling and job opportunities that parents can provide for their children. There are ascriptive elements at work that allow the direct transfer of occupational and socioeconomic status, whether high or low, from parents to adult children, despite a son's or daughters' abilities, motivations, and educational achievements.

Because earnings are one source of a number of rewards, occupational roles should be interpreted and understood based on their prerequisites (Sewell & Mauser, 1975). Sewell & Mauser (1975) believe that earnings are a status achievement like educational attainment or occupational achievement. These achievements are interrelated to the extent they are connected with socioeconomic background influences.

In their classic study, Blau and Duncan (1967) discussed the American occupational structure, which is the first status of the attainment process. It was a new approach to study social mobility. The researchers defined social mobility as the process that develops over the life cycle of the individual. Their approach to analyzing social mobility was different from traditional social mobility analysis because it examined the degree that occupational and career status of a person is dependent on that person's social background. It also discussed the degree to which they are explained or interpreted by the person's own experiences or environmental influences that intervene between the students' background and future endeavors.

As an example, they collected and studied data from a 1962 national sample survey of males 20-to 64-years-oid. Blau and Duncan (1967) speculated about a causal model of status attainment that began with the educational and occupational status of the father, followed by the son's education, the son's first job, and the son's occupation in 1962. In their model, educational attainment accounted for nearly all of the effects of the father's occupational status and his education on the son's occupational status in that year. Education was more influential than the first job in determining later occupational status. This is because educational attainment is largely independent of family background. It also had a large, independent influence on later achievement. These findings were consistent with the different age groups into which the sample was subdivided. They also indicate the crucial role that education plays in the career attainment process.

Socioeconomic Status, Other Influences, and Academic Achievement

Brofenbrenner (1979,1986) noted that student development is not only influenced by the family, but also by systems that exist independently outside the family's control such as parent's workplace, neighborhoods, schools, and available health and daycare services. He also cites macroeconomic forces that cause

stressors such as parental unemployment, job, and income. This work concept taps into a body of research within the developmental psychology field that examines an ecological approach that accounts for multiple levels of influences in proximity to the student.

Based on the body of literature that exists on this topic, there are assessments of economic context at the family level, which is the economic environment closest to the student. When financial resources are necessary to obtain physical and material resources that aid in a student's development (e.g., food, books, learning aids, activities), income becomes the core analysis of family economic context (Coleman, 1988; Entwisle & Astone, 1994).

Incomes exclude other factors required to facilitate development throughout childhood and adolescence. Other factors include human capital, defined as a diverse set of intangible resources (e.g., valuation of education, high education aspiration). These tangible resources are indexed by parental education, and social capital, which involves interpersonal behaviors such as supportive family relationships (i.e., parental attention) and relationships that bridge students to the larger world (Coleman, 1988).

Section 2.3: Implications obtained from the review:

The available studies posit that students' intelligence, SES, personality, level of stress, and coping mechanisms have important role in enhancing achievement of Mathematics. But the survey of the literature revealed that no decisive work has been conducted on the relative contribution of Intelligence different aspects of Socio-Economic Status in the development of academic achievement as well as the relationship of these variables with achievement in Mathematics, across the secondary level student population of Agartala, Tripura (W).

On the basis of the above review the following observations can be made:

i) Though several studies have been conducted on Academic Achievement, fewer studies have conducted on Achievement in Mathematics.

ii) There is a series drought of studies regarding the relative contribution of students' intelligence, & SES have important role in enhancing achievement of Mathematics.

iii) Current literature concludes that minority parents are to blame for their children's poor performance. Parents are supposed to be responsible for helping to educate their children. Instead, their children are not motivated and

dedicated enough to make the system work for them (Dunn, 1987).

iv) Studies have reported that the lower socioeconomic status (SES) minority parents view their student's teachers as pedagogical experts and are unlikely to confront, question, or interfere in what they view as the teacher's domain (Carasquillo, 1994).

v) The studied showed that complacency of the parent often results in a misleading interpretation by the teacher that minority parents are not concerned about their children's education. In reality, these families are highly concerned and willing to help their children succeed in school, but they are unsure how to help (Delgado-Gaitan; 1990; Goldenberg, 1993; Goldenberg & Gallimore, 1991).

vi) Finally, the chemistry of the knowhow of the contribution of the Intelligence, different dimension of SES taking students' sample of Tripura have not been investigated by previous researches.

Section 2.4: The Present Study:

On the basis of the theoretical foundations discussed in chapter-1 and the above review of literature, the present study intends to determine the relative contribution of Intelligence

different aspects of Socio-Economic Status in the development of academic achievement as well as the relationship of these variables with achievement in Mathematics, across the secondary level student population of Agartala, Tripura (W).

With the elaboration of relevant studies for each of the selected variables having been done in the present chapter, the following chapter on methodology will help to shed light on the objectives, sample, tools & techniques employed to investigate the research problem.