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The purpose of this study was to investigate the relationships that were hypothesized to exist between the variables birth order, family size, and parents' college attendance and the dependent variable, college graduation. The three general hypotheses tested were:

1. A positive relationship exists between a given position in birth order and college graduation.
2. An inverse relationship exists between a given family size and college graduation.
3. A positive relationship exists between a given status of parents' college attendance and college graduation.

The 828 subjects were female freshmen who entered Oregon State University, fall term, 1963. Excluded from the study were all

subjects who came from families of more than four siblings. Data for each subject were recorded from the official student personnel data cards.

A series of chi-square tests of independence were performed in order to analyze the relationship between the family background variables and college graduation. Analysis of variance was also used in order to find out the main and interaction effects of the family background variables on college graduation. The following conclusions were made:

1. No relationship exists between birth order and college graduation.
2. An inverse relationship exists between family size and college graduation.
3. A positive relationship exists between a mother's college attendance and a child's graduation from college.
4. The possible relationship which may exist between a father's college attendance and a child's graduation from college is inconclusive.
5. Individually, there is no significant difference between the effects of a mother's and father's college attendance on a child's graduation from college.
6. A positive relationship exists between both parents' college attendance and a child's graduation from college.
7. Individually, a mother's college attendance has as much

influence on a child's graduation from college as when college attendance by both parents is considered jointly.

8. When parents' education differs, each has equal influence on their child's propensity to graduate from college.

9. If one parent has attended college, there is a higher probability of a child graduating than if neither parent attended college.

10. Among students who came from families in which both parents attended college, no relationship exists between birth order and the student's graduation from college.

11. Among students who came from families in which neither parent attended college, no relationship exists between birth order and the student's college graduation.

12. Among students who came from families in which only the mother attended college, no relationship exists between birth order and the student's college graduation.

13. Among students who came from families in which only the father attended college, no relationship exists between birth order and the student's graduation from college.

14. Among students who came from families in which both parents attended college, no relationship exists between family size and the student's college graduation.

15. Among students who came from families in which neither

parent attended college, no relationship exists between family size and the student's graduation from college.

16. Among students who came from families in which only the mother attended college, no relationship exists between family size and the student's college graduation.

17. Among students who came from families in which only the father attended college, no relationship exists between family size and the student's graduation from college.

# The Relationship of Some Family Background Variables to College Graduation

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# THE RELATIONSHIP OF SOME FAMILY BACKGROUND VARIABLES TO COLLEGE GRADUATION

## CHAPTER I

## INTRODUCTION

### Statement of the Problem

While working with college female student family background data, the writer discovered that a relationship may exist between a student's order of birth, family size and parents' college attendance and the probability of her graduation from college. A review of literature revealed that attempts to construct valid predictive indices of college graduation have concentrated on high school performance, various test scores and personality factors. Family background factors such as birth order, family size and parents' college attendance are rarely used. Consequently, little is known about the relationship of these factors to college graduation, even though some socio-psychological theories lead one to suspect that a relationship exists.

### Background

#### Parents' College Attendance

Research relating to the family background variable of parents' college attendance has been almost completely ignored. Only a few have studied this variable. Medsker and Trent (1967) found that family background, especially mother's education, influences college attendance and graduation. Eckland's study (1964) as well as Watson (1965)

investigated the relationship of parents' education to college attendance and achievement.

In Waller's review of the literature concerning college persistence, Wetzler was mentioned as finding college graduates to have better educated fathers.

Duncan (1967) and Eckland (1964) studied other background variables as they relate to college graduation.

It can be seen that these few studies are inconclusive. No known study has ascertained the independent effect and interaction effect of each of the variables birth order, family size and parents' college attendance, on college graduation.

Not only is there a dire need for more research in this area, but the existing relationships need to be explained theoretically.

## Birth Order

Ever since Adler, there has been an increase in research reports on ordinal position and family size. Birth order has been used to explain variations in behavior (college attendance, church attendance, conformity to social pressure, volunteering for experimental studies, homosexuality, juvenile delinquency), psychological-personality characteristics (dependency on parents, achievement motivation, affiliative need, sensitivity and success) and abilities and skills (empathetic ability, intelligence and intellectual aptitude, and achieving

popularity with peers) (Kammeyer, 1967).

Adler was perhaps the first to note and to make systematic observations of the importance of the child's position in the family (Adler, 1930, 1939; Ansbacher and Ansbacher, 1956). Rudolf Dreikurs, a student and later an associate of Adler, expanded Adler's birth order theory. Visher (1948) observed that a comparatively large number of leading American scientists were first-born children. But Damrin (1959) observed that there was no consistency between birth order and achievement. Only since the mid-fifties has there been consistent research interest in birth order. Koch (1954) systematically observed children's sibling relationships. Schachter (1959) published the first series of experimental studies on orginal position. Sampson (1964) recently presented a review of birth order research. Harris (1964) recently studied biographies of first and later born sons who became prominent in Western history. McArthur (1956) investigated the personalities of first and second children. Sears, Maccoby and Levin (1957), and Millar and Dollard (1941) also contributed to birth order research.

## Family Size

A number of investigations have been conducted to study the nature of the relationships in different size families. (Griffitts (1926) observed that the average grades in small families were higher than

the average grades in larger families. Jenkins and Randall (1948) also revealed that members of the superior Negro group came from comparatively small families. Both Floud et al. (1958) and Fraser (1959) found that the size of the family in England was inversely related to academic achievements of the children. However, Damrin's study (1949) and Witty's study (1937) bear conflicting results. More recently, Nichols (1968) demonstrated that there were almost twice as many first born merit program finalists as second borns.

## Statement of the Problem

The present study seeks to test certain hypotheses concerning the relationships between birth order, family size and parents' college attendance and graduation. Alternative theories will attempt to explain the relationship which exists between the independent variables and the dependent variables. Ultimately, this paper seeks to provide parameters which will assist the counselor in helping college students who are faced with the problem of academic failure.

# Hypotheses

## General Hypotheses

From studying the data, the investigator has derived three general hypotheses. The first two concern the relationship between birth order and college graduation and family size and college

graduation. The third concerns the relationship between parents' college attendance and college graduation. They are:

1. A positive relationship exists between birth order and college graduation.
2. An inverse relationship exists between family size and college graduation.
3. A positive relationship exists between parents' college attendance and college graduation.

Specific Hypotheses

1. A direct relationship exists between the order of birth and college graduation. Therefore, it is predicted that a significantly higher percentage of first-borns will graduate than second-borns; a significantly higher percentage of second borns will graduate than third-borns; and a significantly higher percentage of third-borns will graduate than fourth-borns.
2. An inverse relationship exists between the size of family and college graduation. Therefore, it is predicted that a significantly higher percentage of students from one-child families will graduate than students from two-child families; a significantly higher percentage of students from two-child families will graduate than students from three-child

families, and students from three-child families will graduate in significantly higher numbers than students from four-child families.

3. A positive relationship exists between mother's college attendance and the child's college graduation. Therefore, it is predicted that a significantly higher percentage of students whose mothers attended college will graduate than students whose mothers did not attend college.

4. A positive relationship exists between the father's college attendance and the child's college graduation. Therefore, it is predicted that a significantly higher percentage of students whose fathers attended college will graduate than students whose fathers did not attend college.

5. Mother's college attendance has significantly more influence on college graduation than father's college attendance. Then it is predicted that a significantly higher percentage of students whose mothers attended college but whose fathers did not will graduate than students where the fathers attended college and the mothers did not.

6. A positive relationship exists between both parents' college attendance and college graduation. Then it is predicted that a significantly higher percentage of students whose parents both attended college will graduate than students where

neither parent attended college.

7. A significantly stronger relationship exists between both parents' college attendance and college graduation than either mother's college attendance and college graduation, father's college attendance and college graduation, or where neither attended college and college graduation. Therefore, a significantly higher percentage of students whose parents both attended college will graduate than students whose mothers attended college but fathers did not; a significantly higher percentage of students where only the mother attended college will graduate than students where only the father attended college, and a significantly higher percentage of students of parents where only the father attended college will graduate than students where neither parent attended college.

8. Among students where both parents attended college, a direct relationship exists between birth order and college graduation.

9. Among students whose parents did not attend college, no significant relationship exists between birth order and college graduation.

10. Among students where only the mother attended college, a direct relationship exists between birth order and college

graduation.

11. Among students where only the father attended college, no significant relationship exists between birth order and college graduation.

12. Among students where both parents attended college, inverse relationship exists between family size and college graduation.

13. Among students where neither parent attended college, inverse relationship exists between family size and college graduation.

14. Among students where only the mother attended college, no significant relationship exists between family size and college graduation.

15. Among students where only the father attended college, no significant relationship exists between family size and college graduation.

## Definitions

Because the study seeks to ascertain whether a relationship exists between birth order and college graduation, family size and college graduation, and parents' college attendance and college graduation, it is useful and necessary that the variables be defined so their use may be clearly understood.

College Graduate

A college graduate is used in this study as one who has graduated from Oregon State University in four, five or six years. It is essential that at least a six year and ideally a ten year study be conducted. Most studies using non-intellectual variables use four year graduation. However, these studies do not take into account those who take longer than four years to graduate, drop out, later return and graduate, or those who transfer and graduate at another institution (Eckland, 1964).

Nongraduate

A nongraduate is a student who did not graduate from Oregon State University in four, five or six years. A weakness of this study is that we cannot control for those students who according to their transcripts, did not graduate from Oregon State University, but who may have transferred to another university and graduated within the six year period.

Another factor which may contaminate the nongraduates is marriage. Some girls drop out when they marry. But it will be assumed that if they are "graduating types," they will persist on to graduation regardless of marriage. Of course, this does not take into account those who marry, drop out, and return to graduate after the six year period. This weakness is recognized and the contributing

bias will be taken into consideration in the analysis.

## Birth Order

If the student is the oldest child, he is considered a first-born. If he has one older sibling, he is considered second-born. If he has two older siblings, he is third-born, and if the student has three older siblings he is considered fourth-born. Fifth- and later-borns will not be considered as the number in the sample is too small for valid analysis.

Altus (1965a) suggests that first-borns should be treated as a separate category because "they are somewhat anamalous in birth order studies." However, a chi-square test revealed that there is no significant difference between the only-child's graduation rate and the first-born's graduation rate ($X^2 = .00005$). Therefore, all first-born subjects will be treated as one category in the analysis.

## Family Size

If the student has no siblings, he is considered to come from a one-child family. If he has one sibling, he is from a two-child family. If he has two siblings, he is considered to come from a three-child family. If the student has three siblings, he is considered to be from a family of four. Again, five-child and larger families will not be used as the number of these students is too small for meaningful

analysis.

Parents' College Attendance

The students' mothers and fathers who have attended any junior colleges, seminaries, officer-training schools, four year colleges or universities or nursing schools (if the mother is a registered nurse) are considered to have attended college. Beauty school, technical school or business school are not regarded as colleges.

# CHAPTER II

## SURVEY OF RELATED LITERATURE

Although the subdivisions in this chapter are somewhat arbitrary and overlapping, the central theme is the relationship between the independent variables, birth order, family size and parents' college attendance, and the dependent variable, college graduation. The presentation of the relevant literature is developed under broad headings. The divisions include research relating to college persistence, parental influence on college graduation, birth order and family size. In addition, a brief review of major theories which may explain the relationships that are hypothesized to exist between the independent and dependent variables are included. Since this study deals with female subjects, only literature relating to females will be reviewed.

Although high school rank, high school grades and achievement tests predict college graduation to a certain extent, with high school GPA showing the highest correlation of .40 to .70, there is a great deal of room for error (Waller, 1964).

Two areas in which systematic research and the knowledge of their value in predicting college graduation is limited are family background and personal motivation. Some studies have concluded that these factors have some effect on students' college graduation while others have shown there is no relationship.

## Parental Motivation and College Experience

Waller (1964) made a comprehensive reivew of research pertaining to college persistence and withdrawal. He noted that a number of writers stress the importance of motivation and personal and social relationships with parents. The literature also suggested that parental college experience strongly affects the child's attitudes toward college persistence.

In 1941, Russel found college success to be related to such factors as motivation, physical and mental health, and personal and social relationships with parents, fellow students and faculty. Travers (1949) also found that "motivational factors play a major role in determining academic success both in high school and in college" (Waller, 1964, p. 288).

Mulligan suggested that economic differences and other socio-cultural factors influence college attendance.

Both Hyman and Branfenbrenner found a lack of interest in advanced education, lack of knowledge of opportunities and child rearing practices to be related to lack of college success. A study under the sponsorship of the Educational Testing Service showed that the "professional occupation and extent of education of the father were positively related to college plans" (p. 289). Wetzler also found that college graduates had better educated fathers (Waller, 1964).

Waller's review points to the fact that much more research is

needed in the area of parental influence on college graduation. The literature also indicates that a relationship exists between parental influence and academic achievement.

Watson (1965) studied some family background variables as predictors of "academic achievement." He designed a study to investigate the relationships between family, educational, and geographical variables. The subjects' cumulative grade point average was used as a measure of academic performance. Aptitude was defined as the composite score of locally constructed composition, reading comprehension, vocabulary, mathematics and science tests which the students took as entering freshmen. Pearsonian correlations between the predictor variables and partial correlation between the predictors and GPA with aptitude held constant were calculated. Only the father's education level showed a significant relationship at the .05 level.

McClelland (1969) also studied the relationship of some non-intellectual variables to academic achievement as measured by accumulative grade point average at the end of the freshman year of college. Fifteen personality variables were measured by the Edwards Personal Preference Schedule. The socio-economic variables provided significant differences in number of children, amount of education of the mother and degrees held by the mother. It was found that the "amount of education and degrees held by the mother of the academically unsuccessful subject was significantly greater than that

of the successful student (McClelland, 1969).

Ellis and Lane (1963) undertook a four-year study to examine the influence of the nuclear family of lower class students on upward mobility. College was measured as a useful mobility channel. The sample consisted of 194 matriculating Stanford University students. Ninety-six percent of the lower class students (rated by Hollingshead's seven point scale) reported at least one, and usually both parents, had influenced them in their decision to attend college. Also in the lower strata, the mother was more likely to be mentioned, "though the effect of maternal dominance is somewhat obscured by the competing tendency of lower-class subjects to name neither parent as the primary influence." But for those cases where one parent was considered most important, the results firmly established "a sharp reversal of parental dominance in the lower classes" (Classes V and VI) (p. 747). On the other hand, for the students in general, the father was seen as the main source of parental support for attending college. Although Ellis and Lane's research shows the influence of parental support on college attendance, it does not study the relationship between parental support and continuance on to graduation.

Richmond's study (1969), however, did ascertain the relationship of some student, parental and family characteristics to college graduation. The subjects in the experimental group were students who were readmitted after "being dropped because of poor scholarship" (p.

2306-A). The control group consisted of students who continued on to graduation without academic problems. Statistical analysis was made to determine if significant differences exist between the two groups. Of the family and parent characteristics which were associated with the success of the readmitted students, family motivation was named. Some familial variables and student characteristics were found to be associated with success. However, the variables are not stated. The student characteristics studied were sex, age, ability, birth order, number and sex of siblings. The parental characteristics were marital status of parents, working-mother status, education and occupation of parents and grandfathers. Decision-making structure of family, parental motivation and parental mobility were the variables classified as family characteristics.

Another study suggests that educational and socio-economic background of parents may not be directly utilized to identify non-persisting college students. But it is possible that the educational and occupational background of parents influence in "more subtle ways," which may be more difficult to measure (Bogue, 1968, p. 2914-A).

Research in which parental motivation and parents' education was considered was explored by Medsker and Trent (1968). They undertook a four-year longitudinal study at the center for Research and Develoment in Higher Education at Berkeley. By studying 10,000

high school graduates, they focused upon the different impacts of persistence in college.

Nearly 70 percent of the college persisters reported that while still in high school, their parents wanted them to attend college, compared with less than 50 percent of the withdrawals and 10 percent of the nonattenders. Significantly more mothers than fathers were reported as the source of encouragement.

In addition to communicating their values and encouragement, parents' temperaments and interactions with the children were also seen by the subjects as important.

Women college students enrolled in a small, private, liberal arts college in India were studied by Tomeh (1968). The study was designed to give information on the impact of reference groups on student life areas. Sixty-two percent of the total sample viewed one or both parents as influencing them to enter college, where only six percent perceived non-family persons as influential in their decision to enter college. A very high percentage of the students also viewed their parents as the most important in expecting them to graduate from college. When socio-economic status was controlled, the father was perceived to have slightly more influence than the mother. This may be the case, as the culture in India is primarily patriarchal.

Shoben's forward to the book, Beyond High School, states that persistence in college is primarily a function of three factors:

1) the importance undergraduates themselves assign to the completion of a degree,
2) their having decided by the second year of high school or earlier that they would attend college, and
3) the fact that their parents had definitely wanted them to attend college (Medsker and Trent, 1968, p. ii).

He continues

> success in college is rooted in the parents' encouragement and expectation, the acceptance by the child of his family values either of traditional college attendance or of social mobility through attendance, and the youngsters interiorization of the norms and aspirations of adults who look with favor on higher education (Medsker and Trent, 1968, p. ii-iii).

It should be noticed that the thesis' hypotheses concerning parental influence on college graduation are actually dealing with three independent variables, 1) the subject's mother's influence, 2) the subject's father's influence, and 3) the interaction effect of the mother's and father's influence.

The question arises, is the mother more or less influential on the subject's propensity to graduate than the father, and is the mother more influential than both parents together? Ellis and Lane's (1963) research suggests both parents influence college attendance, and in the lower strata, the mother is more influential. Medsker and Trent also conclude that the mother has more influence than the father. But Tomeh's study suggests both parents are influential, but when only one was mentioned as being influential, the father was favored.

Although the research underscores the fact that both parents

strongly influence their children's college aspirations, it is unclear which parent is more influential or if the interaction of both parents is more influential than either individually.

Some theoretical literature suggests the mother is the most influential person in influencing a child's internalization of attitudes. The mother's influence is even more strongly favored for females than for males.

Levy (1969) introduced some assumptions that deal with familial and particularly female influence on attitudes and value development.

> The overwhelming majority of all human beings have received their initial placement and rearing experience in family contexts.
>
> The steepest part of the learning curve for all individuals is to be found in the first three to five years of life.
>
> From birth to roughly age three, the overwhelming majority of all infants are reared under the direct supervision of and in direct contact with females, especially adult ones.
>
> The vast majority of all females continued under the direct supervision of and are in daily contact with older females--usually older members of their own families--until maturity (p. 336-337).

Ansbacher and Ansbacher (1956) also stress the importance of the mother's influence on the child's attitude development.

> The mother represents the greatest experience of love and fellowship which the child will ever have. Her task is to relate the growing child to herself psychologically, as he was formerly related to her physically. But she must also nourish the child's growing consciousness with true and normal conceptions of society, of work, and of love. In this way she gradually transforms the child's love for her and dependence upon her into benevolent, confident, and responsible attitudes toward society and the whole environment (p. 372).

The literature seems to indicate another aspect of parental influence on the child's college persistence. The fact that the parents have college experience affects the child's attitudes toward attending college and persisting on to graduation.

Several researchers have studied the relationship between parents' education and college persistence. Krauss (1964) studied the relationship between parents' education and college attendance, while Eckland (1964), Medsker and Trent (1967), and Duncan (1967) studied the relationship of parental education to students' college graduation.

Krauss (1964) studied the source of educational aspirations of 206 high school seniors in four San Francisco Bay area high schools just prior to their graduation. "For working class parents, where the mother has married 'down,' as indicated by her having had more education than her husband, 76% of the offspring planned to attend college--a larger percentage than among students whose fathers went to college." Where both were high school graduates, 44 percent of the children planned to attend college. But where the mother married "up," only 29 percent had college aspirations. In middle class families, where only the father attended college, the children were less likely to attend college than if both parents had attended college. Krauss further points out that even if the working class mother attended college only for a short time, she would encourage her children to develop college aspirations. Again in middle class families, the effects of mother's

education were almost identical to those of the father's education if the amount of education was equal (i. e., both attended college or neither attended college) but the mother affects college aspirations more strongly when it differed from the father's (p. 869, 873).

Eckland (1964) compared the findings of 24 institutional studies dealing with the academic influence of family background on college students. These studies measured college performance in terms of either attendance or grade point average and correlated performance to father's occupation, parents' education, or an index that combined two or more social-class characteristics. In the two-to-four year studies, five correlated fathers' occupation to measure of performance, five correlated the same measures to parents' education, and one correlated to a composite index. Although the other studies were not statistically significant, they showed results in the predicted direction.

One should notice however, that these studies did not correlate parents' education with college graduation. Even though college attendance and grade point average correlated with father's occupation and parents' education, it should not be generalized that the same relationship exists between fathers' occupation and parents' education and college graduation.

Duncan (1967) pursued a study similar to Eckland's. Tabulation of school years completed by family type (items pertaining to family milieu), family head's education and occupation, and number of

siblings were obtained by the U.S. Bureau of Census. He found that each variable had independent effects of essentially constant magnitude in the subjects' amount of schooling. The partial regression coefficient for head's occupation SES score was .26 for whites and .13 for nonwhites. The net effect of head's education was .23 for whites and .30 for nonwhites and the net effect of siblings was -.20 for whites and -.12 for nonwhites. Although a definite relationship between family background and amount of education has been shown to exist, Duncan's research does not show a correlation of the family background variables to college graduation.

Recently, Medsker and Trent finished a four-year study of 10,000 high school graduates. The University of California, Berkeley, Research Reporter (1967) summarized the progress of the study. They found that family background factors had somewhat more to do with college attendance and graduation than a student's ability. The parents appeared to provide a major source of academic motivation. "Mother's education" was one of the factors "that was at least as influential as the father's occupation." Regardless of the father's occupation, far more enrolled in college if their mothers had attended college (p. 1-2). Sewell and Shah (1968) also studied the relationship of parents' education to college graduation. They wrote a comprehensive review of their longitudinal study of 9,007 randomly selected Wisconsin high school seniors. Only the results which pertain

to the present study will be reported. By use of multiple-regression analyses, they analyzed the individual and interaction effect of father's education and mothers' education on college plans, college attendance and college graduation. Education was trichotomized into less than high school graduation, high school graduation, and some college education. Intellingence and sex were also controlled. The following results were described:

1) The higher the level of parents' education considered jointly, and child's measured intelligence, the greater proportion of males and females perceived parental encouragement, planned on college, attended college, and graduated from college.

2) Individually, for both males and females, the education level of one parent doesn't seem to have any stronger influence than the education level of the other parent.

3) The females, where the father has not graduated from high school and the mother has had some college education, are more likely to graduate from college than those where the mother has not graduated from high school and the father has had some college experience. However, when intelligence is controlled, fathers' college rather than mothers' college is generally favored. For the low and medium intelligence groups, the pattern generally follows the above.

4) There is only a negligible effect of interaction between

fathers' education and mothers' education.

5) Females whose mothers have some college education are in an equally advantageous situation with those whose parents are both high school graduates.

6) Females whose fathers have some college education but whose mothers have not graduated from high school are in the least advantageous position. Then, when one parent has college education and the other has less than high school graduation, the mothers' rather than the fathers' education seem to make the greatest influence (Sewell and Shah, 1968).

Since Sewell and Shah broke the parents' high school education level into high school graduate and less than high school graduate, it is difficult to generalize if the same relationships held for the dichotomy of parents' college experience and no college experience.

This research and Medsker and Trent's research indicate that parents' education is important in determining who graduates from college. However, the research is inconclusive as to which parent is the most influential, if at all, when the parents' education differ.

## Birth Order Research

Birth order research was first given wide publication in the early 1930's. Thirty-nine years ago, Harold Jones listed almost 100 research articles in which ordinal position was treated as an

independent variable. In recent years, there has been even more birth order research in the literature (Bayer, 1966).

The literature with which this thesis is concerned concentrates on the relationship of ordinal position to academic achievement in general, and specifically to college graduation.

## High School Achievement

A number of researchers have devoted time to the study of the effects of birth order on school achievement. In the past, high school achievement has been measured by grade point average and achievement tests. Basic IQ tests have also been used as a basis for determining intellectual ability. As the thesis is not concerned with high school achievement, only a few birth order studies relating to this topic will be discussed.

The hypothesis that first borns, including only children, are superior to later born children in intelligence and school achievement was tested by Oberlander and Jenkins (1967). An analysis of variance of the standard IQ and achievement scores for 972 fifth, seventh, eighth and eleventh graders from two socio-economic levels confirmed the hypothesis. The first-borns' scores were significantly higher than the later-borns' scores for both IQ and achievement.

Chittenden (1968) analyzed the achievement scores of 129 pairs of first- and second-born siblings. Grades and Iowa Basic Skills

scores were compared. Both significantly favored the first-borns. The differences were explained by Sears and Maccoby's assumption of personality differences in first- and later-born children. Chittenden concluded that "the first born is brought up, the others grow up" (p. 1228).

A similar study was conducted by Nichols (1968). Birth order and family size of 1,311 National Merit Scholarship Finalists selected in 1964 were analyzed by means of a chi-square test. Nichols found that in two child families, there were about twice as many first-borns as second-borns, and in three-child families, there were about as many first-borns as second- and third-borns combined and the seconds outnumbered third-borns. The same trend held true for four- and five-child families. All differences were significant.

It is of significant interest to the writer that there is a tendency for birth order researchers to classify their subjects as first-borns and later-borns. It would appear that more significant conclusions could be drawn if analysis of significant differences between each order of birth was undertaken.

## College Achievement

It has been hypothesized by a number of investigators that first-born college students should be brighter as well as more numerous.

Schachter (1963) reviewed some literature pertaining to birth

order and higher education. From his sample of students taking the introductory psychology course, he found precisely the same findings as Cattell and Brimhall's studies--that at every family size there is a significant over-representation of first-borns. The results were also similar to those found in the NORC survey in 1961. The phenomenon is even more marked at the graduate level. Of the graduate students, 57.8 percent were found to be first-born compared to 50.2 percent of the undergraduates.

Several arguments that the over-representation in college may be due to certain biasing factors were presented and then refuted by his research. In a high school sample, where selection factors are minimal, there was no significant birth order effect. "It seems simply that first-borns are more likely to go to college and graduate school" (p. 759).

While indirectly controlling for social economic status by family size, there was still an over-representation of first-borns in college and graduate school.

One possible explanation is first-borns seem to have relatively more ability or motivation than later-borns. The grade point averages of the Minnesota high school sample bore this out.

The relationship of birth order to higher education cannot be accounted for by year to year variations in birth rate. The predominence of birth order has been steady over the past 20 years at

Columbia University. This would also seem to negate the post World War II baby-boom argument.

Schachter does not make any conclusion as to the phenomenon underlying this relationship. He only states that the "shift of the data" is clear that more first-borns go to college than later-borns and that it is even more noticeable in graduate school (p. 768).

Altus is one of the leading birth order researchers who has used college students as subjects. To test the hypothesis stated at the onset of this section, Altus (1965a) tested subjects of both sexes from two-child families. Scores on the Cooperative School and College Ability Test were used to measure achievement. Mean scores for both male and female first-borns were significantly higher than the scores of both male and female second-borns ($p < .01$).

Altus (1965b) also studied the mean MAT scores and VAT scores of approximately 1,500 matriculating students in 1960 and 1961. Two-, three-, and four-child families were analyzed. The hypothesis stated at the onset of this section was tested by means of a two tailed t test. Only the VAT mean difference for women was significant although the other mean scores went in the predicted direction. Altus predicted that first-borns should persist on to a bachelor's degree and possibly to professional training in a greater ratio than later-borns.

In a replication of Altus' study (1965), LeMay (1969) studied the relationship between birth order and scholastic aptitude (SAT scores)

and the relationship between birth order and academic success as measured by high school grade point average and college graduation. The subjects consisted of freshman female students entering Oregon State University fall term 1963 who represented two-child, three-child, and four-child families. The hypothesis of the superiority of first-borns on SAT scores was supported by both the SAT verbal and math scores.

Another measure of academic achievement that has been studied is college GPA. Gordon and Gordon (1967) compared 69 college nursing students to 167 female students with other college majors. The chi-square test showed first-borns obtained significantly higher GPA's than last-borns and had significantly higher chemistry levels than last-borns.

Eisenman and Platt (1968) also investigated the relationship between birth order and sex to grades. The perceptions of reinforcement as internally or externally controlled was also studied. Chi-squares for birth order, sex and grades (A's and B's vs. C's and D's) and birth order, sex and internal vs. external control (Rotter's Internal-External Control Scale) were computed for 131 Unitersity of Georgia students. Females obtained significantly higher grades than males, and first-borns obtained significantly higher grades than later-borns. First-born males were significantly more external than internal on the I-E scale.

It would appear, then, that first-borns not only obtain higher grades but also, first-born males rely upon the approval of others rather than self-approval.

These studies imply that there is a linkage between birth order and academic achievement.

It seems that if the above is the case, then more first-borns should continue on to graduation than later borns. Although Altus (1965b) predicted that first-borns should persist on to a bachelor's degree and possible further training in a greater ratio than later-borns, his study was not designed to test this prediction.

Bayer (1966) emphasized that about one-half of the doctorates in his sample were first-born while one-fourth were second-born and the remaining one-fourth were third- or later-born.

Rossi (1965) also noted that a greater proportion of first-borns have obtained an advanced degree beyond the bachelor's. LeMay's study (1969) systematically tested the hypothesis that first-born females graduate in a higher proportion than later-borns. However, his results were inconclusive.

The majority of the literature on birth order emphasizes that first-borns are superior to later-borns in academic achievement. However, in most of the cases, the interpretive link between the independent and dependent variables is not theoretically explained (Kammeyer, 1967). Birth order, according to Kammeyer, is only an

indicator of something else.

It is suggested by Sutton-Smith, Roberts and Rosenberg (1964) that "high surrogate training" and "strong identification with the parents" are connected with being first-born (p. 37).

Differential achievement is also viewed by Bayer (1966) as a function of various personality attributes which largely result from differential parental treatment accorded children of different ordinal positions.

Kammeyer (1967) also suggests that these are results of the interaction pattern between the parents and first-born child. In hypothetical form, Kammeyer proposes that ". . . children in different ordinal positions are subject to different patterns of interaction and as a result have different learning experiences." Therefore, "any differences which appear between children of different ordinal positions must be the results of their interaction-social learning experiences (p. 80).

## Some Birth Order Assumptions

In order to understand the phenomena which underlie the link between birth order and academic achievement, i.e., college graduation, it is necessary to review some basic birth order assumptions.

Both Freud and Adler attached great significance to a child's position in the family. However, Adler was perhaps the first to make

these systematic observations (Adler, 1930, 1939; Ansbacher and Ansbacher, 1956; Porter, 1931).

The position of each child in the family makes a great deal of difference as each child grows up in a different situation. The child develops according to his unconscious interpretation of the position he occupies in relation to his environment (Adler, 1930).

As a result, each child will show, in his "style of life," the results of his attempts to adapt himself to his own particular circumstances (Porter, 1931).

Adler describes the particular characteristics and attitudes of each of five positions: first-born, second-born, youngest, middle and only. Adler was primarily concerned with the effects of birth order on the problem child. Therefore most of his assumptions related birth order to neurosis rather than the effects of birth order on education.

The oldest child has the most defined characteristics. For one thing, he has the advantage of an excellent position for the development of his "phychic life." History recognizes the favored position of the eldest child. Adler emphasizes this,

> If his development in this direction goes without disturbance, then we shall find him with the traits of a guardian of law and order. Such persons have an especially high evaluation of power... Power is something which is quite self-understood for the oldest child, something which has weight and must be honored (Adler, 1927, p. 153).

The first-born is often given a good deal of attention and spoiling.

He is accustomed to being the center of the family. Too often, it is quite suddenly and without preparation that he finds himself ousted from his position. Another child is born and he is no longer unique. He must now share the attention of his mother and father with a rival. The oldest child tries to either preserve his superiority or if it is already endangered, at least tries to prevent the rival from gaining superiority. He tries in every way possible to safeguard his position as the oldest and superior child (Porter, 1931; Ansbacher and Ansbacher, 1956).

The only child is also in a unique position. He is at the mercy of the educational methods of the environment. The parents place their entire educational zeal on the only child. The child becomes dependent to a high degree and constantly seeks support. Because he is pampered, he is not accustomed to difficulties. He easily acquires the feeling that he really counts for something of great value because he is constantly the center of attention. On the one hand, the only child may be motivated by his parents' expectations, or he becomes overwhelmed by constant dependency and begins to approach life as "a parasite who does nothing" (Adler, 1927; Porter, 1931).

Again, it should be emphasized that the position in the family per se does not determine certain attitudes, but the individual's interpretation of the situation influences every psychological process as the child develops (Ansbacher and Ansbacher, 1956).

As part of a larger paper, Clausen and Williams recently summarized the relationships between birth order and social relations. They said:

> The effect of ordinal position, as it regards socialization experiences, appeared to be a consequence of:
>
> 1. Parental attitudes and experience--e.g., parents are more insecure and overconcerned with first-borns.
> 2. Amount and intensity of parent-child interaction--e.g., parents are more available to first-born children because of fewer competing demands for time and attention.
> 3. Availability of child models in learning age- and sex-roles--e.g., boys with older brothers have pace-setters and models for appropriate behaviors.
> 4. Displacement of older siblings by new arrivals--e.g., there is greater intensity of displacement experienced by the eldest child who has had his parents to himself, possible leading to greater dependency needs.
> 5. Effects of parental age, apart from those in item (1), above (since first-born children have younger and last-born have older parents) (Kammeyer, 1967, p. 76).

Assumptions one, two and five deal with parent-child interactions where assumptions three and four concern sibling interactions. Clausen and Williams, thus, focus upon parental attitudes and experiences and the amount and intensity of child-parent interaction.

Kammeyer (1967) presented outstanding characteristics of each of six familial interaction patterns which have been in the past advanced as significant influences on development. The first is in regard to first-born and parent interaction while the second and third concern first-born and later-born interaction, and first-born, parent and later-born interaction.

A. First-born Child and Parent Interaction

1. Parents consider the birth and existence of the first-born in the family a profoundly significant event. They attach great importance to the birth and beginning of the first-born child.

2. Parents possess greater ardor for the first-born child than later-born children.

3. Parents have more time and energy to devote to the process of socializing the first-born child.

4. Parents will be less knowledgeable about the process of rearing the first-born child because they lack experience.

5. The first-born child is unbuffered from the adult world; he is more openly exposed to adult expectations and pressures. There are no generational peers to mediate between the adult world and the child's.

B. First-born Child and Later-born Sibling Interaction

1. The first-born child will play a superordinate, parent-surrogate role relative to the later-born sibling.

2. The younger sibling displaces the first-born child as the principal object of parental attention (the dethroning process).

3. Parents will try to reassure and make up to the first-born child for his displacement by the younger sibling (Kammeyer, 1967, p. 78).

The second set of characteristics describes social learning experiences of the later-born child. They are sub-divided into three categories: later-born child and parent interaction, later-born child and first-born (or older) sibling interaction, and later-born child, parent, and first-born (or older) sibling interaction. They are:

A. Later-born Child and Parent Interaction

1. Parents attach less significance to the birth and being of the later-born child than they did to the first-born child.

2. Parents have less ardor for the later-born child than they did for their first-born child.

3. Parents will have less time and energy to attend to the

later-born child than they did for their first-born child.

4. The parents will be more experienced about child-rearing with their later-born child.

5. Parents will accelerate independent mastery of the later-born child to gain freedom from child-rearing.

B. Later-born Child and First-born (or older) Sibling Interaction
1. The first-born child will make life difficult for the later-born child and thus be a threat and source of anxiety for the younger child.

2. The later-born child will experience many stress situations vicariously by observing the first-born child, e.g., entering school.

3. The later-born child will learn much of his social behavior from peer models.

C. Later-born Child, Parent, and First-born (or older) Sibling Interaction
1. The later-born child will learn norms by observing parent and older sibling interaction.

2. The later-born sibling will have to compete with an older sibling who is superior in many ways for parental attention (Kammeyer, 1967, p. 78-79).

The pilot study at Bowling Green University supported two propositions:

1) that ordinal position and sibling sex status involves distinctive social learnings, deriving from the position-typing and sex-typing influences of the parents and other adults and from the interactive influence of the siblings.

2) social learning amongst first-borns includes high surrogate training and strong identification with the parents (conscience, conformity, affiliation, dependency, volunteering, internalization) and leads both to academic success and a readiness to take parent-surrogate roles as exemplified by a preference for teaching (Sutton-Smith et al., 1964, p. 36).

## A Family Size Theory

The importance of the size of the interacting group has long been recognized. The present section is concerned with the size of the family and its significance to child development, i. e., development of attitudes regarding college persistence.

Studies in family life have shown size to correlate with definite characteristics, practices and values of family living (Bossard, 1953).

Bossard is one of the leading theorists in regard to family size. Family size is broken down into two systems, the small family system consisting of one to three children, and the large family system which has four or more children. Bossard's conclusions dealing with the small family system are based on assumptions and findings of previous research. The larger family system assumptions proposed by Bossard are based on collected data, written analysis and informal interviews.

### The Small Family System

Planning is a primary characteristic in the small family system. Emphasis is placed upon size, spacing and timing of each birth; the main objectives in education are also focused upon "with careful attention being paid to its status-achieving and promoting possibilities" and preparation for future careers (Bossard, 1957, p. 85).

Parenthood in the small family is intensive rather than extensive.

Each child is able to receive a good deal of attention and consideration. Emphasis is placed upon the importance of cooperative relationships between parent and child. Individualizing of activities and roles is coupled with the freedom and democracy of expression. The siblings enjoy "protected competition." Parents also double as playmates and friends. On the basis of these early experiences, then, each child develops his self concept. He grows up in a world which primarily revolves around him and he thinks of himself accordingly.

Another important aspect of the small family system is the undue pressure placed on the child or children. Each of the above characteristics is underscored by the high level of expectation of the parents. Most parents have ambitions for their children, but the parents of a small family are even more ambitious as there are so few children on which they can focus their ambitions. Also, the whole family is organized around the child's future development.

Bossard also concludes that children in small families spend much more of their time with adults. "Adults play with them, walk with them, study with them, educate them and discipline them" (p. 98). The child, then, sees the world through adult eyes. And of course, the relationship between the eldest child and the parent is even more intense.

The small family system is a quality rather than quantity system. It is based on the idea of achievement. "It is an upward, climbing

system, adapted to the requirements and opportunities of an open-class system. It is a rational system, giving sway to long range planning rather than a passive hopefulness or a careless disregard" (Bossard, 1953, p. 100).

## The Large Family System

On the other hand, the large family system not only differs in size, but it involves a distinct way of life and therefore produces a quite different personality type. Bossard (1953) sets up a number of conclusions which were found from his research on a pilot study of 25 large families. Only the conclusions pertaining to the present study are listed below:

1. "Large families live in an ever-changing milieu, so that they are under the necessity of adjusting repeatedly to changes in role, in status and in responsibilities, in group and individual circumstances, and in possibilities of individual development" (p. 107).

2. The large family emphasizes the group rather than the individual.

3. The larger the family becomes, the more internal organization, administration, authoritarian control, and executive direction appear. This may mean a dominant role for the father or mother, or on occasion, an older sibling.

4. Conformity is valued above self-expression. Cooperation

is needed more than individualism. Listening is the rule rather than talking. Specialization of role and function occurs among its members.

> Durkheim points out another principle: the greater the degree of specialization, the greater the degree of interdependence that comes about. This brings about 'consensus' and the more family consensus tends to develop, the stronger its hold upon the individual member becomes (p. 109).

5. Discipline is often left to the siblings. The adjustments must be made primarily to the other children, not to the adults.

6. Parents, in many cases, are not able to adequately launch the older children on their adult careers.

Number six suggests that first-borns of larger families, then, are less likely to achieve than the first-born in small families even though they are the eldest child and in the most favored position.

## Family Size Research

Chopra (1966) compiled a short review of early research in which time had been devoted to studying the relationship between family size and academic achievement.

> Griffitts observed that the average grades of children in small families were higher than the average grades of children in large families. Buesman's studies revealed that family size was definitely related to academic achievement. Jenkins and Randall, in their study "Differential Characteristics of Superior and Unselected Negro Students," concluded that the members of the superior group were drawn from comparatively small families. Floud et al. observed that size of family was inversely related to success in the selection examination. Fraser's study showed that there was negative correlation between size of family and academic achievement of students (p. 133).

However, two studies did not reach the level of statistical significance. Witty's study showed negligible difference in academic achievement of the two family sizes. Although Damrin's study showed that children from small families were generally superior in intelligence test scores and academic achievement, the difference between the means was not significant.

A sample of 1,359 randomly selected high school boys in India were tested for intelligence (by use of the Progressive Matrices Test) and academic achievement. Birth order and family size were individually controlled, but the interaction effect was not controlled. It is interesting to note that Chopra classified up to five children in one family size group. He then compared this group to six-, seven-, eight-, nine-, and more-child families. Analyses of variance and covariance were used. The mean IQ test scores and high school grades declined significantly as the family size increased. Even with intelligence held constant, the differences in the means for academic achievement continued to be significant. Ordinal position did not show a significant relationship to either IQ or high school marks. This could easily be the case because family size was not held constant.

Another aspect of academic achievement is the motivation to continue education after high school. Elliot's (1968) study attempted to assess the relationship between family structure and educational

attainment. It was hypothesized that certain aspects of structure may serve as determinants of life chances and socialization experience. The population consisted of 276 families with 410 siblings and 71 first-borns. The family heads were primarily blue-collar workers. The analysis revealed that social class was positively related to college expectations with the association most pronounced in the unskilled blue-collar group. Family size was negatively related to college expectations. Child spacing and ordinal position were also found to be significantly related to college plans of females. Another conclusion which is of interest is that the subjects who expected to go to college had expectations in line with their parents' and friends'.

Bayer's (1966) study analyzed the relationships of birth order, family size and socio-economic status to college attendance. From his national sample of 46,000 high school seniors, it was found that:

1) last-borns are as likely to attend college as first-borns from the same family size and socio-economic position;
2) within each socio-economic level, first-borns are more likely to attend college than those in any other ordinal position, and
3) within each socio-economic class and family size, . . . those of an intermediate ordinal position are consistently the least likely to attend college (p. 484).

A review of family size research shows that there is a need for further exploration. It should be pointed out that most of the family size research has drawn samples from high school aged subjects and from primarily male subjects. It is dangerous for one to generalize from a high school male sample to a college female sample.

Furthermore, it is not known whether the same relationship as shown in the above studies holds true for college girls and graduation from college.

Although it would appear that the effects of the family milieu in which children develop would continue to influence college students, it cannot be assumed. It must be empirically tested.

One study which investigated a sample of college students was Barger and Hall's (1966). They studied the interrelationships of the family size and socio-economic status of college student parents. The hypothesis tested was:

> If family size is related to differential educational aspirations and need achievement for adolescents, measures of educational attainment, vocational level, and income should be significantly related to family size for middle-aged adults (p. 186).

A questionnaire concerning family background was administered to approximately 2, 900 students at the University of Florida. Analysis revealed that educational attainment for mothers and fathers of both male and female students was very strongly related to the size of family of origin ($p < .001$). That is, parents who came from larger families were much less likely to have attended or graduated from college than parents from one- or two-child families. The occupational level and family income was also significantly related to size of family of origin.

This supports Bossard's findings that children in larger families seem to be less achievement oriented but value family solidarity,

while children from small families, and particularly only children, seem to value educational and economic attainment.

It would appear that Barger and Hall's study also supports the writer's hypothesis that an inverse relationship exists between family size and college graduation.

At this point in the survey of literature, theories and research which relate the variables mothers' college attendance, fathers' college attendance, birth order, and family size to college graduation have been reviewed.

It seems logical to follow this review with theories which may explain the interaction effect of these variables on college graduation.

## Some Identification Theories

To summarize the discussion of chapter two so far, research regarding and possible theories underlying the link between the variables parental education, birth order and family size and the dependent variable have been reviewed.

The various assumptions from the literature support the following hypotheses:

1. A direct relationship exists between birth order and college graduation.
2. An inverse relationship exists between family size and college graduation.

3. A positive relationship exists between the mother's college attendance and the child's college graduation.
4. A positive relationship exists between the father's college attendance and the child's college graduation.
5. A positive relationship exists between both parents' college attendance and the child's college graduation.

It seems that each theoretical framework would support the hypotheses concerning the individual effects of birth order, family size and parents' college attendance on college graduation. However, it is suspected that these theories are not sufficient in explaining the interaction effects of the three variables on college graduation.

It is at this point, that some theories of identification are introduced as a possible explanation of the interaction effects of the three variables on college graduation.

Most theories as to why one individual comes to identify with another stem directly from Freud. The term identification usually refers to the "more or less lasting influence of one person on another as shown by the latter's behaving like the other (in Aldous and Kell, 1961, p. 15).

Reviewing literature pertaining to identification has proved to be a very difficult task as Freud's references to identification were scattered throughout his books. Secondly, Freud often used the same term to refer to basically quite different concepts. This confusion

becomes more profound in the later development and modifications of Freud's theory by contemporary writers. They have applied Freud's terminology in other ways and have introduced new names for the concepts and processes discussed by Freud himself.

The term identification has been applied to three broad classes of phenomena:

1. Identification as behavior - Here, overt actions are emphasized. Within this context, it is used in three different ways: a) the action of the subject is learned through taking as a model the overt actions of the model; b) the similarity of the subject and the model without regard to whether the model's behavior actually served as a model; c) identification in overt behavior with an ideal standard never actually exhibited.

2. Identification as motive - This refers to the disposition to act like another, but there is no necessary correspondence between the behaviors of the subject and the model.

3. Identification as process - Here, identification is dealt with as a "mechanism through which behavior and motives are learned." The theories dealing with identification, primarily deal with "the psychological forces that impel a child to emulate a model" (Brofenbrenner, 1960, p. 40).

Freudian Theory

Freud considered the process of identification in three stages. The first occurs when the child is very young and imitates some of his mother's actions because he is unable to differentiate between himself and the object of his identification, his mother. The second stage consists of the development of the specific object choice due to the child's dependency on his mother for love and protection. The third stage occurs when "the object choice is lost due to some action of the mother that disappoints the child" (Bronfenbrenner, 1960, p. 15).

The object choice is presexual in nature. The attachment is based on "a learning or dependency relationship with the mother or the person having to do with the feeding, care and protection of the child" (Brofenbrenner, 1960, p. 16). This relationship becomes the basis for one of the two mechanisms of identification. The first, anacletic identification, involves identification as a function of loss of love. The second, identification with the aggressor, is a function of fear of the aggressor.

At this point, it should be stressed that the writer is only concerned about the identification of females; as the literature indicates, male identification involves different processes (therefore, the pronoun "he" is not meant to be masculine).

The second, identification with the aggressor, seems to be the

mechanism which helps in the development of sex-role identities. Freud explains this:

> The daughter, under the influence of her envy for the penis, cannot forgive her mother for having sent her into the world so insufficiently equipped. In her resentment she gives her mother up and puts someone else in place of her as the object of her love--her father. If one has lost a love-object, the most obvious reaction is to identify oneself with it, to replace it, as it were, from within, by means of identification. This mechanism now comes to the little girl's assistance. Identification with her mother can take the place of attachment to her. The little girl puts herself in the mother's place, as she has always done in her games; she tries to take her place with the father... (Fliess, 1950, p. 98).

It is possible that neither mechanism can occur unless the child is, in some sense, dependent upon the parent. Then, if the child is dependent, the separation or withdrawal "can lead to anacletic identification and superego formation" (Brofenbrenner, 1960, p. 21).

Although Freud seemed to indicate that identification involved imitating the model, he later emphasized that it is not the immediate image which parents present to the child, "but the ideal standard reflecting the parents aspirations..." (p. 21). In other words, the child not only comes to resemble what the parent is, but what the parent wants the child to be.

## Some Variants of Freud's Theory

Mowrer utilized developmental and defense identification in place of anacletic and aggressor identification. Developmental is milder and simpler than defensive identification, as the latter is

"violent and crisis-like in nature" (in Brofenbrenner, 1960, p. 23).

He described defensive identification in this way.

> . . . in the case of the normally-loved child. . . the disciplinary demands of the parents cause him first of all to attack his parents (since their discipline frustrates him and he is too dependent to retreat from them), and when this behavior meets with still further punishment, he is likely to be thrown into intolerable anxiety. . . At this point, a most remarkable thing normally occurs. At the height of his conflict, the child discovers that he can satisfy his parents and at the same time still his own inner turmoil if he will only do one thing: accept the standards of conduct and social values which his parents are holding up to him and make them his standards and his values. . . In common parlance, we say that the child now has a conscience or that, in the language of psychoanalysis, his superego has begun to function. . . the induction stands that character, conscience, or superego (the term is not important) is forged as a solution to the unbearable conflict generated during the period of "intensive" socialization by the great love for and equally great fear (and/or hatred) of the parents (Mowrer, 1953, p. 69-94).

Mowrer viewed the developmental identification as a process in which progressive differentiation of social objects occurs. The first identification which infants make with the mother is undifferentiated as to sex. Then, the characteristics acquired through identification at this stage are non-sexual characteristics. As the child grows, he develops sexually differentiated characteristics by means of identification.

Stoke disagreed with Freud's aggressor identification and relied completely on anacletic identification. He also emphasized that anacletic identification does not distinguish between emotional and behavioral identification. Emotional identification refers to the

emotional tie between the child and parent where behavioral identification refers to overt behavior of the parents that is exhibited in the child. Emotional identification was described in the following way: "a child gives its emotional allegiance to one of its parents and tries to duplicate in its own life the ideas, attitudes and behavior of the parent with whom it is identifying" (Stoke, 1950, p. 163).

## Parsons' Sociological Theory

Parsons (in Bronfenbrenner, 1960) elaborated Freud's theory. However, he diverged from Freud on the question of the content that is internalized. Not only is the parents' superego internalized, but also the culture as a whole. In describing the parents' role in the child's development, two concepts were used. 1) Expressive function, which is associated primarily with the mother. It involves being affectionate, solicitious, warm, and emotional to the children and serving as a "mediator and conciliator" in the family. 2) The instrumental function deals with "establishing the desired relations to external goal objects." The father "acts as the final judge and executor of punishment and control over the children and the family." Briefly, in the mother's treatment of the child, she begins with permissiveness and support which develops in the child a "diffuse attachment to her, a dependency on her." The child internalizes the mother in her role as a source of care. The identification is not of

the mother's total personality but only that part with which the child has been a part of in meaningful interaction. After the first stage of identification, the child enters a stage of "love dependency, in which the mother's expressions of affection become rewarding in themselves. Since the mother's love is always conditional, "the denial of reciprocity" at this level leads to internalization of the mother as the love giver and of himself as the love object. Identification in the third stage is the Oedipal stage in which the child internalizes the distinctions between male and female. The identification heretofore has been undifferentiated in respect to sex. Principally, the early identifications are general and related to concrete behavior where the later identifications are differentiated and organized around "symbolic role-entities," such as familial we-categories and society as a whole (Bronfenbrenner, 1960, p. 29-37).

Identification is related to the clarity of the role model. Identification is also a function of the developmental capacities of the child. What the child strives to internalize will depend on the content and clarity of the reciprocal role relationship of which he is a part.

Personal and positional identification were referred to by Slater (1961) as similar to anaceltic and aggressor identification. Personal identification involves identification of the subject with the actual model - the adoption of the model's "personality traits, values

and attitudes." It is motivated primarily by the subjects love and admiration for the model. Positional identification is the identification of the subject with the situation or role of the model. There is no empathetic understanding on the part of the subject. It is motivated by envy and fear ( p. 113).

It is suggested by research findings that paternal and maternal identification are strongly and positively related. It is also suggested that paternal and maternal identification possibly occur consecutively rather than simultaneously. One may facilitate the other. Sears (1953) and Goethalas (Slater, 1961) suggest that identification with the father occurs through the mother. Paternal identification is dependent upon the mother's attitude toward the father. Then, if there is a satisfactory climate for identification, the child will internalize cultural norms held by both parents.

## Learning Theory

Sears attempted to explain identification within a stimulus-response framework. The infant's primary needs are satisfied by the mother. He gradually develops a secondary drive system of dependence on the mother in which her "presence, her gestures, and attitudes as well as her more manipulative actions become secondary rewards for the child" (in Aldous and Kell, 1961, p. 15). In time the child incorporates some of the mother's habits into the behavior he

makes in response to his internal needs. When the internal stimuli occur during the mother's absence, the child will respond as he normally would in the presence of his mother. When the mother is not present to carry out her actions, the child attempts to fulfill them. Although the child cannot perform the exact behavior, he can "imitate" her affectionate attitudes and gestures and thus partially satisfy the "dependency drives" (Sears, 1957, p. 153).

From the above, Sears hypothesized that children identify with the same sex parent. In introducing the concept of family function as another factor in identification, he proposed a similar hypothesis. "The greater the number of roles relating a child and a parent, the stronger the child's identification with the parent will be" (Winch in Aldous and Kell, 1961, p. 16). Mussen and Disler suggested that individuals are most likely to play the role of or identify with ones whom they perceive as powerful. The child would then identify with the parent who controls his rewards and punishment (in Aldous and Kell, 1961, p. 16).

Sears, Macoby and Levine interviewed mothers of five-year-olds and found that children identify with parents of the same sex (Sears, 1957). Gray and Klaus found that when they gave a sample of college students the Allport-Vernon-Lindzey study of values, both men and women showed greater similarities with parents of the same sex. They also found a positive relationship exists between the amount

of affection of the same-sexed parent and the degree of similarity.

However, Aldous and Kell's (1961) study of 50 middle class juniors at Kansas State University did not find a significant relationship between students' identification with the same-sexed parent or family function, or the "controlling" parent or their perception of the mother's affection, even though the trend was in the hypothesized direction. There was a significant relationship, however, between the girls' identification with their mothers and not perceiving them as over-prohibiting their freedom.

Before one can accept Aldous' conclusions, it should be pointed out that the study is weak because of the small sample size for one thing, and the nature of the hypothesis for another. For instance, it seems that a college girl would view her mother's amount of control over her much different as a young adult than she did as a child. It seems it would be more acceptable to ask the girls how they perceived their mother's control as a child.

Kagen (1958) also set forth some definitions and assumptions pertaining to identification. Primary and secondary identification are new terms for Freud's anacletic and aggressor identification. Primary identification is referred to as "the initial; undifferentiated perception of the infant in which an external object was perceived as part of the self" (p. 247). Secondary identification occurs after the child is able to discriminate a world of objects separate from himself.

Kagen suggested that besides anxiety over anticipation of aggression being a motive for identification, to experience or obtain the goal states which the child perceives the model controls is also a motive. The two main goal states are mastery of the environment and love and affection.

Identification proper, then, is "an acquired, cognitive, response within the person." The content of the response is that some of the "attributes, motives, characteristics and affective states of a model" are parts of the subject's psychological organization (p. 298).

The assumptions are: 1) the subject perceives that the model possesses or commands goals and satisfactions that he desires; 2) the wish and command goal states of the model leads to the desire to possess the characteristics of the model because he believes that if he is similar to the model he will command the desired goals; 3) the identification response (i.e., "some of the characteristics are mine") is reinforced each time the subject perceives or is told that he is similar to the model; and 4) in order for the identification belief to be maintained, the subject must experience some of the desired goal states of the model.

Another variation of identification in Learning Theory is that of Lazowick (1955). Two questions are dealt with. What is learned, and how is it learned? He postulated that identification consists of more than learning specific stimulus-response patterns. It is proposed then

"that meanings are learned which collectively make up the individual's frame of reference" (p. 176). The child begins imitating the parents' behavior without understanding their significance, or meaning. Then signs which are associated with the child's imitative acts will evoke subsets of behavior. "The self-stimulation (S'm) resulting from these subsets of imitative behavior is the meaning associated with the response hierarchy." This imitative behavior, is sufficiently rewarded, will tend to be generalized. It is the relation between the subject's set of meanings and the model's sets which, according to Lazawick, constitutes identification (p. 175-176).

## Social Role Theory

A final identification theoretical framework is proposed by Elkin (1960). He placed identification in a social role theory. Socialization replaces the term identification. It is defined as the "process by which someone learns the ways of a given society or a social group so that he can function within it" (p. 35). This includes both the learning and internalization of appropriate patterns, values, and feelings. Status and role are two key concepts. Status refers to the position in a social structure and role refers to the pattern of expected behavior for a given position. The child learns the ways of society through objects of emotional attachment that are especially significant in his development or "significant others." Significant

others define the world for the child and serve as models for attitudes and behavior. They teach the child, in a broad sense, through rewards and punishments. They teach the child through their behavior in the child's presence and the feelings and attitudes they express. Through their interactions, they indicate attitudes, feelings, and expected relationships; they express rights and obligations of different positions. The role that significant others play in the process of socialization is diverse. At one extreme, the model may serve as a source of imitation. Or, through establishing strong emotional ties with the child, they may become prototypes of strong permanent psychological characteristics. The impact of specific interactions is a function of what the child has already become and relationships he has already formed.

Learning is not just a cognitive process. It is closely associated with attachments to others. The child is motivated to think and behave as the model does in order to gain love and approval from significant others. Later these patterns become habits and others like success-striving become part of an internalized value system.

The first person in the significant other role is the mother or mother figure. Because of his dependence on her for care, the child becomes attached to her. Following this comes the father and other siblings in the family.

Self is another important concept in social role theory. It

refers to the organization of personality qualities or the experience of identity. Mead used it in a more limited way: "Self means simply that a person is the object of his own activity; he can act towards himself as he acts towards others" (Elkin, 1960, p. 32). From this point of view, the child must know what is expected of him in each position. The child sees himself as the object and thereby checks his own behavior according to others' expectations.

Mead postulated how self develops. Stage one is imitation of specific actions. By reinforcement the child learns the appropriate behavior. In stage two the child actually plays a role. He links specific behavior with given statuses. An example is girls playing with dolls and boys playing with guns. The third involves situations in which the child finds himself responding to expectations of several people simultaneously. From the different roles, he interprets what the others in general expect of him. He then views himself from the position of the groups or the "generalized other." Specifically, "as the child develops, the generalized other becomes in internalized model consisting of the standards from which he views and judges his own behavior" (p. 35).

Stryker (1968) referred to symbolic interaction theory as he attempted to clarify family identities. Symbolic interaction theory will not be reviewed here. The hypotheses that Stryker proposed are: 1) the more extensive and/or intensive the network of relationships

into which one enters by virtue of a given identity (mother-child relationship) the higher will be that identity in the salience hierarchy; 2) the more congruent the role expectations of those to whom one is committed (by dependency), the higher will be that identity in the salience hierarchy; 3) the higher an identity in the salience hierarchy (identity with parents' value of college education), the higher the probability that a person will perceive a given situation as an opportunity to perform in terms of his identity; 4) the higher an identity in the salience hierarchy, the higher the probability that a person will seek out opportunities to perform in terms of that identity (college graduation).

## Summary

It seems that the identification theorists have concentrated on what occurs during the identification process more than what specific conditions are necessary and sufficient in order for identification to occur. However, such assumptions can be extracted from the various theories.

1. The mother is the first significant other. Because of his dependency on her for care, the child becomes attached to her (Elkin, 1960).

2. The child must be dependent upon the parent before identification can occur (Bronfenbrenner, 1960).

3. What the child strives to internalize will depend on the content and clarity of the reciprocal role relationship of which he is a part (Paron in Bronfenbrenner, 1960).

4. The greater the number of roles relating a child and a parent, the stronger the child's identification with the parent will be (Winch in Aldous and Kell, 1961).

5. The amount of affection is related to the degree of similarity (Sears, 1957).

6. Individuals are likely to play the role of or identify with ones whom they perceive as powerful. The child would then identify with the parent who controls his rewards and punishments (Aldous and Kell, 1961).

7. Identification with the father occurs through the mother. Paternal identification is dependent upon the mother's attitude toward the father. Then, if there is a satisfactory climate for identification, the child will internalize cultural norms held by both parents (Slater, 1961).

The above assumptions support the hypothesis that mothers' college attendance has significantly more influence on the child's college graduation than fathers' college attendance.

Assumption seven may explain the hypothesis that a significantly stronger relationship exists between both parents' college attendance and college graduation than either mother's college attendance and

college graduation, father's college attendance and college graduation, or where neither attended college and college graduation.

Sutton-Smith (1964) observed that first-borns more strongly identify with their parents than do later-borns. This is based on Clausen and Williams' assumption (in Kammeyer, 1967) that the amount and intensity of interaction is much more intense between first-borns and parents than later-borns and parents. Not only do first-borns identify more strongly with their parents than later-borns, but first-born girls identify more strongly with their mothers than with their fathers. This again is based on the assumptions of Aldous and Kell (1961), Levy (1969), and Ansbacher and Ansbacher (1956).

Kammeyer's study (1966) supported his hypothesis that first-born girls are more likely to agree with their mother's orientation toward the feminine role than later-born girls.

The following hypotheses are based on the above assumptions:

1. Among students where only the mother went to college, a direct relationship exists between birth order and college graduation.

2. Among students where only the father attended college, no significant relationship exists between birth order and college graduation.

From the above assumptions, it would seem that the interaction effect of mother's college, father's no college, and birth order would bear the same effect as mother's college, father's college, and birth

order. However, it must be remembered that the literature on parental influence suggested that father's college attendance may have an additive effect to mother's college attendance.

In the same way, the hypothesis concerning the interaction effect of parents' college attendance and family size are based on the family size assumptions plus the assumption that the greater number of roles relating a child to a parent, the stronger the child's identification with the parent will be (Winch in Aldous and Kell, 1961).

# CHAPTER III

# METHODOLOGY

## Subjects

The subjects were female freshmen who entered Oregon State University, fall term, 1963. The 1963 matriculating freshman girls were selected because records of graduation from Oregon State University in four, five, and six years were available. The literature indicated that a study of this sort should be conducted over at least a six year period.

Male subjects were not used, as ordinal position, family size and parents' education were not recorded on the official records for the male students.

The records of 828 subjects were used. A total of 343 graduated sometime during the six year period. Of the first-born subjects, 43 percent graduated; 39 percent of the second-borns graduated, 40 percent of the third-borns graduated, and 42 percent of the fourth-borns graduated. According to family size, 43 percent of the one-child families graduated, 43 percent of the two-child families graduated, and 38 percent of the three-child families graduated. Of the four-child families, 43 percent graduated.

Of those students coming from families in which both parents attended college, 51 percent graduated, while 44 percent of the students

graduated who came from families in which only the father attended college. Fourty-five percent of the students graduated who came from families in which only the mother attended college, and 33 percent graduated who came from families in which neither parent attended college. Table 1 shows the breakdown of subjects by birth order, family size, parents' college attendance and college graduation. In the first column, the top number in each cell represents the ordinal position. The lower number denotes family size (i.e., 1/1 indicates that the student was first-born in a one-child family, 1/2 refers to the first-born in a two-child family). Within each cell, Grad represents graduation and Nongrad represents no graduation.

## Procedure

Data for each subject were recorded from the official student personnel data cards. These cards are filed in the Office of the Dean of Students. Identification number, birth order, family size, fathers' college attendance, mothers' college attendance, and graduation in four, five, and six years were obtained. The data were punched on IBM cards, one card per subject.

If any of the data were unknown, the IBM card was coded so. The cards which had data missing were not used in the analysis. Twins, foreign students, those with brothers and sisters from another marriage, and those from five-child families and larger were

Table 1. Breakdown of subjects by birth order, family size, parents' college attendance and graduation.

| Birth Order Within Family Size | FCMC | | FCM$\bar{C}$ | | F$\bar{C}$MC | | F$\bar{C}$M$\bar{C}$ | |
|---|---|---|---|---|---|---|---|---|
| | Grad | Nongrad | Grad | Nongrad | Grad | Nongrad | Grad | Nongrad |
| 1/1 | 13 | 8 | 7 | 9 | 8 | 11 | 12 | 24 |
| 1/2 | 25 | 15 | 12 | 12 | 11 | 11 | 21 | 41 |
| 1/3 | 18 | 16 | 8 | 11 | 2 | 7 | 12 | 26 |
| 1/4 | 10 | 8 | 4 | 6 | 2 | 3 | 4 | 12 |
| 2/2 | 20 | 26 | 11 | 12 | 12 | 12 | 18 | 41 |
| 2/3 | 12 | 19 | 11 | 12 | 4 | 4 | 9 | 30 |
| 2/4 | 11 | 7 | 3 | 6 | 3 | 4 | 10 | 17 |
| 3/3 | 8 | 14 | 5 | 6 | 1 | 2 | 17 | 29 |
| 3/4 | 6 | 3 | 1 | 1 | 1 | 1 | 3 | 8 |
| 4/4 | 3 | 3 | 0 | 3 | 1 | 0 | 4 | 5 |

FC = father's college attendance

F$\bar{C}$ = father's college nonattendance

MC = mother's college attendance

M$\bar{C}$ = mother's college nonattendance

not used. A total of 176 cards were not included in the analysis for various reasons.

## Method of Data Analysis

Since the purpose of this study is to investigate the relationships between the variables birth order, family size and parents' college attendance, and the dependent variable, college graduation, Chi-square tests of independence and analysis of variance were used to analyze the data. The chi-square tests of independence were used to ascertain if the two variables tested were independent of each other. Null hypotheses were established. If the null hypothesis was rejected at the .05 level of significance, it was concluded that the data supported the hypothesis.

The analysis of variance was used to find out the main and interaction effect of birth order, family size and parents' college attendance on college graduation. Since the data were proportions, unbalanced (unequal n in each cell) andhad small n or missing data in some of the cells, a modified version of the General Linear Hypothesis Analysis of Variance Program (BMDO5V) was used. The output of this program included 1) means and standard deviations of the dependent variable and means of the covariates; 2) sums and squares explained by the hypotheses; 3) estimates of regression coefficients; 4) residual sums of squares; 4) F-tests and degrees of freedom; and

6) accuracy coefficients (Yates, 1967, p. 14-1). The reader is referred to Mosteller and Yautz (1961) and Snedecor and Cochran (1967, p. 327-329) for explanations of the Program modification. Table 2 shows the proportions within each cell who graduated from college.

Table 2. Proportions of subjects who graduated from college by birth order, family size, and parents' college attendance.

| Birth Order Within Family Size | FCMC | FCM$\bar{C}$ | F$\bar{C}$MC | F$\bar{C}$M$\bar{C}$ |
|---|---|---|---|---|
| 1/1 | 62 | 44 | 42 | 33 |
| 1/2 | 63 | 50 | 50 | 34 |
| 1/3 | 53 | 42 | 22 | 32 |
| 1/4 | 56 | 40 | 40 | 25 |
| 2/2 | 43 | 48 | 50 | 31 |
| 2/3 | 39 | 48 | 50 | 23 |
| 2/4 | 61 | 33 | 43 | 37 |
| 3/3 | 36 | 45 | 33 | 37 |
| 3/4 | 67 | 50 | 50 | 27 |
| 4/4 | 50 | 0 | 100 | 44 |

# CHAPTER IV

## RESULTS

The general hypotheses were:

1. A positive relationship exists between birth order and college graduation.
2. An inverse relationship exists between family size and college graduation.
3. A positive relationship exists between parents' college attendance and college graduation.

In order to test the three general hypotheses, the 15 specific hypotheses stated in Chapter I were tested.

Hypothesis 1 stated that a direct relationship exists between birth order and college graduation. It was found that of the 389 first-borns, 169 graduated and 220 did not graduate. There were 314 second-borns, of which 124 graduated and 190 failed to graduate. Forty-two of the 106 third-borns graduated and 64 did not graduate. Of the 19 fourth-borns, eight graduated and 11 did not.

In order to test Hypothesis 1, a chi-square test of independence for birth order and college graduation was used. The analysis yielded a $X^2$ value of 1.28 which did not reach the critical value of 7.81 (df = 3) at the .05 level of significance.

The results are shown in Table 3 (Grad denotes graduation from OSU and Nongrad denotes that the student did not graduate from OSU).

Table 3. Chi-square test of independence for birth order and college graduation.

| Birth Order | Grad | Nongrad | Total |
|---|---|---|---|
| First-born | 169 (161.14) | 220 (227.86) | 389 |
| Second-born | 124 (134.07) | 190 (183.93) | 314 |
| Third-born | 42 ( 43.91) | 64 ( 62.09) | 106 |
| Fourth-born | 8 ( 7.87) | 11 ( 11.13) | 19 |
| Total | 343 | 485 | 828 |
| | $X^2 = 1.28$ | $X^2_{.05,3} = 7.81$ | |

Although the results were in the predicted direction, the chi-square test did not support the hypothesis.

In testing for the amount of variance in graduation due to birth order, an analysis of variance was used. The analysis yielded an F value of 8.77, which was slightly smaller than the critical $F_{.05,3,3}$ of 9.28. Therefore, after all the effects of the other variables were excluded, birth order did not explain the variance in graduation at the .05 significance level.

On the basis of the two tests, it can be concluded that there was insufficient evidence to accept Hypothesis 1, although the results were in the predicted direction.

The findings did not support Altus' (1965a, b) predictions that the rate of graduation of first-borns is significantly higher than that of other-borns. However, it may be possible that the small sample size contributed to non-significant results.

Hypothesis 2 stated that an inverse relationship exists between the size of the family and college graduation. There were 92 students who came from one-child families, of which 40 graduated and 52 did not. Three hundred students came from two-child families, of which 130 graduated and 170 did not graduate. One hundred and seven of the 283 students who came from three-child families graduated, while 176 failed to graduate. Of the 153 students who came from four-child families, 66 graduated and 87 did not graduate.

A chi-square test of independence for family size and college graduation yielded a value of 1.28 which was smaller than the critical value of 7.81 (df = 3) at the .05 significance level. Therefore, there was insufficient evidence to support Hypothesis 2 and its predictions. Table 4 shows the results.

Table 4. Chi-square test of independence for family size and college graduation.

| Family Size | Grad | Nongrad | Total |
|---|---|---|---|
| One-child | 40 ( 38.11) | 52 ( 53.89) | 92 |
| Two-child | 130 (124.27) | 170 (175.73) | 300 |
| Three-child | 107 (117.23) | 176 (165.77) | 283 |
| Four-child | 66 ( 63.38) | 87 ( 89.62) | 153 |
| Total | 343 | 485 | 828 |

$X^2 = 1.28$ $X^2_{.05,3} = 7.81$

An analysis of variance yielded an F value of 10.58, which was larger than $F_{.05,3,3} = 9.28$. Therefore, on the basis of this test, it

was concluded that family size significantly affects the rate of graduation from college.

The different results revealed by these two tests can be explained. The chi-square test included the effects of all the other variables while the analysis of variance excluded the effects of all the other variables. Therefore, it is possible that the effects of birth order and parents' college attendance canceled out the effects of family size as shown by the chi-square test. The conclusions will be based, then, upon the results from the analysis of variance.

Elliot (1968) found that an inverse relationship existed between family size and college expectations. The results of the present study would tend to support Elliot's work as well as that of Bayer and Hall (1966). Bayer and Hall found that the educational attainment of the mothers and fathers of both female and male college students was inversely related to family size of origin.

Hypothesis 3 stated that a positive relationship exists between a mother's college attendance and a child's graduation from college. In order to test the hypothesis, a chi-square test of independence for mother's college attendance and the child's graduation from college was used. The results produced a $X^2$ value of 16.15 which was significant beyond the .005 level ($X^2_{.005,1} = 7.88$). Therefore, the results supported the hypothesis that a positive relationship exists between mother's college attendance and college graduation. The

results are reported in Table 5.

Table 5. Chi-square test of independence for mother's college attendance and child's college graduation.

| Mother's College | Grad | Nongrad | Total |
|---|---|---|---|
| MC | 171 (142.92) | 174 (202.08) | 345 |
| $M\bar{C}$ | 172 (200.08) | 311 (282.92) | 483 |
| Total | 343 | 485 | 828 |

$X^2 = 16.15$ $X^2_{.005, 1} = 7.88$

The table shows that out of the 345 students whose mothers attended college (MC), 171 graduated and 174 did not graduate; and of the 483 students whose mothers did not attend college ($M\bar{C}$), 172 graduated while 311 failed to graduate.

The hypothesis was also tested by means of an analysis of variance. After excluding the effects of all the other variables, the test yielded an F value of 14.08 which was larger than the critical $F_{.05, 1, 3}$ of 10.13.

Both tests supported the hypothesis that there is a significant relationship between a mother's college attendance and a child's graduation from college.

The results supported Medsker and Trent's (1967) study at the University of California, Berkeley. They found that mother's education influenced the college attendance and college graduation of the child.

Hypothesis 4 stated that there is a positive relationship between a father's college attendance and a child's graduation from college. A $X^2$ test was used to test the hypothesis. Of the 385 students whose fathers attended college (FC), 188 graduated and 197 did not graduate. Of the 443 students who came from families in which their fathers did not attend college ($F\bar{C}$), 155 graduated and 288 did not graduate. The test yielded significant results with a $X^2 = 16.26$ which was significant beyond the .005 level. The data are reported in Table 6.

Table 6. Chi-square test of independence for father's college attendance and child's college graduation.

| Father's College | Grad | Nongrad | Total |
|---|---|---|---|
| FC | 188 (159.49) | 197 (225.51) | 385 |
| $F\bar{C}$ | 155 (183.51) | 288 (259.49) | 443 |
| Total | 343 | 485 | 828 |
| | $X^2 = 16.26$ | $X^2_{.005, 1} = 7.88$ | |

While excluding the effects of all the other variables, the analysis of variance yielded a value of 2.5 which was not significant at the .05 level ($F_{.05, 3, 3} = 10.13$). However, when the effects of the other variables were included in the analysis, an F value of 4.94 was obtained and was significant at the .01 level. A possible explanation for this inconsistency is that although the variance in graduation from college seems to be explained by fathers' college attendance from the results of the chi-square test and the second analysis of variance, it

can in fact be explained by some hidden effects as shown by the results of the first analysis of variance.

Another possible explanation is found within the computer program itself. The square root transformations (correction for unequal n) and arcsin transformations (for binomial proportions) were made on the basis of the n in each cell of the ten by four model (Table 1) rather than on the basis of a collapsed model (e. g., Table 6) (Snedecor and Cochran, 1967, p. 327-329; Mosteller and Yautz, 1961). Therefore, the results are considered inconclusive.

Hypothesis 5 stated that a mother's college attendance has significantly more influence on a child's graduation from college than a father's college attendance. The chi-square technique was used to test the independence of mother's and father's college attendance and college graduation of the child. Table 7 shows that 140 students came from families in which only the fathers attended college ($FCM\bar{C}$) and 100 students came from families in which only the mothers attended college ($F\bar{C}MC$). Of the 140, 62 graduated and 78 did not graduate, while 45 of the 100 students graduated and 55 failed to graduate.

The $X^2$ value of .03 was nonsignificant since it did not reach the critical $X^2$ value of 3.84 at the .05 level. Therefore, there was insufficient evidence to support Hypothesis 5.

These results are supported by the work of Sewell and Shah

Table 7. Chi-square test of independence for mother's college attendance, father's college attendance and child's college graduation.

| Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| $FCM\bar{C}$ | 62 (62.42) | 78 (77.58) | 140 |
| $F\bar{C}MC$ | 45 (44.58) | 55 (55.42) | 100 |
| Total | 107 | 133 | 240 |
| | $X^2 = .03$ | $X^2_{.05,1} = 3.84$ | |

(1968). They found that for both males and females, individually, the education level of one parent did not have any stronger influence than the education level of the other parent.

In order to test Hypothesis 6 which stated that a relationship exists between both parents' college attendance and a child's graduation from college, a chi-square test was used. The results are recorded in Table 8.

Table 8. Chi-square test of independence for both parents' college attendance and child's college graduation.

| Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| FCMC | 126 ( 98.33) | 119 (146.67) | 245 |
| $F\bar{C}M\bar{C}$ | 110 (137.67) | 233 (205.33) | 343 |
| Total | 236 | 352 | 588 |
| | $X^2 = 22.30$ | $X^2_{.005,1} = 7.88$ | |

Of the 245 students whose parents attended college, 126 graduated and 119 did not. Of the 343 students who came from families in

which neither parent attended college, 110 graduated while 233 failed to graduate. The test was highly significant beyond the .005 level ($X^2 = 22.30$ compared to $X^2_{.005, 1} = 7.88$).

An analysis of variance which excluded the effect of all the other variables, yielded an F value of 38.70 which was significant beyond the .01 level ($F_{.01, 1, 3} = 34.12$). Both tests supported Hypothesis 6.

The present results supported Sewell and Shah's (1968) research as well as that of Richmond (1969), who found that one of the factors which was associated with continuance on to graduation was the education of the parents. Sewell and Shah concluded from their findings that the higher the level of parents' education considered jointly, the greater the proportion of males and females who planned on college, attended college and graduated from college. But, they found a negligible effect of interaction between fathers' education and mothers' education. This was in direct contrast to the present results which showed very strong effect of the interaction of fathers' education and mothers' education on college graduation.

Hypothesis 7 was tested by means of three chi-square tests of independence. The hypothesis stated that a significantly stronger relationship exists between both parents' college attendance (FCMC) and a child's graduation from college than between a mother's college attendance ($F\bar{C}MC$) and a child's graduation from college; a significantly stronger relationship exists between a mother's college

attendance ($F\bar{C}MC$) and a child's graduation from college than between a father's college attendance ($FCM\bar{C}$) and a child's graduation from college; and a significantly stronger relationship exists between a father's college attendance ($FCM\bar{C}$) and a child's graduation from college. The results are reported in Tables 9, 10, and 11.

Of the 245 students who came from families in which both parents attended college (FCMC), 126 graduated while 119 did not graduate.

Of the 100 students who came from families in which only the mother attended college ($F\bar{C}MC$), 45 graduated and 55 did not. There were 140 students who came from families where only the father attended college ($FCM\bar{C}$) of which 62 graduated and 78 did not. One hundred and ten students graduated and 233 did not graduate of the 343 students who came from families where neither parent attended college ($F\bar{C}M\bar{C}$).

The $X^2$ value for the first sub-hypothesis was 1.17 which was less than $X^2_{.05,\,1} = 3.84$. The second sub-hypothesis was also not supported as the $X^2$ value of .03 was smaller than the critical value of 3.84 (df = 1) at the .05 significance level. However, the third sub-hypothesis was accepted at the .01 level as the $X^2$ value of 6.46 exceeded the $X^2_{.025,\,1} = 5.02$.

It can be said that college attendance by both parents does not influence a child's college graduation any more than mother's college attendance alone, as shown in Table 9; that when parents' education

Table 9. Chi-square test of independence for both parents' college attendance and child's college graduation and mother's college attendance and child's college graduation.

| Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| FCMC | 126 (121.43) | 119 (123.36) | 245 |
| $F\bar{C}MC$ | 45 ( 49.57) | 55 ( 50.64) | 100 |
| Total | 171 | 174 | 345 |

$X^2 = 1.17$ $X^2_{.05,1} = 3.84$

Table 10. Chi-square test of independence for mother's college attendance and child's college graduation and father's college attendance and child's college graduation.

| Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| $F\bar{C}MC$ | 45 (44.58) | 55 (55.42) | 100 |
| $FCM\bar{C}$ | 62 (62.42) | 78 (77.58) | 140 |
| Total | 107 | 133 | 240 |

$X^2 = .03$ $X^2_{.05,1} = 3.84$

Table 11. Chi-square test of independence for father's college attendance and child's college graduation and parents' college nonattendance and child's college graduation.

| Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| $FCM\bar{C}$ | 62 ( 49.86) | 78 ( 90.14) | 140 |
| $F\bar{C}M\bar{C}$ | 110 (122.14) | 233 (220.86) | 343 |
| Total | 172 | 311 | 483 |

$X^2 = 6.46$ $X^2_{.025,1} = 5.02$

differ, each has equal effect on his child's propensity to graduate from college (Table 10); and if the father has gone to college, there is a higher probability of the child graduating than if neither parent attended college (Table 11).

The findings from the test of Hypothesis 7 supported Sewell's (1968) study which concluded that the effects of a mother's college attendance on college graduation were not significantly different from the effects of a father's college attendance. What is important to the student's college graduation is that at least one parent attended college.

Hypothesis 8 stated that among students who came from families in which both parents attended college, a direct relationship exists between birth order and a child's graduation from college. In order to test this hypothesis, a $X^2$ test of independence was used. The data are recorded in Table 12.

Of the 113 first-born students, 66 graduated and 47 did not; of the 95 second-born students 43 graduated and 52 failed to graduate. Fourteen out of 31 third-borns graduated while 17 did not graduate. There were six fourth-borns of which three graduated and three did not graduate. The $X^2$ value of 4.14 was not significant at the .05 level ($X^2_{.05, 3} = 6.25$). It can be concluded that there was insufficient evidence to support Hypothesis 8.

Hypothesis 9 stated that among students whose parents did not

Table 12. Chi-square test of independence for birth order within parents' college and child's college graduation.

| Birth Order Within Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| FCMC First-born | 66 (58.11) | 47 (54.89) | 113 |
| FCMC Second-born | 43 (48.86) | 52 (46.14) | 95 |
| FCMC Third-born | 14 (15.94) | 17 (15.06) | 31 |
| FCMC Fourth-born | 3 ( 3.09) | 3 ( 2.91) | 6 |
| Total | 126 | 119 | 245 |

$X^2 = 4.14$ $X^2_{.05,3} = 7.81$

attend college, no significant relationship exists between birth order and a child's graduation from college. A chi-square test was used in order to test the above hypothesis. The results are recorded in Table 13.

Table 13. Chi-square test of independence for birth order within parents' college nonattendance and child's college graduation.

| Birth Order Within Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| $F\bar{C}M\bar{C}$ First-born | 49 (48.75) | 103 (103.25) | 152 |
| $F\bar{C}M\bar{C}$ Second-born | 37 (40.09) | 88 ( 84.91) | 125 |
| $F\bar{C}M\bar{C}$ Third-born | 20 (18.28) | 37 ( 38.72) | 57 |
| $F\bar{C}M\bar{C}$ Fourth-born | 4 ( 2.89) | 5 ( 6.11) | 9 |
| Total | 110 | 233 | 343 |

$X^2 = 1.22$ $X^2_{.05,3} = 7.81$

Of the 152 first-borns, 49 graduated and 103 did not. Of the 125 second-borns, 37 graduated and 88 failed to graduate. Fifty-seven were third-born of which 20 graduated and 37 did not. Of the nine fourth-borns, four graduated while five failed to graduate.

The chi-square test yielded a value of 1.22 which was not significant ($X^2_{.05, 3} = 6.25$). Therefore, it can be concluded that there is no significant relationship between birth order within parents' college nonattendance and a child's graduation from college.

Hypothesis 10 stated that among students who came from families in which only the mother attended college, a direct relationship exists between birth order within mother's college attendance and a child's graduation from college. To test the hypothesis, a $X^2$ test of independence was used. Of the 55 first-borns, 23 graduated and 32 did not; of the 39 second-borns, 19 graduated and 20 did not; of the five third-borns, two graduated and three did not, and the only fourth-born student graduated.

As shown in Table 14, the hypothesis was not accepted because the obtained $X^2$ value (1.78) did not reach the $X^2_{.05, 3} = 7.81$. The results from the analysis of variance ($F = 1.72 < F_{.05, 3, 3} = 9.28$) did not support the hypothesis. It can be concluded that no relationship exists between birth order within mother's college attendance and a child's graduation from college.

Hypothesis 11 was also tested by means of a chi-square test for

Table 14. Chi-square test of independence for birth order within mother's college and child's college graduation.

| Birth Order Within Mother's College | Grad | Nongrad | Total |
|---|---|---|---|
| $F\bar{C}MC$ First-born | 23 (24.75) | 32 (30.25) | 55 |
| $F\bar{C}MC$ Second-born | 19 (17.55) | 20 (21.45) | 39 |
| $F\bar{C}MC$ Third-born | 2 ( 2.25) | 3 ( 2.75) | 5 |
| $F\bar{C}MC$ Fourth-born | 1 ( .45) | 0 ( .55) | 1 |
| Total | 45 | 55 | 100 |
| | $X^2 = 1.78$ | $X^2_{.05,3} = 7.81$ | |

independence, and analysis of variance. It stated that among students who came from families in which only the father attended college, no significant relationship exists between birth order and a child's graduation from college. The chi-square test yielded a value of 2.45 which was not significant at the .05 level ($X^2_{.05,3} = 7.81$). The analysis of variance yielded a value of 1.98 which was less than the critical $F_{.05,3,3}$ value of 9.28. Therefore, it is concluded that there is no significant relationship between birth order within father's college attendance and a child's graduation from college.

Table 15 shows that of the 69 first-borns, 31 graduated and 38 did not; of the second-borns, 25 graduated and 30 did not; of the 13 third-borns, six graduated while seven failed to graduate; and none of the three fourth-borns graduated.

The results of the tests for Hypotheses 8, 9, 10, and 11 indicated that the assumptions underlying the hypotheses are questionable.

Table 15. Chi-square test of independence for birth order within father's college attendance and child's college graduation.

| Birth Order Within Father's College | Grad | Nongrad | Total |
|---|---|---|---|
| FCMC̄ First-born | 31 (30.56) | 38 (39.44) | 69 |
| FCMC̄ Second-born | 25 (24.35) | 30 (30.65) | 55 |
| FCMC̄ Third-born | 6 ( 5.76) | 7 ( 7.24) | 13 |
| FCMC̄ Fourth-born | 0 ( 1.33) | 3 ( 1.67) | 3 |
| Total | 62 | 78 | 140 |

$X^2 = 2.45$ $X^2_{.05,3} = 7.81$

Although research data have indicated that children identify with their parents and females identify with their mothers, the assumed conditions under which the internalization of attitudes takes place do not hold for internalization of parental attitudes toward college graduation. The results indicated that birth order within college attendance of parents (FCMC, FC̄MC, FCMC̄) and a child's graduation from college are independent phenomena.

Hypothesis 12 stated that among students who came from families in which both parents attended college, an inverse relationship exists between family size and a child's graduation from college. The hypothesis was tested by means of a chi-square test of independence.

Table 16 shows the breakdown of those who graduated versus those who did not graduate for each family size within both parents' college attendance (FCMC). Of the 21 students who came from one-child families, 13 graduated while eight failed to graduate; of the 86

Table 16. Chi-square test of independence for family size within parents' college attendance and child's college graduation.

| Family Size Within Parents' College | Grad | Nongrad | Total |
|---|---|---|---|
| FCMC One-child | 13 (10.80) | 8 (10.20) | 21 |
| FCMC Two-child | 45 (44.23) | 41 (41.77) | 86 |
| FCMC Three-child | 38 (44.74) | 49 (42.26) | 87 |
| FCMC Four-child | 30 (26.23) | 21 (24.77) | 51 |
| Total | 126 | 119 | 245 |

$X^2 = 4.17$ $X^2_{.05,3} = 7.81$

students who came from two-child families, 45 graduated and 41 did not; of the 87 students who came from three-child families, 38 graduated while 49 did not, and 30 students who came from the 51 four-child families graduated while 21 failed to graduate.

The chi-square test yielded a value of 4.17 which was less than $X^2_{.05,3} = 7.81$. Therefore, the hypothesis was not supported.

Hypothesis 13 was tested by means of a chi-square test. It stated that no relationship exists between family size within parents' college nonattendance and a child's graduation from college. Table 17 shows the results.

Of the 36 students who came from one-child families, 12 graduated while 24 did not; of the 121 who came from two-child families, 39 graduated and 82 did not; of the 123 students who came from three-child families, 38 graduated while 85 did not, and of the 63 who came from four-child families, 21 graduated while 42 did not graduate.

Table 17. Chi-square test of independence for parents' college nonattendance and child's college graduation.

| | Grad | Nongrad | Total |
|---|---|---|---|
| $F\bar{C}M\bar{C}$ One-child | 12 (11.55) | 24 (24.45) | 36 |
| $F\bar{C}M\bar{C}$ Two-child | 39 (38.80) | 82 (82.20) | 121 |
| $F\bar{C}M\bar{C}$ Three-child | 38 (39.45) | 85 (83.55) | 123 |
| $F\bar{C}M\bar{C}$ Four-child | 21 (20.20) | 42 (42.80) | 63 |
| Total | 110 | 233 | 343 |

$X^2 = .15$ $X^2_{.05,3} = 7.81$

The chi-square value equaled .15 which was not significant at the .05 level ($X^2_{.05,3} = 7.81$). Therefore, it was concluded that no significant relationship exists between family size within parents' college nonattendance and college graduation.

A chi-square test of independence and analysis of variance were used to test the relationship between family size within mother's college attendance and college graduation (Hypothesis 14). Table 18 shows the results.

There were 19 students who came from one-child families of which eight graduated and 11 did not. Of the 46 students who came from two-child families, 23 graduated and 23 failed to graduate. Of those 20 who came from three-child families, seven graduated and 13 failed to graduate, while seven of the 15 who came from four-child families graduated and eight did not graduate.

The chi-square test yielded a value of 1.35 which was less than

Table 18. Chi-square test of independence for family size within mother's college attendance and child's college graduation.

| Family Size Within Mother's College | Grad | Nongrad | Total |
|---|---|---|---|
| $F\bar{C}MC$ One-child | 8 ( 8.55) | 11 (10.45) | 19 |
| $F\bar{C}MC$ Two-child | 23 (20.70) | 23 (25.30) | 46 |
| $F\bar{C}MC$ Three-child | 7 ( 9.00) | 13 (11.00) | 20 |
| $F\bar{C}MC$ Four-child | 7 ( 6.75) | 8 ( 8.25) | 15 |
| Total | 45 | 55 | 100 |

$X^2 = 1.35$ $X^2_{.05, 3} = 7.81$

the critical value of 7.81 ($X^2_{.05, 3}$). The analysis of variance yielded a value of .59 which was not significant at the .05 level ($F_{.05, 3, 3} = 9.28$). Therefore, the hypothesis was not supported. It was concluded that no relationship exists between family size within mother's college attendance and a child's graduation from college.

The last hypothesis was also tested by means of a chi-square test of independence and analysis of variance. The results of the chi-square test are recorded in Table 19.

The hypothesis stated that among students who came from families in which only the father attended college, no significant relationship exists between family size and a child's graduation from college.

Of the 16 students who came from one-child families, seven graduated and nine did not; of those 47 who came from two-child families, 23 graduated and 24 failed to graduate; of those 53 who came

Table 19. Chi-square test of independence for family size within father's college attendance and child's college graduation.

| Family Size Within Father's College | Grad | Nongrad | Total |
|---|---|---|---|
| FCMC̄ One-child | 7 ( 7.09) | 9 ( 8.91) | 16 |
| FCMC̄ Two-child | 23 (20.81) | 24 (26.19) | 47 |
| FCMC̄ Three-child | 24 (23.47) | 29 (29.53) | 53 |
| FCMC̄ Four-child | 8 (10.63) | 16 (13.37) | 24 |
| Total | 62 | 78 | 140 |

$X^2 = 1.59$ $X^2_{.05,3} = 7.81$

from three-child families, 24 graduated while 29 failed to graduate, and of the 24 students who came from four-child families, eight graduated while 16 did not graduate.

The chi-square value was 1.59 which was less than $X^2_{.05,3} = 7.81$. The F value was 1.33 which was not significant at the .05 level ($F_{.05,3,3} = 9.28$). Therefore, it was concluded that no significant relationship exists between family size within father's college attendance and a child's graduation from college.

As was the case with Hypotheses 8, 9, 10, and 11, the results indicated that the assumptions which underlie Hypotheses 12, 13, 14, and 15 are questionable. Even though research indicated that identification is dependent on such conditions as family size, the students' identification of parental values regarding college, graduation from college, seems to be dependent on other conditions besides family size and birth order.

A possible explanation for the negative results of Hypotheses 8, 10, 12, and 14 is that birth order and family size were treated as two main effects, rather than as a nested main effect. However, an F value for birth order nested within family size (e.g., 1/1, 1/2, 1/3) was 4.61. This was slightly lower than the critical $F_{.05, 6, 3} = 4.76$. Therefore, it was concluded that birth order nested within family size did not explain the variation in college graduation.

# CHAPTER V

# SUMMARY AND CONCLUSIONS

## Summary

The purpose of this study was to investigate the relationships that were hypothesized to exist between the variables birth order, family size, and parents' college attendance and the dependent variable, college graduation. The three general hypotheses were:

1. A positive relationship exists between a given position in birth order and college graduation.
2. An inverse relationship exists between a given family size and college graduation.
3. A positive relationship exists between a given status of parents' college attendance and college graduation.

The 828 subjects were female freshmen who entered Oregon State University, fall term, 1963. Excluded from the study were all subjects who came from families of more than four siblings. Data for each subject were recorded from the official student personnel data cards.

A series of chi-square tests of independence were performed in order to analyze the relationship between family background variables and college graduation. Analysis of variance was also used in order to find out the main and interaction effects of the family background

variables on college graduation. The following conclusions were made.

1. No relationship exists between birth order and college graduation.
2. An inverse relationship exists between family size and college graduation.
3. A positive relationship exists between a mother's college attendance and a child's graduation from college.
4. The possible relationship which may exist between a father's college attendance and a child's graduation from college is inconclusive.
5. Individually, there is no significant difference between the effects of a mother's and father's college attendance on a child's graduation from college.
6. A positive relationship exists between both parents' college attendance and a child's graduation from college.
7. Individually, a mother's college attendance has as much influence on a child's graduation from college as when college attendance by both parents is considered jointly.
8. When parents' education differs, each has equal influence on their child's propensity to graduate from college.
9. If one parent has attended college, there is a higher probability of a child graduating than if neither parent attended college.

10. Among students who came from families in which both parents attended college, no relationship exists between birth order and the student's graduation from college.
11. Among students who came from families in which neither parent attended college, no relationship exists between birth order and the student's college graduation.
12. Among students who came from families in which only the mother attended college, no relationship exists between birth order and the student's college graduation.
13. Among students who came from families in which only the father attended college, no relationship exists between birth order and the student's graduation from college.
14. Among students who came from families in which both parents attended college, no relationship exists between family size and the student's college graduation.
15. Among students who came from families in which neither parent attended college, no relationship exists between family size and the student's graduation from college.
16. Among students who came from families in which only the mother attended college, no relationship exists between family size and the student's college graduation.
17. Among students who came from families in which only the father attended college, no relationship exists between family

size and the student's graduation from college.

Figure 1, page 93[1], contains a graphical representation of the possible main and interaction effects of mother's college attendance, father's college attendance, birth order and family size on a child's graduation from college. Each variable is divided into the levels of control (i.e., first-born, second-born). The dotted lines show the possible interactions; the dot and dash line represents the significant interaction which was found in the analysis. The asterisks denote significant main effects which were found in the analysis.

This type of diagram is useful because of "its compactness and visual effects" (Inoue, 1970). It should be kept in mind that although the analysis of variance tested for the interaction effect of father's college attendance and mother's college attendance, father's college attendance and family size, father's college attendance and birth order, mother's college attendance and family size, mother's college attendance and birth order, and the nested effect of birth order within family size, the computer program was not able to test for third order interactions (i.e., the interaction effect of father's college attendance, mother's college attendance and family size) because of the design matrix. Therefore, all of the possible interactions shown in the

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[1] This is a modification of the diagram which was presented by Michael S. Inoue, Professor of Industrial Engineering at Oregon State University as an example of the use of the *NANOVA program in a paper presented at the Industrial Engineering Conference, June 1970.

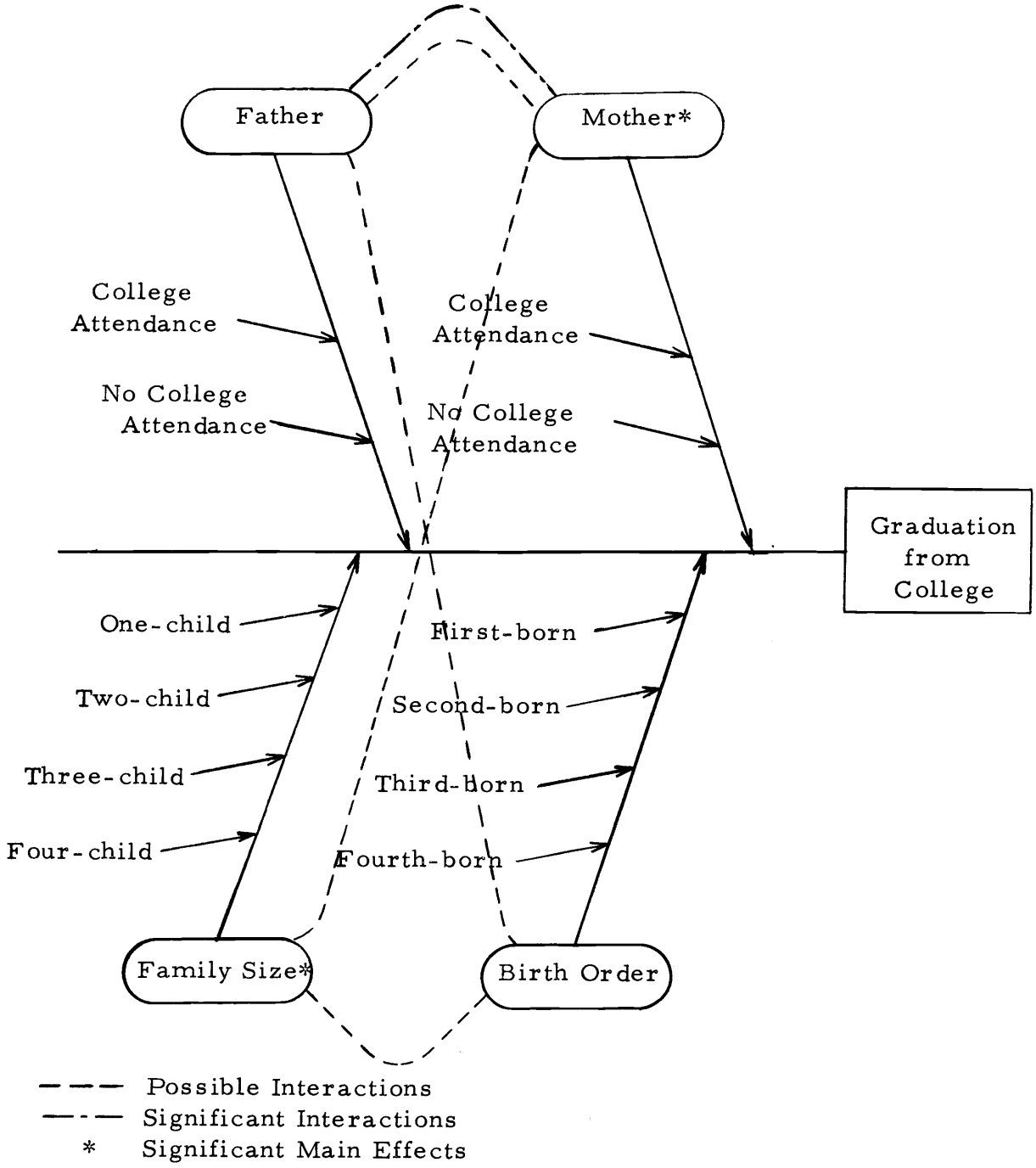


Figure 1. Cause and effect diagram for the study of the effects of family background variables on college graduation.

diagram were not tested.

## Discussion and Implications for Further Research

Before the findings of the test of Hypothesis 1 are rejected, tests should be run on larger samples of both males and females.

From testing the second hypothesis, it was found that an inverse relationship exists between family size and college graduation. These findings supported Bossard's (1953) family size theory. Bossard described the small family's attitudes toward education. The main objectives in education are focused upon "status-achieving and promoting possibilities" and preparation for future careers (p. 85). Other factors such as individual attention, a cooperative relationship between parent and child, freedom and democracy of expression, "protected competition," and high level of parental expectations may contribute to the relationship between family size and a child's graduation from college.

The conclusions from the test results of Hypothesis 3 stated that a relationship exists between mother's college attendance and a child's graduation from college. This supported Levy's (1969) assumptions regarding the mother's influence on a girl's attitude and value development.

1. The steepest part of the learning curve for all individuals is to be found in the first three to five years of life.
2. From birth to roughly age three, the overwhelming majority

of all infants are reared under the direct supervision of and in direct contact with females, especially adult ones.

3. The vast majority of all females continue under the direct supervision of and are in daily contact with older females usually older members of their families (p. 336-337).

Medsker and Trent's (1969) research findings also indicated mother's education was a major factor in academic motivation.

The findings from the fourth hypothesis were inconclusive because of the method of testing used. Therefore, it is suggested that these results remain inconclusive until other tests can be conducted on this data as well as on a larger sample.

It seems that the conclusions which were made on the basis of testing Hypothesis 5 contradict the conclusions of Hypothesis 4. However, Hypothesis 5 which stated that mother's college attendance has significantly more influence on college graduation than father's college attendance, was tested by means of a chi-square test which did not exclude the effects of the other variables. Therefore, it cannot be concluded from Hypotheses 3 (a significant relationship exists between mother's college attendance and a child's graduation from college) and 5 (individually, there is no significant difference between mother's and father's college attendance and a child's graduation from college) that Hypothesis 4 is supported.

Conclusions from the test results of Hypothesis 6 supported research findings of Krauss (1954). He found that in middle class families, the effects of the mother's education were almost identical to

those of the father's education if the amount of education was equal (i. e., both attended college or neither attended college). Medsker and Trent's (1967) study also revealed that parents' education was important in determining who graduates from college.

An explanation could be simply that one or both parents encourage and expect their children to graduate from college if one or both have attended college. However, this explanation does not take into account those parents who have not attended college but who encouraged their children to attend college (and graduate) as a means of upward mobility.

From the test results of Hypothesis 7, three conclusions were made: 1) individually, mothers' college attendance has as much influence on a child's graduation from college as when the college attendance of both parents is considered jointly; 2) when parents' education differ, each has equal influence on their child's propensity to graduate; 3) if one parent has attended college, there is a higher probability of the child graduating than if neither parent attended college.

As mentioned in Chapter IV, Sewell's research findings (1968) supported the above conclusions. It seemed that the important factor which affects a child's propensity to graduate is that at least one parent has attended college. The tests of the subhypotheses of Hypothesis 7 seemed to cast doubt on the female identification

assumptions. The results indicated other explanations are necessary.

The test results of Hypotheses 8 through 13 suggested several possibilities: 1) the conditions under which identification takes place are different from those established in Chapter II, and/or 2) the conditions under which children identify with their parents' attitudes of college graduation are different than the conditions established in Chapter II, and/or 3) a child's graduation from college cannot be used as a measure of identification with parental values, and/or 4) parents' college attendance is an indicator of something else, such as socio-economic status, or both may be indicators of other phenomena. Bogue (1968) suggested that educational and socio-economic background of parents may not be directly utilized to identify nonpersisting students or those who persist on to graduation; that parental education and occupation may influence students in more subtle ways which may be difficult to measure.

For future research which might shed light on the present conclusions, tests should be conducted on a larger sample of female freshmen from other years besides 1963. The particular sample of females may not be representative of the students who matriculate in other years. Also, a larger sample may significantly change the present results.

An analysis of variance should be used which includes models of square root and arcsin transformation for each hypothesis tested. This

will give more accurate results than the way the present analysis of variance was designed.

Another possibility is to randomly select equal n for each cell from an extremely large sample. A large sample is necessary as the size of the n will be based on the cells containing the smallest n. Some of the cells will be small since the data is peculiar in that as one goes further down the order of birth and size of family, the number of students who attend college becomes smaller.

Other factors which could be tested in the future as to their contributions to identification theory are spacing and sex of siblings (i.e., the sex of the older and younger siblings and the number of years between each sibling).

Other factors which might be of value for future studies regarding college graduation are socio-economic status, intelligence or ability, personal motivation, sex, and working-mother status. Students who transfer to other colleges and universities should also be studied.

There is much to be done to solve the problem of college attrition. One must begin by tackling a small part of it. This study as well as the research reviewed in Chapter II revealed that family background helps determine a student's probability of graduating from college.

The information obtained from this study should be of interest to college administrators, educators and counselors. Two questions

arise: should the university adopt a tighter screening process in order to eliminate the potential nongraduating types or should the educational standards be lowered in order to "provide more degrees"? Neither is necessary if the relationships between family background variables and college graduation are understood and steps are taken to compensate for the negative effect some variables have had on the nongraduating types. This might include the development of programs which would alleviate or prevent the negative effects family background might have on a student's academic motivation. Taking action when a student enters college is probably too late. It seems that programs of this type should be available for children when they are of pre-school age. This is a practical problem for both educators and counselors.

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