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A PATH MODEL FOR BLACK AND WHITE EDUCATIONAL ACHIEVEMENT

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# A PATH MODEL FOR BLACK AND WHITE EDUCATIONAL ACHIEVEMENT

by

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Abstract

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Adviser: Lindsey Churchill

This research is an attempt to further develop intergenerational research in educational achievement by refining the "Wisconsin Model of Socioeconomic Achievement." The data source was the 1972 wave of the "Panel Study of Income Dynamics" (popularly known as the "5,000 Families") collected by the Survey Research Center of the University of Michigan. This data, which contained families originally sampled and "spin-off" families that were created by the establishment of a new family by a member of a sample family, was reprogrammed so that the parental characteristics were linked with those of their offspring. The subsample was of all spin-off male heads under twenty-six who had a parental family sampled in 1972. The subsample is small and potentially unrepresentative, caution should be applied in generalization from the findings of this research.

Path analysis was used as the analytic device because it permits the calculation of both indirect and direct

effects in time-ordered data and because it replicates the technique used by other researchers in the "Wisconsin model."

The "Wisconsin model" was developed to explore variables that would provide interpretive links between parental social statuses and offspring statuses. Earlier research has used educational aspirations, career aspirations, school grades, and disciplinary problems. The model is rooted in "symbolic interactionist theory" by the notion that behavior is, at least partially, the outcome of the perception one has of one's self based upon interactions with others. Previous research has demonstrated, however, that these self-perceptions are less important than structural variables such as socio-economic background and evaluation by gatekeeping institutions.

This research attempted to use more refined social-psychological measures of both parents and offspring as interpretive variables. Achievement motivation (nAch) was measured with a survey scale developed by the Survey Research Center. Other interpretive variables were: offspring I.Q., parental desires for their offsprings' education, number of siblings, parental occupation, parental education, parental I.Q., and parental nAch. Race was the only purely exogenous variable.

About 40 percent of the variance in offspring educational achievement was explained. The variables which had influence (in declining order of total effect) were: parental education, parental education desires, offspring nAch, parental I.Q., race, parental occupation, number of siblings, and parental nAch. Offspring I.Q. had a spurious relationship with offspring educational achievement.

This research indicates that parental characteristics seem to have strong influences on offspring educational achievement. Unlike earlier research on similar path models, however, the model developed in this dissertation is not characterized by a few clear, strong paths of influence. Instead, this model shows many influences, direct and indirect, but the pattern they follow seems relatively clear. First, parental characteristics that are obviously "educational" (parental education, parental desires for their offsprings' education, and parental I.Q.) tend to influence offspring education the most and their influence is (except for that of parental I.Q.) direct. Parental characteristics that are not so obviously educational (parental occupation, parental nAch, and number of siblings) tend to be less influential and mostly indirectly, operating through interpretive variables. Secondly, the offspring characteristics that were expected to be interpretive, offspring I.Q. and offspring nAch, do not fill this function well. Offspring I.Q.'s strong zero-order correlation with educational achievement was found to be spurious. Offspring nAch, in contrast, is the third most influential variable on educational achievement, but largely independently rather than interpretively, because it is so little explained by antecedent variables. The conclusion, then, is that the higher potential educational achievement is and the stronger the aspirations they have for their offspring, the more education the offspring is likely to achieve. The model is

unable to explain this linkage but it seems it is not very much through a generalized need for achievement or through the greater resources that a family with few offspring or high occupational position is likely to have.

Race has only small, indirect effects on educational achievement but these small effects are cumulative, making race the fifth most influential variable on educational achievement. Black parents tend to have lower educational achievement, measured I.Q., and less prestigious occupations. Their offspring tend to have less achievement motivation and more siblings. All of these characteristics lead to lower educational achievement. That all of the influence of race was indirect suggests that "overt" forms of discrimination are not very important in explaining the difference in black-white educational achievement levels.

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# CHAPTER I

## INTRODUCTION

In an influential essay in 1968, Rossi and Blum lament the lack of systematic surveys of the poor. Those studies that were often cited, according to Rossi and Blum, were based upon small sample sizes or were inherently imprecise because of their qualitative character. Perhaps especially important was the lack of studies of intergenerational continuity so that it was quite impossible to discover whether poverty and the attitudes that conventional sociology attributed to it were likely to be inherited by succeeding generations. Rossi and Blum's remark, made of the "culture of poverty" debate, could have referred to any socioeconomic level in American society, for most research in stratification had concentrated on "mobility rates" and societal causes of differing mobility rates rather than the factors that cause mobility (or the lack of it) on an individual level.

To a considerable extent, this is no longer the case; research stimulated by the path model developed by Peter Blau and Otis Dudley Duncan in American Occupational Structure has led to wide use and acceptance of an elaboration of that model, the "Wisconsin Model of

Socioeconomic Achievement" proposed by Sewell, Haller and Portes (1969). This dissertation is an attempt to further develop the Wisconsin model by improving several features of it. In this introduction, the context of research on achievement is discussed and some of the problems that exist in recent research (particularly the "Wisconsin Model") are noted. Finally, the features of this dissertation that are directed at these problems are noted.

Recent interest in the causes of mobility and achievement seem intrinsically related to the "War on Poverty" of the mid-1960's. As researchers from opposite ends of the political spectrum, Frances Fox Piven (1968) and Daniel Moynihan (1969) point out, the origins of the programs that made up this "war" are complex and closely related to the political needs and visions of the participants. The necessity to justify policy led to sharp conflict among social scientists as whether the "causes" of poverty are "cultural" or "structural." To oversimplify (almost to the level of parody), "cultural" theorists contended that the poor had developed a style of life adaptive to poverty with appropriate beliefs, attitudes, and values that were transmitted intergenerationally. In contrast, "structural" theorists emphasized the constraints that the social structure imposed on the poor and how the adoptions and their appropriate beliefs, attitudes, and values were recreated in each generation as its members had to confront the same social situation as their parents. Each theory

would lead to a radically different strategy in the "War on Poverty." As Rossi and Blum point out, however, there were few means to choose between the theories because research on the subject had been largely unsystematic and/or qualitative and perhaps unrepresentative. Quantitative techniques that were more effective in uncovering causal processes were limited in their usefulness because of the large number of variables involved and the likelihood of spurious relationships.

Path analysis, with its ability to suggest causal relationships among several time-ordered variables, provided an escape from this dilemma, and Blau and Duncan's American Occupational Structure provided the first demonstration of the effectiveness of the technique in analyzing this problem. Blau and Duncan's key finding, however, that fathers' social characteristics influenced their son's occupational achievement mostly through influencing their educational achievement rather than directly, raised additional questions of how this occurred. Plausible alternate explanations include: the use of the differential economic resources to permit more education, differential skills useful in school that different class environments provided, and different attitudes and personality features that different class environments encouraged.

Sewell et al.'s "Wisconsin Model" was an attempt to address these competing hypotheses by disclosing the interpretive variables between parental statuses and offspring

occupational and educational achievement. They attempted to demonstrate that the linkage was formed by "ambition," which in turn was influenced by "significant others' influence" (parents, teachers, and peers) and academic performance to that time. As analyzed in the "Review of the Literature" chapter, Sewell et al. were highly successful but their work has serious operational flaws. Replications and extensions of this model, including this dissertation, have attempted to correct these flaws by more precisely operationalizing the interpretive variables and by attempting to identify further interpretive variables that make the link between parental status and offspring achievement. In this process researchers have shifted to an emphasis on the process of educational rather than occupational achievement, largely because the respondents have usually been too young to have reached the peak of their careers.

It is impossible to consider stratification and mobility in American society without analyzing the impact of race. Developments of the "Wisconsin Model" have attempted various strategies to incorporate race and this dissertation uses one of them which is to use race as a "dummy" antecedent variable. Unfortunately, as the dummy variable had to be dichotomized, only two racial groups, whites and blacks, could be analyzed. Also, the data set includes insufficient Hispanic and Asian parent-offspring links to complete similar analysis on these groups.

Mainstream sociology has tended to eschew complex social psychological measures of states of mind and instead accepts "attitudes" as representative. It is difficult to know, however, how "deeply" this attitude is held--does it act to impel behavior or is it merely verbal conformity to widely recognized norms of what one should do? This dissertation is also an attempt to incorporate a widely researched measure of perception and response to the environment, "achievement motivation," into the "Wisconsin Model." Some of the criticisms discussed of Sewell et al. and others is that their "ambition" measure lacks causal order toward achievement; "achievement motivation," a more generalized attitude, is an attempt to address this issue here.

In summary, this dissertation is an attempt to link these three sociological problems by revision of the "Wisconsin Model": What is the process of achievement?; How does race affect this process?; and Is "achievement motivation" a useful interpretive variable? Five features of this dissertation are designed to permit exploration of these problems. First, in this study real intergenerational data are employed, unlike the subject-reported data about parental characteristics and attitudes used in Sewell et al. and other replications and developments. Second, particular care has been taken to control for time-order problems among the variables that typically plague quasi-experimental research exploring causal processes. Third, the parent's

statuses, characteristics, and values are incorporated as individual variables into the model so that the relative importance of each for their offsprings' educational achievement can be assessed. Fourth, more sophisticated measures of the respondent's and his parent's social characteristics and values are used in the model. Extensive research has been done on "achievement motivation" in social psychology and a variable measuring this value, nAch, has been used as an independent variable (parental nAch) and as an interpretive variable (offspring nAch). Finally, race has been incorporated into the model in an attempt to discover the impact it has on educational achievement apart from and in interaction with other variables.

Chapter II is a review of the relevant literature. It begins with the impact of education on mobility and achievement in general and then reviews the "Wisconsin Model" and some of its replications and extensions, particularly those that attempt to investigate the impact of race. An interpretive variable important to the present research, "achievement motivation," is then explored. Chapter III is an explanation of the sampling, data source, methodology, and variable construction employed in constructing the model developed for this research.

Chapter IV is an analysis of the model constructed. The path coefficients are explained, influential variables are identified, and an attempt is made to uncover the patterns that the influences follow. Chapter V is a comparison

of the findings of the present research with the studies reviewed in Chapter II. The impact of nAch on educational achievement is explored and the utility of nAch as an interpretive variable is discussed. The remainder of Chapter V compares the results obtained here with other "Wisconsin Model" research. Finally, Chapter VI is a discussion of how successful the present research has been in meeting the goals noted in this introduction. Some suggestions for future research conclude the chapter.

# CHAPTER II

## REVIEW OF THE LITERATURE

This literature review has three sections. The first will discuss the impact of education on mobility and achievement in the general context of stratification research. The second section will discuss the "Wisconsin Model" of socio-economic achievement first developed by Sewell et al. and much replicated and extended. These models are similar to that developed in this dissertation, and comparisons of the results provide much of the discussion in Chapter V. The third section of this chapter explores the history and usage of "achievement motivation" (or "nAch") as an explanatory variable in understanding achievement. This variable was used in this dissertation as an interpretive variable between parental social statuses and the achievement of their offspring in place of the "aspirations" variable usually used in Wisconsin models. The final section is a summary.

### Section 1: The Context

Cumulative research in stratification indicates the importance of educational achievement for occupational achievement and income achievement. Most studies indicate these relationships to be strong (Blaug, 1970). Wolfe (1960)

found increased education associated with higher income, even controlling for (1) position in high school class, and (2) measured I.Q. and parental occupation. Becker (1964) used five data sets and concluded that after ability and social class of origin were controlled, further education was the major determinant. Blau and Duncan (1967) found a strong impact, independent of social class background. Morgan, David, Cohen, and Brozier (1962) found education more important than age, on the job training, sex, race, I.Q., motivation, parental education, family size, parental occupation, religion, area of residence, city size, occupational choice, unemployment rate, and number of hours worked.

In contrast, other studies show a much smaller relationship between educational achievement and occupational attainment or income. For example, Bowles (1972) found years of schooling had only a small impact once social class background was controlled. An influential work by Jencks (1973) found that controlling for family background and ability test scores reduced the impact of education significantly.

A few studies have found that education has impact but not independently of ability. These studies include Griliches and Mason (1972), Wolfe and Smith (1956), and Hause (1972).

In spite of the potential importance of education as a determinant in stratification, research on this subject until quite recently has had limited validity because of the

obvious problems of spurious relationships in the proposed causal system. Perhaps because of the difficulty of untangling the causal system, stratification research has tended to emphasize either quantitative or qualitative approaches to the problem with little attempt to combine them.

Quantitative research has concentrated on problems of mobility rates, the social structures that would produce different rates, and the political and social consequences of these forces. This research is summarized and extended by Bendix and Lipset (1959). As Haller and Portes (1973) point out, however, these interests lead to a poverty of causal explanation of how mobility (or the lack of it) occurs at the individual level. Qualitative studies were largely used to fill this need, as Cole (1980) suggests to describe a known causal process. All of these studies suffer from well known problems in qualitative research: small sample size, unrepresentative samples, experimental effect, and an unestimatible amount of researcher bias and selectivity.

Perhaps another reason for the poverty of research on the process of stratification has been the isolation of social psychology from the main interest and research tools in sociology. The values and attitudes that are related to educational and occupational achievement have been a central issue in motivation research in social psychology. However, perhaps because of the experimental techniques employed and the rather grandiose claims made by early researchers (see,

for example, McClelland, 1961), this work has had little impact upon understanding the stratification system in the larger context that sociology requires.

Recently, however, quantitative models of achievement pioneered by Blau and Duncan (1967) have been combined with some social psychological intervening and antecedent variables that attempt to explain the linkages between the social status variables originally used. This research was stimulated by Sewell, Haller, and Portes (1969) through a path model of achievement that has come to be known as the "Wisconsin Model." Sewell et al.'s work and replications and extensions of it are reviewed in detail in the next section of this chapter.

## Section 2: The Wisconsin Model

The path model developed by Peter Blau and Otis Dudley Duncan in American Occupational Structure was an attempt to move toward an explanation of how mobility occurs on an individual level. Structural, social status, variables like those used by Blau and Duncan cannot, however, explain the process of mobility because the reasons for the linkage among the social status variables that make up the model can only be speculated upon. The Wisconsin model of socio-economic achievement, first proposed by Sewell et al. (1969), is an attempt to overcome this limitation by using social psychological variables and institutional evaluations (such as school grades) as interpretive variables. The Wisconsin model is rooted in symbolic interactionism based on the

hypothesis that one's achievements are shaped, in part, by one's aspirations, which in turn were shaped by how one was evaluated and encouraged by others. Sewell et al., the originators of the Wisconsin model, expanded Blau and Duncan's basic model by retaining parents' socioeconomic status as an independent variable and adding the respondent's mental ability as another. In sequence, the model then adds performance in school, the influence of significant others (parents, teachers, peers) on aspirations, levels of educational and occupational aspiration, educational achievement and, finally, occupational achievement. Sewell et al. applied this model to longitudinal data for a large sample of Wisconsin farm-reared males. This model could account for about 50 percent of the variance in educational achievement and about 34 percent of the variance in occupational achievement. These findings compare with a 26 percent explained variance in educational achievement, 33 percent explained variance in the first job, and 42 percent explained variance in the 1962 level of occupational achievement for Blau and Duncan's model applied to a national sample. Alexander et al. (1974) suggest the lower explained variance Sewell et al. found for occupational achievement is probably due to the relative youth of the sample (note that it is similar in magnitude to the explained variance for first job, however). Educational achievement has a much larger explained variance as indicated by Sewell et al., which may be because of the interpretive variables, the new independent

variable, mental ability, or may reflect changes that have been made in the educational system since Blau and Duncan's sample received their schooling.

Regardless of the magnitude of the explained variance, however, Sewell et al., provide a plausible mechanism through which parents' socioeconomic status can be linked to the socioeconomic status of their offspring. Sewell et al.'s method and findings are characterized by several clear features. First, as it was an attempt to discover if intergenerational socioeconomic variables could be linked by social-psychological states, the parental socioeconomic status variable was an index variable combining parental education, respondent's perception of the economic status of his family, perception of possible economic support should he choose to go to college, the amount of such support, and his father's occupation. Because of this indexing feature, it is impossible to discover the relative importance of each of these variables.

Secondly, the data set used is not, in fact, intergenerational because all the data were collected from the offspring respondents. That is, although the model purports to measure change from parents to offspring and uses parental statuses and attitudes as well as the attitudes of other "significant others," the parents and others were not, in fact, measured. Rather, the respondent reported them. This may be of little importance in the reporting of parental education and occupation but may be a considerable source of

error in the reporting of parental encouragement and support as well as the encouragement of teachers and peers. Following the notion of cognitive dissonance, one would expect that those doing well in school and planning further schooling would report (and believe) that they received greater encouragement. Kerckhoff and Huff (1974) indicate that this is indeed likely to occur, that a respondent's perception of the goals that others have for him are closer to his own ambition than are the goals others actually report when asked directly.

A third consideration in interpreting the findings of Sewell et al. is that their respondents were all high school seniors when they were first queried. This has at least two possible effects. First, almost no high school dropouts would be included as few leave school after reaching their senior year. Second, by the senior year, those continuing to future schooling are likely to have made concrete steps to do so (by taking "College Board" examinations and applying to colleges). These acts are likely to influence one's aspirations by either heightening or dampening them. The weakness in this causal order is perhaps heightened by the manner in which Sewell et al. have constructed the educational aspirations and achievement variables. Both of these variables are dichotomized between those who planned to attend college (had some college schooling) and those who did not plan to attend (no college schooling). In effect, the researchers merely asked respondents what they expected to be

doing a few months from then, after the respondents had actually acted to determine what they would be doing. The causal order is obviously confused and it is not surprising that the coefficient between the variables should be high because they influence each other.

Sewell et al.'s findings have several striking characteristics: the high proportion of variance (especially in educational achievement) that is explained, the parsimoniousness of the model, and the efficiency of the model with its few, quite strong path coefficients "soaking up" almost all the explained variance in the independent variables. These characteristics are associated with their most important finding: that almost all of the influence on the ultimate independent variables, socioeconomic status and mental ability, was mediated by evaluation and encouragement of others and their aspirations. Educational attainment was influenced most strongly by educational aspirations, followed by "significant others' influence" and, more weakly, academic performance and socioeconomic status. Most of the explained variance in educational achievement is from educational aspiration, with academic performance only half as influential and socioeconomic status only one-seventh. "Significant others' influence" has a coefficient with education achievement that is about two-thirds the size of the coefficient between educational aspirations and educational achievement, but Sewell et al. believe this path to be "theoretically debatable" because they expected all of this influence to be

channelled through educational aspirations. The authors avoid what seems to be an obvious post-hoc explanation, that "significant others" can influence one's actions without influencing the attitudes that also influence them.

Consideration of the limitations noted above substantially reduces the utility of the findings reported by Sewell et al. The high proportion of variance explained in educational achievement is probably partly due to its interactive effects with supposed interpretive variables, "significant others' influence" and educational aspirations. That is, if educational achievement partly causes reported aspirations and then partly causes reported "significant others' influence," the reported coefficient between the variables will be increased by this effect which is, after the fact, unestimable. This effect perhaps also accounts for some of the high efficiency of the model, with its few quite strong paths instead of several weaker ones, and the tendency for the intermediate variables to be very interpretive for the relationships between educational achievement and the ultimate independent variables. These characteristics are probably caused by the high correlation between educational achievement, educational aspirations, and "significant others' influence" that is caused, as noted by their interactive causal effect. Because the reported "significant others' influence" and then reported educational aspirations are added to the model before educational achievement, the correlation between educational achievement and the ultimate

independent variables appears to be interpreted by these variables.

In summary, Sewell et al. provide a plausible model for extending and explaining Blau and Duncan's model of individual mobility. Their testing of the model, however, is rather flawed because of seemingly minor problems in variable construction that limit the usefulness of the interpretive variables. This model is the starting point for the research in this dissertation because of its theoretical insight rather than its findings.

Karl Alexander, Bruce Eckland, and Larry Griffin (1974) attempted a replication of Sewell et al.'s "Wisconsin model" using data from the Educational Testing Service national survey of high school sophomores first conducted in 1955 with a follow-up in 1970. The reported findings indicated reduced impact of the educational aspirations-educational attainment linkage and increased the impact of class rank and aptitude. About 45 percent of the variance in educational achievement was explained and no parental status variable had much impact apart from the father's occupation. The expectations that parents and teachers had also had little influence. Class rank and aptitude had clearly the strongest consequences for educational achievement, followed by educational expectations, peer plans, and father's occupation. The data set used by Alexander et al. has more satisfactory variable construction than that used by Sewell et al. Educational aspirations were collected

during the respondent's sophomore years of high school rather than the senior years as in Sewell et al., and this probably reduces the interactive effect noted previously that has the effect of confusing the causal order. Curiously, Alexander et al. consider this clear improvement something of a liability and attribute the reduced effect of aspirations on achievement to the "less realistic" expectations that a high school sophomore is likely to have. They do agree, however, that measures "less proximate to the actual transition or attainments to which they pertain" are more relevant for a social-psychological measure of motivation.

Alexander et al. wisely discomposed the components of the "significant others' influence" that was so influential in Sewell et al. Further, the data were structured slightly differently so that the questions tapped more directly the encouragement of college plans by parents and teachers. The "peer influence" variable was an index of two items: tapping the college plans of the friend most liked by the respondent, and the proportion of peer associates attending or planning to attend college. Both were reported by the respondent. The effect of these changes and the decomposition of the index variable was the marked absence of influence from parents and teachers contrasted with the strong influence from peers. It must be noted, however, that as these variables are reported for others by the respondent, they suffer from the same potential distortion noted in the consideration of Sewell et al. (1969). Because of space

limitations, Alexander et al. do not report indirect effects except for a comment about the indirect influence of socio-economic status upon educational achievement. Although as previously noted, only father's occupation among the socio-economic status variables had much of a direct impact on educational achievement, together, Alexander et al. report, they had a very substantial indirect effect through the interpretive variables: aptitude, class rank, and peer influences. The standardized coefficient for the total effect (direct and indirect) of the index of socioeconomic status on educational achievement was a very substantial .431. This compares to a Beta of .391 reported by Sewell et al.

In summary, Alexander et al. used a national sample and more appropriate variable construction in their replication of Sewell et al. Despite these differences, however, there is considerable consistency between the findings in that most of the impact of socioeconomic status is mediated by interpretive variables. Possibly the reduced impact of the "significant others' influence"--educational aspirations--educational achievement linkage reported by Alexander et al. was due to the more realistic manner in which the former two variables were constructed. The result of the reduction of these relationships was the heightened relative impact of class standing and aptitude. Most of the impact of socio-economic status was interpreted by these two variables.

Another replication of Sewell et al.'s Wisconsin model is reported in a 1974 article by Kenneth Wilson and Alejandro Portes. The article has two parts. In the first part, Wilson and Portes were primarily concerned with determining whether the Wisconsin model worked or not rather than how it worked. That is, these authors returned to the basic hypothesis the Wisconsin model was developed to test, whether the psychological qualities of an individual (Wilson and Portes term them "personal influences and subjective orientations") are effective mediators between parental and offspring statuses. Alternately can parental statuses influence offspring statuses directly? The second part of the article is a limited attempt to explore how the model works by adding a "self-assessment" variable between academic performance and educational aspirations. The addition of this variable merely makes explicit the underlying rationale of the Wisconsin model.

Wilson and Portes used a representative national sample that was collected for the University of Michigan Youth in Transition Project. The sample size was 2,213 male high school sophomores in the first interview wave (1966) with 1,620 (about 71 percent) remaining in the third follow-up in 1970. In the first part of the article, the replication, Wilson and Portes are able to account for about 42 percent of the variance in educational achievement and compared to Sewell et al., find much reduced effects of the intervening social-psychological variables ("significant

others' influence" and self-assessment) and increased direct effects of "objective" variables: parental socioeconomic status, academic performance, and mental ability. The influence of significant others is entirely mediated by educational aspirations, but this influence is much less than that reported in Sewell et al. or Alexander et al. Academic performance is the strongest determinant of educational achievement, and it operates both directly and by shaping aspirations. Mental ability has a powerful influence on academic performance. Educational aspirations is the second most influential variable on educational attainment, and it is shaped by academic performance, significant others' influence, and parental socioeconomic status in that order. Mental ability and socioeconomic status have about equal direct effects on educational attainment, and mental ability has slightly more indirect influence due to its strong relationship with academic performance.

The second part of Wilson and Portes is an attempt to make explicit the underlying assumption of the Wisconsin model by adding a "self-assessment" variable to the basic model. The variable is added just after educational aspirations, that is, between aspirations and significant others' influence. Wilson and Portes argue that this variable is logically necessary to link aspirations with how performance has been evaluated. The addition of the variable, however, has little effect because almost all of self-assessment's relationship with the dependent variables, aspirations and

achievement, is spurious. Wilson and Portes discard the "self-assessment variable and return to the results of their replication. As the authors point out, however, the rejection of this variable from the model emphasizes the difference between their replication and the results reported by Sewell et al. in terms of the reduced role of the social-psychological interpretive variables.

Wilson and Portes' replication has some weaknesses in sample and variable construction but avoids others that were present in Sewell et al. (1967) and Alexander et al. (1974). High school dropouts (at least those who reached the tenth grade) are included and a national sample was used. Measured ability was tested in the first wave of the sample, reducing some of the interactive effects from increased education. However, aspirations and "significant others' influence" were not measured until the second wave when the respondents were high school seniors and "significant others' influence" was self-reported. It has been noted that this probably tends to increase the reported impact of these variables through an interactive effect with actions taken toward actually attending college. Most significant for the present dissertation is the fact that socioeconomic status is an index variable and the individual effects of the components are not available. While this is consistent with Wilson and Portes' goal of comparing the effect of these variables together with the effect of the social-psychological variables, which and how each component influences education achievement remains

unknown. Wilson and Portes allude to the significance of this by including items like "number of books in the home" in their socioeconomic status variable, thereby raising the important question of whether it is class or "life style" that is more important.

In a 1976 article, Portes and Wilson used the same data and a model similar to that developed by the authors for the work just reviewed, adding, in two different ways, the important variable of race. First, they added race to their model as a dummy antecedent variable preceding the other variables in time-order. In construction then, their first attempt is much like the model developed for this research. The second approach was more conventional; a separate model was developed for each race. These two approaches permit Portes and Wilson to do a quite comprehensive analysis, the first allows the examination of the effects of race of each endogenous variable while the second permits the comparison of metric coefficients (since the variables are constructed in the same way) path by path. The former approach is of most interest here since it is similar to that used in this dissertation. Unfortunately, the relatively small sample size of the data set used in this dissertation precludes replicating the second approach as well.

Portes and Wilson's model is similar to that used in Wilson and Portes (1974), with the addition of a "self-esteem" variable placed between "significant others' influence" and educational attainment. While this new

variable was not available in the data sets used in the original Wisconsin model developed by Sewell and his associates, Sewell, Haller and Portes (1969) made a "speculative" case for it as a generalized variable that intervenes between how one is responded to and the attitudes toward the environment that one develops as a response. In the review of Wilson and Portes (1974), we saw how an unsuccessful attempt was made to use "self-assessment of ability" as the intervening link in the model. Its effects were found to be spurious. Portes and Wilson, in their 1976 article, recognize that the effects of this link might be quite different for whites and blacks, so it has been reintroduced in a different form. The self-esteem variable was constructed by combining items from the Rosenberg (1965) "Self-Esteem Scale" with the Cobb et al. (1966) measure of the same variable. Portes and Wilson find that adding race to their previously developed model has small but nontrivial effects on all endogenous variables. However, the effect of race was split, with being black having a negative effect on parental socioeconomic level and measured mental ability but a heightening effect on educational aspiration, academic performance, "significant others' influence" and self-esteem. There was no residual effect of race on educational achievement once the impact of race on these variables was controlled.

These findings led Portes and Wilson to several conclusions. First, the zero-order correlation between race and

educational achievement of -.126 (as a dummy variable: whites were coded 0 and blacks 1) is caused by "initial and historically-conditioned disadvantages in exogeneous determinants of the process" (p. 423). Second, the findings support the oft-reported findings of others that once parental social status and mental ability are controlled for, blacks tend to have higher educational achievements than do whites. Portes and Wilson also confirm that blacks tend to have higher academic performance, encouragement, and ambition than whites, once social class and ability are controlled. Finally, Portes and Wilson conclude that the lower educational achievement of blacks is not due to discrimination in the schools but to social status and characteristics with which black males begin schooling.

Portes and Wilson's 1976 model shares the strengths and weaknesses of their earlier attempt. High school dropouts who at least reach the tenth grade are included and a national sample is employed. Mental ability was measured in the first wave, reducing possible interactive effects. "Self-esteem," the new variable added to the model, was also measured in the first wave, reducing but not eliminating similar interactive effects. In contrast, educational aspirations and "significant others' influence" were not assessed until the second wave when the respondents were high school seniors. The effect of this has been discussed above. Educational attainment was assessed in the fourth wave, only four years after the respondents were in the tenth grade,

leading to some possible distortion for potential later starters in college. A limitation of Portes and Wilson's work that has been noted is that the social status variable is not decomposed in the model. This suits the authors' purposes, to uncover the impact of social-psychological variables compared with social status and ability, but obscures the impact of specific social statuses.

The second approach taken by Portes and Wilson was the development of separate models for whites and blacks. As noted, the limited sample size used in this research precludes this auxiliary approach, and therefore their findings do not bear directly on the present work. The findings should be noted, however, because they suggest an important limitation in the results of this research and provide some explanation for the effect that race has on variables in the model. Portes and Wilson found that the model was much less successful in accounting for variance in educational achievement among blacks than among whites; about 43 percent of the variance was explained for whites while only 31 percent was explained for blacks. The lower explanatory ability of the model for blacks seems to be due to the reduced predictive ability of parental social status, ability, and especially academic performance. As noted, the former two variables have less impact on educational achievement among blacks. In contrast, however, blacks tend to have higher academicperformance than whites when these other two variables are controlled, but as Portes and Wilson indicate,

higher academic performance in high school is less strongly related to further academic achievement among blacks than among whites. Stated differently, whites' academic grades tend to carry them along to predictable levels of achievement while black grades do not. The Beta between academic performance and academic attainment is a strong .282 for whites and a much more modest .09 for blacks.

In summary, the development of separate models for blacks and whites and the discovery of the more limited predictive ability of the model for blacks, should lead to caution in the interpretation of the findings of this dissertation. While the incorporation of race as a variable in the model allows the observation of the interactive effects of race on the variables, because the slopes are also different only a part of the effect of race can be illuminated with this technique. The recognition of this limitation was behind Alan Kerckhoff and Richard Campbell's 1977 replication of the Wisconsin model, which is the final model of this type reviewed here. As in the second portion of Portes and Wilson's 1976 article, because separate models were developed for whites and blacks, the results are not directly comparable to the results obtained in the present research which incorporates race as a variable in a single model. Review of this work is useful, however, because it places the present work in context.

Using separate models for blacks and whites, Kerckhoff and Campbell were able to account for about equal

amounts of variance in educational achievement for both groups by introducing some new variables and more carefully operationalizing others. A rather high proportion of the variance was explained, 59 percent for the whites and 61 percent for blacks, but the patterns of effect the independent variables had on education achievement were quite different for whites and blacks. The basic finding was that ambition, a measure of discipline problems in junior high school, and high school grade performance are better predictors for blacks than whites. Whites, in contrast, seem most influenced by socioeconomic status. The research is discussed in detail below.

Kerckhoff and Campbell responded to the Wisconsin model's demonstrated inability to account for as much variance in educational achievement among blacks as whites by modifying some of the model slightly. They deleted the "significant others' influence" variable, noting its theoretical importance but recognizing the difficulties of operationalizing it successfully. Socioeconomic status was represented by four separate variables entered simultaneously: father's occupation, father's education, mother's education, and family size. Like the present work, Kerckhoff and Campbell's study is not only concerned with comparing the effect of socioeconomic status with sociopsychological ones but also with which of the socioeconomic status variables were of significance. This was recognized as of particular significance because previous studies like Portes and Wilson

(1976), as reviewed above, showed that socioeconomic status of origin has little impact on the educational achievement of blacks. Combining these variables in an index could have the effect of masking the relative influence of some of them. As in the Wisconsin model, Kerckhoff and Campbell's model contained a measure of mental ability taken, in this sample, when the respondents were in the eighth grade. As previously noted, using a measure taken relatively early in the respondent's education has the effect of reducing some of the interactive effect of education on the measure.

The first new variable introduced in the model is junior high school academic performance, constructed from an average of the respondent's seventh and eighth grade grades. Kerckhoff and Campbell reason that if relatively "objective" measures of performance are more significant than social-psychological variables, as Portes and Wilson and Wilson and Portes contend, then there should be consistency between junior high school grades and high school grades (which is entered into the model later). Equally important, Kerckhoff and Campbell recognize the problems in causal inference that arise when academic performance and aspirations are measured at the same point in time. Inserting junior high school performance earlier in the model permits this clearer order because educational expectations were not measured until the ninth grade.

Kerckhoff and Campbell also depart from the basic Wisconsin model by adding here a variable that measures how

much the respondent was perceived by the junior high school counselors to be a discipline problem. While the authors are rather ambiguous about their purpose for this variable, it fits potentially well with both the structural and social psychological emphasis. Each of these models (noted above) would expect to find different effects of this variable. Structural emphasis would view measured "discipline problems" as another form of certification of "objective" characteristics like academic performance. In contrast, a social psychological interpretation would be justified by a strong link between the variable and educational expectations.

Kerckhoff and Campbell next insert educational "expectations" and follow that with high school academic performance. As noted there is, at least, an a priori time order among these last four variables because junior high school grades and discipline problems were measured for the respondents' seventh and eighth grades. Educational expectations were measured in the ninth grade, and high school academic performance was the respondent's average for the final three high school grades (or that portion completed). Educational attainment is the final variable in the model. Perhaps unfortunately, it was collected in 1974, only two years after the respondents were to have graduated from high school (given their having been in the ninth grade in 1969).

The sample used by Kerckhoff and Campbell included all boys in the ninth grade from five of the thirteen junior

high schools in Fort Wayne, Indiana, in 1969. The schools were selected to provide a broad distribution of socioeconomic status and to oversample blacks. The sample size was 503: 309 whites and 113 blacks. Later, high school grades were located for 87.7 percent of them, somewhat more for the whites than the blacks (90 percent to 79.6 percent), and educational achievement data were collected in 1974 through mailed questionnaires and telephone interviews. Nearly equal proportions of whites (92.3 percent) and blacks (87.7 percent) for whom high school grades were located provided data on educational achievement, but due to the greater loss of black respondents in the high school grade variable, the loss of black respondents was somewhat greater. The response rate was 83.1 percent for whites and 69.9 percent for blacks. An analysis of the nonrespondents indicates they had somewhat lower junior high school grades and, among blacks, came from slightly lower socioeconomic strata than the respondents.

Kerckhoff and Campbell's findings are most easily understood by discussing the effect of the addition of each variable in the model to the basic socioeconomic status, I.Q., and educational attainment links. Parental socioeconomic status has much lower impact on educational attainment for blacks, with only 10 percent of the variance in the dependent variable explained compared to 37 percent for whites. Adding respondents' mental ability raises the explained variance to 32 percent for blacks and 45 percent

for whites. Actually, mental ability has similar effects for both groups but for whites much of the correlation was spurious. Kerckhoff and Campbell report that components of parental socioeconomic status have different effects for each race. Among whites, both father's and mother's education were influential, while among blacks, father's education was quite uninfluential while mother's education had more impact for blacks than whites.

Respondents' mental ability was important for predicting junior high school grades among both whites and blacks but parental socioeconomic status had impact only among whites. For both whites and blacks, junior high school discipline problems were not well predicted by antecedent variables in the model. These two variables had differing impacts on educational attainment. For blacks, junior high school discipline problems had some impact on attainment while junior high school grades seemed unimportant. Among whites, the opposite was the case; grades had impact while discipline problems did not.

Among whites, educational expectations were well explained (39 percent), mostly by junior high school grades and discipline problems. Among blacks, in contrast, little (only 11 percent) of the variance was explained. For both blacks and whites, however, the amount of additional in attainment variance explained by adding expectations was identical and small (.03).

Slightly more of the variance in high school grades as explained for whites (60 percent) compared to blacks (55

percent). For whites, junior high school grades were of most predictive significance. For blacks, junior high grades were also important but discipline problems and educational expectations were also quite significant. High school grades have a much more significant impact on educational achievement among blacks than whites. Indeed, adding this variable to the model raises the proportion of explained variance among blacks (61 percent) above that explained for whites (59 percent).

Kerckhoff and Campbell demonstrate how different the educational attainment process is for blacks and whites. For whites, the attainment process is relatively orderly and predictable from mental ability and, especially, parental socioeconomic status. Kerckhoff and Campbell explain a considerable 59 percent of the variance in white educational attainment using the whole model, but 37 percent of the variance was explained by parental socioeconomic status alone and 45 percent of the variance by parental socioeconomic status and mental ability. For whites, then, educational attainment is a relatively orderly process in which parental characteristics are converted into attainment. For blacks, however, the model shows less continuity from one stage to the next.

Parental socioeconomic status explains only about a sixth of the explained variance in educational attainment. Mental ability has more impact, but the total variance explained from these variables is only about half of the

total the complete model explains. Among the other variables, senior high school grades are quite crucial for black attainment. If they do well there, they are at least as likely as whites to go on to college. High school grades are explained nearly as well for blacks as for whites, but different variables seem to be causal. For blacks, high expectations and the lack of discipline problems are important while earlier educational performance is not. For whites, junior high school grades are of most importance in predicting high school grades.

Kerckhoff and Campbell's work represents a real refinement of the Wisconsin model because, for the first time, it predicts as much of the variance in educational achievement among blacks as whites. Part of the elegance of this research is due to the care with which concepts are operationalized, in contrast to the somewhat awkward manner of some similar research. Measuring academic performance at two points in time with expectations measured at an intermediate time is an example of this. Kerckhoff and Campbell's most important innovation, however, is the introduction of the "discipline" variable, although it is difficult to interpret how this variable has its demonstrated impact.

Each student was ranked by a high school counselor as either a severe, moderate or negligible discipline problem. Kerckhoff and Campbell assigned a score of 2 to severe, 1 to moderate, and 0 to negligible. The means for blacks and

whites were 1.88 and 1.30 respectively. Little of the variance in discipline problems was explained for either race, but socioeconomic status had some influence on whites. Given this little information it is hard to decide how this variable exerted its influence, although at least two explanations are possible. First, the label as a discipline problem could be appropriately applied most of the time and the link for blacks between high school grades and discipline problems could then reflect that students with discipline problems learn little.

Alternately, the link may be due to some labeling process in which a discipline problem label is successfully applied to some (more often blacks) and the successful application of the label has different effects for blacks and whites. Perhaps blacks are socially less able to "defend" themselves against the labeling and its effects.

The Wisconsin model and similar models of attainment have become among the most widely used devices in stratification research and it would be impossible to review all the attempts to employ the model that have been made. Rather, this literature review has attempted to show the origins of the model, some replications and extensions of it, and a very competent attempt to use it to explore the effects of race on the educational attainment process using a rather different strategy than that employed in this dissertation. Some of the weaknesses of conceptualization and, more typically, operationalization of the several studies have

been noted. These weaknesses, however, should not detract us from the positive qualities that permit a quantitative examination of the process through which a stratification system persists from generation to generation.

## Section 3: Achievement Motivation

A persistent problem in "Wisconsin model" research has been the development of a suitable social psychological variable to provide a linkage between parental social statuses and attitudes and the offspring's achievement. Sewell and his associates hypothesized that parents, teachers, and peers shape ambitions so that "significant others' influence" and aspiration/expectation provide this linkage. As previously noted, however, both the conceptualization and operationalization of these variables has been rather flawed. Operationally, the variables are weak because although the models purport to measure causality from "others'" attitudes and behavior to the offspring attitudes and behavior, the level of "others'" attitude and behavior are not, in fact, measured. Rather, the offspring reports them. Operationally, "ambition" is also a weak variable because as noted, it usually is measured close in time to the behavior it is expected to produce. In both these cases, then, the causal direction implied is inappropriate.

Conceptually, the use of "ambition" as an interpretative variable also has limitations. Sewell et al. (1969) and Wilson and Portes (1974) use educational aspiration and

occupational expectation, while Portes and Wilson (1977) use self-esteem and educational aspiration. Variables such as aspirations are limited because they cannot include an indication of how intensely the aspirations are held or the context in which they are held. Research on motivations has indicated that the relationship between aspirations and expectation of success is not linear; rather, it is curvilinear, with those who have low expectation of success having either quite low aspirations or unrealistically high ones. Both levels of aspirations are distinguished from moderate but realistic ones by their function as a device to avoid failure. This tendency is well documented experimentally but has not been systematically applied to larger populations in survey research. Aspirations realistically related to the respondent's chances of obtaining them are termed "appropriate aspirations" and indicated a positive desire to move toward some goal rather than "mere" fantasy. Holding high aspirations is, for American society, only an indication that the norms and values of the society have been internalized and need not lead to constructive action to realize these aspirations. It is, in other words, possible to be socialized into the normative system without being socialized to the belief that one is capable of carrying out a normative role.

As was indicated earlier, Portes (1974) and Alexander et al. (1974) also used occupational expectation, while Portes and Wilson (1977) also used self-esteem in their

models. It is unclear whether these variables were selected because of the limitations of the aspirations variable or because of the data sets used in the studies, but they are improvements upon aspirations. In this research, however, a more generalized value is employed, nAch (achievement motivation), which is well developed in social-psychological literature.

"Achievement motivation" is a personality measure that attempts to measure the tendency to derive satisfaction from overcoming obstacles by one's own efforts where the outcome is ambiguous. Achievement motivation is believed to be acquired, relatively stable and also general, and is applicable to all arenas in which competition is present. It is not believed to be especially subject to life cycle changes that would influence economic needs.

A detailed discussion of theories of motivation is beyond the scope of this dissertation and the cunning of its author, but it is necessary to consider them briefly in order to examine the origins, development, and limitations of the theory of achievement motivation. The central issue in the psychology of motivation has been the relationship of motivational variables to those of learning and, until recently, the dominant conceptual schemes have been various "drive-habit" theories that are often referred to as "mechanistic." The most influential theorist has, perhaps, been Hull (1943) who proposed the famous equation ${}_sE_r = D \times {}_sH_r$, which means that the strength of the excitatory tendency to respond in a

certain way ($_sE_r$) is dependent upon the magnitude of the drive force (D) and the strength of habit $_sH_r$ of responding to it in that way in this stimulus situation. This model is, of course, a more formally stated model of the fixation (or habit) and motivation (drive as conceived of by Freud and elaborated by his followers, of which an example is Dollard and Miller, 1950). The various biological needs of the organism such as hunger, thirst, and sex are the sources of general excitement but any strong stimulus can become a drive, including external stimuli. The biological stimuli are the sources for the "primary" drives (to adopt Dollard and Miller's terminology), while secondary drives are built upon them as elaborations or facades. Perhaps more clearly, the "secondary" or social drives can be seen as learned devices for responding to primary drives. Anxiety and fear, for example, are seen as secondary drives built upon the avoidance of pain, a primary drive. Some secondary drives are the consequence of several primary drives so that a secondary drive for achievement is seen as a consequence of the primary drives for affection and away from pain.

"Habit," the second element of the mechanistic model, is a consequence of learning, through punishment and reward, of a device with which the organism associates the satisfaction of that drive. What intervenes then between the stimuli and response are the overall level of excitement or drive (that is, the strength of the stimuli) and the strength of habit for each competing response. "Personality" in this

model, is the differences in drive forces and in habits with which one responded to the drives.

As Heckhousen (1968) points out, it is possible for a unitary theory of achievement motivation to fit easily into this model with achievement motivation being either a secondary drive or a habit, depending upon whether it was the stimulus for action itself or a response to stimuli. For McClelland and his associates (1953) nAch was, of course, a secondary drive that would shape the response whenever the organism was in a situation of competition. However, from work on nAch, an alternate model of motivation was developed by Atkinson (1964) as it became apparent that achievement motivation was not the unitary drive it was once thought. The new theory, developed from the work of Kurt Lewin and his students (Lewin et al., 1944), emphasizes the role of expectations held by the subject on the consequences of action and is known as the expectancy X value or "cognitive" theory. In the formula $_{x}E_{r}$ = E X V, the tendency to act in a particular way depends upon the strength of the expectancy (E) times the value of the goal (V) to the subject. While most "mechanistic" research was carried out upon hungry or fearful animals, "cognitive" theory emphasizes the relatively unique ability humans have to think, symbolize and solve problems.

This break with mechanistic models was necessary because of the discovery of the central feature that "anxiety" played in the response of human subjects (Hill and

Sarason, 1966). Under cognitive theory, higher anxiety could be expected to lead to higher performance through heightened necessity to satisfy the drive (whether it be primary or secondary). Experimental research has demonstrated something quite different--that those with high anxiety are likely to choose either very low risks (where the possibility of success is very high on the order of P = .90) or extremely high risks where the possibility of success is extremely low P = .10). Those with low anxiety like to be challenged and so prefer situations of moderate risk where the challenge is apparent. Atkinson hypothesized (1964) that the level of risk taking should be about P = .50 but empirical research has indicated rather higher risks are preferred, on the order of P = .30. The unitary motive was discarded then in favor of at least two distinct forces that operate together (varying in their intensity depending upon the subject), the "motive to succeed" and the "motive to avoid failure." Anxiety is used as the indicator of which is in operation, with high anxiety signifying that the subject is acting so as not to fail. Two responses are available to the subject operating with this value (V); to choose low risks where failure is almost impossible or to avoid competition by stalling or taking an impossibly difficult risk so that one cannot be attacked for failure.

At first, expectancy was believed to be determined by clues given the subject and therefore situationally based, but Atkinson suggested later that this tendency was a more

stable personality feature, separate from nAch but interacting with it. This sense of expectancy can be seen as rather similar to "self-esteem" (Wylie, 1961; Rosenberg, 1967; Coopersmith, 1967). As noted above, these concepts (especially nAch) are more sophisticated than "aspirations" or "ambitions" because they measure more accurately a state which may lead to behavior rather than mere verbal adherence to the norms and values of a society in which ambition and aspirations are culturally supported.

Research on nAch began in the late 1940's when a method was developed using fantasy situations that was believed could measure individual strength of motivation. Achievement motivation, a general tendency to attempt to achieve, was believed to be acquired, relatively stable, and likely to be exhibited whenever the subject was given a task which he or she believed could be measured against a standard of excellence. The strength of nAch was (and is) usually measured by counting the achievement themes occurring in a series of fantasy productions elicited by a standardized projective instrument, the TAT. It has been demonstrated that the content of imaginative behavior is sensitive to the motivational state of the individual (manipulated experimentally) and that after the symptoms of achievement motivation were identified and standardized, they could be used to diagnose individual differences in the strength of nAch. As Katz (1967) points out, the evidence that nAch fantasy scores are valid comes from several sources.

First, the amount of achievement-related imagery can be increased for some subjects by introducing conditions, e.g., the belief that the subjects will be evaluated, that would presumably arouse the nAch. Second, individual differences on tasks can be predicted from nAch scores. Tasks that have been used include coding, arithmetic, scrambled words, recall of uncomplicated problems, risk taking, and task persistence (Atkinson, 1964 and 1978, provides a review of this literature). Finally, treated below, correlations have been found between success in activities in the real world where subjects have some control over their situation and their scores on nAch. Studies that have been done include academic grades, social mobility, college attendance, and occupation choice.

The projective technique has been found to be highly reliable, perhaps because it does draw upon several of the separate achievement components (Veroff et al., 1971). Testing on new subject populations, along with the already discussed risk-taking behavior, leads to questioning the unitary concept. Most of the original theory on nAch was the result of data collected on white males, but research on other groups, notably women, failed to validate known assessment procedures. Horner (1968) has argued that women are likely to be motivated by a fear of success instead of fear of failure or desire to achieve success. Whether Horner's contention would be supported by a larger sample is a moot point for this dissertation because the data set does

not contain female offspring (unless they are household heads).

Research has indicated the important role that anxiety plays in achievement motivation because it is a clue as to whether the subject is oriented toward achievement ($M_s$) or is oriented away from failure ($M_{af}$) (Hill and Sarason, 1966; Atkinson, 1964, 1978). The instrument used here contains anxiety measures which provide this useful control in separating what the subject believes are realistic and unrealistic aspirations. The index has been found to be reliable compared to the original fantasy-based measures (Veroff et al., 1971). There is some reason to believe that because it is freer from the contaminating effects of I.Q., the index used here may be more accurate than projective measures (Entwistle, 1972). Each of these issues as well as the questions that make up each index will be treated in the appropriate section of this dissertation.

A number of studies have found a positive relationship between nAch and socioeconomic status or mobility. Douvan (1956), in a sample of midwestern high school students (N = 313), found middle class adolescents had higher nAch than those of working class background. Rosen (1956) found a similar relationship among New Haven high school sophomores. In an often cited study, Rosen (1959) found differences in nAch, values, and aspirations among six different racial and ethnic groups in four northeastern cities (N = 427 pairs of mothers and sons). While he found significant

differences by religion and ethnicity, social class accounted for much more of the variance. The only exception was Jews, who tended to have high nAch even when coming from a poverty environment.

Morgan et al. (1962), using the results of a national probability sample that included a projective nAch instrument, found higher nAch for respondents whose fathers were better educated, in white collar jobs, and lived in large Northern cities. Crockett (1964), in a secondary analysis of the same data set used by Morgan et al., classified male respondents by the occupational prestige of their fathers and compared this with the respondents' occupational prestige while controlling for nAch. Crockett found more mobility (especially among those respondents whose fathers had low prestige) when the respondent had high nAch. About 64 percent of those respondents whose fathers had low prestige and high nAch were upwardly mobile. In contrast, 46 percent of those who had fathers with low prestige and low in nAch were mobile. In 1966, using the same data, Crockett redefined the variables and compared those whose fathers had low prestige jobs dichotomized on a manual-nonmanual index and related it to college completion. About 57 percent of those with high nAch and low middle class origins (low prestige, nonmanual fathers' occupations) completed college, compared to 28 percent of their low nAch lower middle class counterparts. About 21 percent of the working class (low prestige, manual fathers' occupations) offspring with high

nAch completed college compared to 12 percent of their counterparts.

## Section 4: Review of Literature Summary

In this chapter, three subjects were treated in depth. First, the context in which developed the quantitative analysis of the achievement process was discussed. Second, the origins, replications, and some extensions of the "Wisconsin model of socioeconomic achievement" were analyzed. Finally, achievement motivation, a key interpretive variable in the model developed in the present research was explored. The application of path analysis to achievement models pioneered by Blau and Duncan has resulted in the general use of the Wisconsin model which uses "significant others' influence" and the respondents' ambitions as interpretive variables between parental and respondent social positions. However, the studies reviewed that use of the Wisconsin model has serious conceptual and operational flaws that limit the utility of their findings. Perhaps a crucial flaw is the poorly conceptualized (and often, poorly operationalized) variable "ambition."

Isolated from this trend toward more sophisticated models of the achievement process, social psychologists have developed a concept that attempts to measure a generalized need to achieve. While much experimental research has indicated the reliability and validity of this measure, its usefulness for predicting achievement in society has been little demonstrated. The few studies employing it as a

causal factor in educational and occupational achievement have been quite flawed and probably plagued by spurious relationships. This review has attempted to demonstrate that these two approaches, path modeling of achievement processes and sophisticated measures of orientation toward achievement, might be profitably combined by incorporating both the parents' and offspring's nAch into the path model.

# CHAPTER III

## SAMPLING, DATA SOURCE, METHODOLOGY, AND VARIABLE CONSTRUCTION

### Part I: Sampling and the Data

The source of data for this study is the 1972 wave of the "Panel Study of Income Dynamics" conducted by the Survey Research Center of the Institute for Social Research, University of Michigan. Funding for that study was provided primarily by the Office of Economic Opportunity. More detail about the sampling, interview procedures, questionnaire construction, editing and data processing can be found in "Study Design, Procedures, Available Data" (Volume 1) for the Panel Study of Income Dynamics, published by the Survey Research Center. A brief overview of the study procedures will be presented below.

The 1972 wave was to be the final complete year of a six year longitudinal panel study that began interviewing in the spring of 1968. The 1973 wave was to be a truncated telephone interview. Each interview, including the 1972 wave, was about an hour in length, face-to-face, and included questions about attitudes, expectations, behavior, income occupation, and family structure. Also, more environmental

information from other sources were obtained, such as the average wage rate in the respondent's county of residence. The primary focus of the research was the influences and effects of short-run changes in the economic status of families and individuals. This primary interest in short-run changes influenced the decision to vary the questionnaire little from year to year. The 1972 wave, however, was unique in that it also included questions that can be constructed into a survey instrument to measure achievement motivation. Also included in this wave's questions were 13 sentence completion items taken from the Lorge-Thorndike Intelligence Test that used together can be used as a rough measure of an important control variable: I.Q.

The sample for these data was selected from two sources. About 40 percent of the 1968 sample was drawn from a sample of about 30,000 used by the Bureau of the Census in 1966 as part of the Survey of Economic Opportunity. These families were interviewed twice, in 1966 and 1967, when demographic, income, and employment variables were collected. About 2,500 of these 30,000 families in the Survey of Economic Opportunity were selected by the Survey Research Center for the Panel study. Each of them had, in 1966, incomes equal to or below <u>twice</u> the poverty level at that time. The selection formula was $2,000 + N ($1,000) where N equals the number of individuals in the family unit. Families where the head was over 60 in 1966, and those families who refused to sign a release of the data, were

excluded. Other families were excluded because their residences were inconvenient for the limited spread of Survey Research Center interviewers. In all but the South, only Census sample families who lived in Standard Metropolitan Statistical Areas were included in the Panel survey population.

To these 1,872 families were added 2,930 families selected from a cross-section sampling of dwellings in the mainland United States. All income levels are therefore represented. The data have been weighted to correct for disproportionate selection and response rates both in 1968 and again in 1972. The loss rate of respondents has been quite low; in 1972, for example, only 146 families out of 5,206 interviewed in 1971 were lost.

As new families were created in the sample, through offspring moving out of their families of orientation and by adults moving out, the new families were added to the sample. In the 1972 wave, 5,060 families were successfully interviewed of which 1,108 were formed from the original 4,802 (some families from the original 4,802 were lost by the 1972 wave). The "Panel Study of Income Dynamics," because of its emphasis on the economic status of families, attempted to interview the "family head" in the family unit under study. This was always defined as the adult male if one was present. Of the 383 offspring families whose head was under 25 and had a corresponding parental family, 163 were headed by males who headed a family unit to which a female offspring

belonged. Because the only females who were present in the sample then were those who headed their own family units, females were regrettably excluded from the subsample. Of the 220 male family heads and their parents left in the subsample, 146 were white and 74 were black.

## Part 2: Methodology

Path analysis has been selected as the analytical device for two reasons: its ability to suggest the strength of interpretive links among variables and its use by other researchers in achievement through the "Wisconsin model." As Duncan (1966) suggests, path analysis is especially useful in problems involving the successive experiences of a cohort. While it does not purport to be a method for discovering causality, it is useful for analyzing and illustrating the interpretive links among variables when the time-order among the variables is relatively clear, as it is with a cohort measured (actually or synthetically) at different points in time. In this dissertation it is hoped that insight will be developed into the interpretive variables that link the dependent variable, educational achievement, with the ultimate independent variables in the model, the social statuses and characteristics of the respondent's parent.

Path analysis is a recent innovation in sociology although it has long been in use among population geneticists and biometricians. As Duncan (1966) indicates:

> We are concerned with linear, additive, asymmetric relationships among a set of variables which are

> conceived as being measurable on an interval scale, although some of them may not even be measured or may even be hypothetical. . . . In such a system, certain of the variables are represented as dependent on others as linear function. The remaining variables are assumed, for the analysis at hand, to be given. They may be correlated among themselves, but the explanation of their inter-correlation is not taken as problematic. Each 'dependent' variable must be regarded explicitly as completely determined by some combination of variables in the system. In problems where complete determination by measured variables does not hold, a residual variable correlated with other determining variables must be introduced. (pp. 2-3)

Technical discussions of the method are beyond the scope of this dissertation; extended discussions are to be found in Duncan (1966), Blalock (1967), Li (1955) and Blau and Duncan (1967).

Several features of the developed model may be considered controversial. First, most of the variables are merely ordinal-level, and consequently, regression may be considered by some to be inappropriate. Some other researchers using the model, including the originator, Sewell et al. (1969), solve this by dichotomizing their ordinal variables. For example, an ordinal variable with grouped data measuring years of schooling completed is dichotomized into those "college attendance" and "no college attendance." Dichotomized variables can, of course, by their nature of having only two, mutually exclusive categories, be treated as an interval level measure. There is, however, a considerable loss of precision and, as an examination of Sewell et al. (1969) in the "Literature Review" chapter of this dissertation demonstrates, the point

at which the dichotomization is made can have a striking effect on the results obtained.

A second controversial feature of the model developed in this dissertation is the inclusion of race as a dummy variable. Sewell and Shah's work on differential college attendance rates among males and females in 1967 pioneered the standard technique for comparing two groups using path analysis. First, the technique used in this dissertation, the variable is inserted as an antecedent dummy variable so that the interactive effects can be observed. Secondly, separate models for each group are developed and their metric coefficients are compared. The latter technique permits observation of whether the models differ substantially for each group. As discussed below in the "literature review," only Portes and Wilson (1976) adhere to this strategy in their attempt to discover the impact of race on the "Wisconsin model." Kerckhoff and Campbell (1977), in an otherwise very thoughtful article, use only the latter strategy, as does Porter (1974). Here the sample size was too small to carry out this two-model strategy and retain acceptable levels of significance, so analysis is limited to the "dummy variable" strategy. However, because Kerckhoff and Campbell's model is somewhat similar, it is discussed and compared in detail to the results obtained from this research.

A final controversy may be the use of standardized measures of effect in the model. The debate over whether

standardized coefficients (usually called path coefficients) or unstandardized coefficients (usually called path regressions) are more appropriate to path analysis is tedious and heated. Most previous studies have used unstandardized coefficients because implicitly or explicitly they were designed to attempt to find causal process or (especially) to compare parameters of one population with another. This is particularly necessary for research such as that just previously cited where black and white path models were compared. As the variables were usually dichotomized, they had equivalent scales and the unstandardized coefficients could be used for interpreting their relative magnitude within the model as well.

In this dissertation, however, as the primary interest is the assessment of the effects of one variable compared to another in the same sample and the independent variables are measured in different units, standardized coefficients are much to be preferred. It must be noted, however, that this usage limits the ability to compare individual path coefficients obtained in this analysis with the path regressions obtained in other studies even if the models are similar.

## Part 3: Variable Construction

In this section are provided the variable number in the 1967-1972 Five Year Tape Codebook, the actual interview question, the recoding rationale used for the variables in this dissertation, and discussion of controversial variables. Means and standard deviations for each of the variables for

the subsample and for whites and blacks are provided in Table 1. The regression was conducted in a listwise fashion so the sample size is consistent for all variables.

All variables used in the model were collected in the 1972 wave of the "Panel Study of Income Dynamics." As noted above, the study which first interviewed subjects in 1967, collected data from "spin-off" families as well as families that had been sampled for the first wave. "Spin-off" families were new families created when a family member from a panel family moved into another household or created his or her own. The data set was reprogrammed, using the 1967 identification number so that selected variables collected from parental families were linked to their offspring's cases. This restructuring of the data permits the analysis of self-reported parental attitudes and characteristics and therefore avoids a serious limitation of much "Wisconsin model" research, that "significant others' influence" reported by an offspring respondent is unreliable because it reflects the offspring respondent's desires more than the influence of his parents/teachers, or peers. Three variables, all of which would probably be unreliable if reported by the offspring, are supplied by the head of the offspring's parental family: parental nAch, parental I.Q., and parental desires for the offspring's education.

Secondary analysis, however, often requires some compromises that place constraints on the conclusiveness of the results. In these data, some parental family heads who

supplied parental nAch, parental I.Q., and parental education desires were not the fathers the offspring had grown up with. This could be due to a change in family head before 1967 or between 1967-1972 as the family composition shifted. For this reason (and because some of the parental family heads are retired) the parental education and parental occupation variables used in the model were reported by the offspring respondent rather than those reported by the head of the parental family which were also available. This potential source of error is unavoidable with this data set.

## List of Variables

Race (variable 2828)

Race was assigned by the interviewer through observation. Whites are coded "1" and blacks "2."

Father's Education and Offspring Education (V2822)

Both father's education and son's education were reported by the offspring son. While the current male head of the offspring's parental family self-reported his education, this male head was sometimes not the father the offspring had while growing up. Consequently, the offspring report is probably more accurate. Both father's education and offspring education were coded and recoded using similar values.

How much education did your father have? Could he read and write? (if less than 6 grades).

How many grades of school did you (HEAD) finish?

1. 0-5 grades; don't know grade and could not (cannot) read and write
2. 6-8 grades; don't know but could (can) read and write
3. 9-11 grades; some high school; junior high
4. 12 grades; high school
5. 12 grades plus nonacademic training
6. College, no degree
7. College degree; no advanced degree
8. College, advanced or professional degree

Parental Occupation (V2796)

This variable was also reported by the offspring son. As it was originally coded in reverse of occupation prestige, it was transformed by $X/-1 - X_1$ for inclusion in the model.

What was your father's usual occupation when you were growing up?

1. Professional, technical
2. Managers, officials, and proprietors
3. Self-employed businessmen
4. Clerical and sales workers
5. Craftsmen, foremen, and kindred workers
6. Operatives and kindred workers, miscellaneous (armed services, protective workers)
7. Farmers and farm managers
8. Laborers and service workers, farm workers

Education Desired for Offspring (V2549)

This question was asked of the current head of the parental family. Occasionally, this was not the father the offspring grew up with. In addition, only those parental families who currently had children at home were asked this question, necessitating the elimination of about 4 percent of the offspring (and their parental family) from the sub-sample. Both of these compromises are regrettable but unavoidable. This variable was transformed by $X/-1 - X_1$ for inclusion in the model.

About how much education do you think the children will have when they stop going to school?

1. All children will go to/finish college (including junior college).

2. Some children will go to college; probably, hope wish All children finish/go to college.

3. All will finish high school; probably, hope wish Some children finish/go to college; Some or All will go to vocation/technical school after high school.

4. Some will finish high school; probably, hope wish All finish high school; probably, hope, wish to go to vocational/technical school after high school.

5. Respondent only says (some) children will not finish high school; don't know.

Number of Siblings (V2804)

The offspring respondent was asked this question. The actual number of siblings was coded up to seven.

Eight or more siblings were grouped.

How many brothers and sisters did you (HEAD) have?

Parental I.Q. and Offspring I.Q. (V2949)

The instrument used in the 1972 wave of the "Panel Study of Income Dynamics" is a thirteen-item shortened version of the Lorge-Thorndike Word Recognition Test developed by Veroff. The instrument was adapted after considerable pretesting and was considered by the Survey Research Center to be the "best single measure of general intelligence for all population subgroups." (p. 108)

Because of the interactive effect of education on this measure of I.Q. since it is based upon verbal skills (that is, formal education provides skills that independently increase scores on verbal I.Q. tests) the respondent's I.Q. and parental I.Q. were adjusted to permit the proposed antecedent time order. Following an equation suggested by Jencks, each I.Q. score was discounted the equivalent of one I.Q. point for each year of schooling reported by the respondent. In a few cases, the parental I.Q. reported is not that of the actual parent for reasons noted above. The index variable was constructed by summation of the correct responses to the following questions. The correct responses are starred.

J2a. We see _____ only at night.

1. Children
2. Plants
*3. Stars
4. Houses
5. Trees

9. NA; DK

J3. Not every cloud gives _____.

1. Weather
2. Shade
3. Sky
4. Climate
*5. Rain
9. NA;DK

J4. In the spring the buds form on the branches of the _____.

*1. Trees
2. Rivers
3. Bugs
4. Leaves
5. Animals
9. NA;DK

J5. There is an old _____, "An apple a day keeps the doctor away."

1. Talk
*2. Saying
3. Reader
4. Book
5. Man
9. NA;DK

J6. The ragged _____ may prove a good horse.

1. Puppy
2. Child
3. Calf
4. Lamb
*5. Colt
9. NA;DK

J7. The important thing is not so much that every child should be taught as that every child should be given the wish to _____.

*1. Learn
2. Play
3. Hope
4. Reject

5. Teach

9. NA;DK

---

J8. The person who _____ another must make good the damages.

---

1. Reforms
2. Improves
3. Instructs
*4. Injures
5. Delights

9. NA;DK

---

J9. False facts are highly _____ to the progress of science.

---

*1. Injurious
2. Necessary
3. Devoted
4. Useful
5. Instrumental

9. NA;DK

---

J10. It is better that ten guilty persons _____ _____, than that one innocent suffer.

---

1. Suffer
*2. Escape
3. Capture
4. Starve
5. Repent

9. NA;DK

---

J11. The winds and the waves are always on the side of the ablest _____.

---

1. Soldiers
2. Statesmen
*3. Navigators
4. Students
5. Weather

9. NA;DK

---

J12. The vanquished never spoke _____ of the conqueror.

---

1. Ill

*2. Well
3. Little
4. Nastily
5. Often
9. NA; DK

---

J13. Think long when you may _____ only once.

---

1. Abstain
2. Live
3. Die
*4. Decide
5. Eat
9. NA; DK

---

J14. The coward threatens only when he is _____.

---

1. Afraid
2. Surrounded
*3. Safe
4. Conquered
5. Happy
9. NA; DK

---

Parental nAch and Offspring nAch (V2950)

These variables were developed by Veroff and his associates (1971) as a survey instrument that was found to have high validity with fantasy based measures traditionally used to measure nAch. It includes questions about orientation toward achievement and anxiety. This index is believed to be superior to more situationally based measures of orientation toward achievement (such as educational aspirations) because it taps more underlying personality structure and because it is less obvious to the respondent, it is more likely to represent "real" orientation rather than verbal conformity to norms.

Each component is assumed to be equally weighted and one or zero is added to the index score depending upon the response. The responses that add a point to the index are starred.

K17. Which of these would come closer to describing why you might quit a job, the job was too difficult after all, or the job was not challenging any more?

1. The job was too difficult after all.
*5. The job was not challenging any more.
9. NA; DK

K18. Which would you like your child to do most, be popular with his classmates, or be a leader?

1. Be popular with his classmates.
*5. Be a leader.
9. NA; DK

K19. Would you rather have your child be a leader or do the work his teacher expects?

*1. Be a leader.
5. Do the work his teacher expects.
9. NA; DK

K20. Which of these is truer for you, would you like to have more friends or would you like to do better at what you try?

1. Would like to have more friends.
*5. Would like to do better at what you try.
9. NA; DK

K21. Would you like to have more people pay attention to your point of view or would you like to do better at what you try?

---

1. Would like to have more people pay attention to your point of view.

*5. Would like to do better at what you try.

9. NA; DK

---

K22. What kind of job would you want the most, a job where you had to think for yourself, or a job where the people you work with are a nice group?

---

*1. A job where you had to think for yourself.

5. A job where the people you work with are a nice group.

9. NA; DK

---

K23. Would you want a job where you had a lot to say in what's going on or a job where you had to think for yourself?

---

1. A job where you had a lot to say in what's going on.

*5. A job where you had to think for yourself.

9. NA; DK

---

K24. Now I'll read some statements people use to describe other people. Suppose you were to hear them. Which would you most like to hear about yourself--(his/her) opinion carries a lot of weight among people who know (him/her) or people like to live next door to (him/her)?

---

*1. (His/Her) opinion carries a lot of weight among people who know (him/her).

5. People like to live next door to (him/her).

9. NA; DK

---

K25. Now these two. Which would you rather hear about yourself--other people like (him/her) very much or (he/she) can do anything (he/she) sets (his/her) mind on doing?

---

1. Other people like (him/her) very much.

*5. (He/she) can do anything (he/she) sets (his/her) mind on doing.

9. NA; DK

---

K26. Now these two. (He/She) is fun to have at a party, or people like to go to (him/her) for advice on important matters?

---

1. (He/She) is fun to have at a party.

*5. People like to go to (him/her) for advice on important matters.

9. NA; DK

---

K27. Now think back to when you were in school, or to some other time when you had to take tests like applying for a job or a driver's license. Try to remember how you felt at that time.

When taking tests some people have an uneasy, upset feeling. When you took a test, would you say you were very upset, somewhat upset, or not upset at all?

---

1. Very upset

3. Somewhat upset.

*5. Not upset at all.

9. NA; DK

---

K28. When working on important tests, how fast did your heart beat--very fast, faster than normal, or about normal?

---

1. Very fast.

3. Faster than normal.

*5. About normal.

9. NA; DK

---

K29. During tests, how much did you worry about what it would mean to fail. Would you say you worried a lot, worried some, or did not worry at all?

---

1. Worried a lot.
3. Worried some.
*5. Did not worry at all.
9. NA; DK

---

K30. When you were taking an important test, how much did you perspire--a great deal, more than usual, or not at all?

---

1. A great deal.
3. More than usual.
*5. Not at all.
9. NA; DK

---

K31. Suppose you'd just taken some hard tests, and someone told you you'd done very well on them. Would you want to know more about the tests, or would you feel good about that?

---

*1. Want to know more about the tests.
5. Would feel good about that.
9. NA; DK

---

K32. Suppose you were in the middle of some important tests and someone told you that you were doing very well. Would you mostly feel good about what you had done so far or would you think mostly about the tests yet to come?

---

1. Mostly feel good about what had done so far.
*5. Think mostly about tests yet to come.
9. NA; DK

---

## Part 4: Summary

This chapter has attempted to provide information on sampling techniques, the collection of the data, the methodology used in constructing the model, and the manner in which the variables were constructed. The data, obtained

from the Survey Research Center of the University of Michigan, contained 220 male heads of families that were under 26 and had parental families that were also interviewed. The data set was reprogrammed so that offspring and parental cases formed a single case. This permits the analysis of offspring achievements and characteristics in the context of parental characteristics and attitudes with the parental qualities reported by that parent. A major criticism of prior research on the Wisconsin model has been that offspring reported their parent's influence. The reporgramming avoids this problem and permits true intergenerational analysis. Path analysis was selected as the methodological technique in conformity to other research on socioeconomic achievement and because it is particularly well suited to research that has a relatively clear time-order among the variables. Social status variables were constructed using standard sociological techniques. The variables nAch and I.Q. were extensively pretested for reliability and validity by the data source, the Survey Research Center.

The author wishes to make clear the limitations of the data. The sample is small and potentially unrepresentative and application of the findings of the present research to the general population should be done with caution.

# CHAPTER IV

## ANALYSIS

This chapter has several goals: (1) to explain the path coefficients that make up the model; (2) to identify the variables that are most influential in accounting for the explained variance in the ultimate dependent variable, respondent's educational achievement, and; (3) to uncover some order or pattern that the influential variables follow. Toward these goals, the model is presented in a series of figures (1 to 5), adding variables in developmental time-order, either singly or in places where the time-order between a pair of variables is unclear, together. In Part 1, the text explains the developing model, figure by figure, indicating the direct relationships among the variables. Also in Part 1 the cumulative effect of the variable race is explained both for illustrative purposes and to provide insight into the effect of that variable.

In Part 2 of this chapter, the direct and indirect influences of the several variables in the model on respondent's educational achievement are explored. In Part 3, an attempt is made to discuss the patterns these influential variables are in and summarize the interpretation of the model.

## Part 1: The Relationships Among the Variables

Figure 1 shows the relationships among race, parental nAch, parental I.Q. and parental education. While the intention is not to analyze the relationships among the parental variables in detail because of the possibility of spurious relationships, the relationships will be noted because they bear upon the relationships among the offspring variables. Little variance (2 percent) in parental nAch is explained by the only variable that preceeds it in the model, race. The standardized path coefficient between race and parental nAch is a mild -.155 and it should be noted that there are numerous interpretive and extraneous variables that might influence this relationship that the model does not include. Consequently, there is little usefulness in attempting to do more than note the relationship.

Somewhat more of the variance in parental I.Q. is explained, about 9 percent, and race and parental I.Q. have a Beta of -.297, which is somewhat substantial. However, despite the adjustment on the I.Q. variables for years of schooling that has been made, the same consideration of possible spuriousness that was noted earlier precludes any analysis. Parental nAch and parental I.Q. are positively related to each other with a coefficient of .2966 but because the time order between these variables is unclear, it not indicated in the model or analyzed as a causal relationship. Instead, the relationship between parental nAch

and parental I.Q. are seen as developing in the same time frame, that is, during primary socialization. It is useful to note, however, that the correlation is in the expected direction.

About 22 percent of the variance in parental education achievement is explained. Directly, parental I.Q. exerts the greatest influence (.388) despite the I.Q. "discounting" that has been applied. Parental nAch influences parental education achievement somewhat (.181) but race, directly, only slightly (-.097). The indirect influence of race is primarily through parental I.Q. (-.100) and only slightly through parental nAch (-.028) for a total Beta (directly and indirectly) of -.225.

Figure 2 shows the model for race, parental nAch, parental I.Q., parental education achievement, and parental occupation. Only about 7 percent of the variance in parental occupation is explained by the model. Parental education, directly, is the strongest influence (.196) and race, also directly, the next strongest (-.128). Parental nAch and parental I.Q., operating through parental education, are weakly influential (.035 and .067 respectively). Race, operating through parental education, is weakly influential (-.019) and through parental nAch and hence parental education, insignificantly. Race also influences parental occupation through parental I.Q. and then parental education only slightly (-.025). The total influence of race on parental occupation, directly and indirectly, is then, a mild (-.172).

Figure 3 adds both parental desires for their offspring's education and the number of siblings the respondent had (which is, of course, roughly equal to the number of offspring the respondent's parent had). About 16 percent of the variance in parental desires for their offspring's education is explained. Directly, it is influenced by parental education (.205), parental I.Q. (.195) and parental occupation (.157). Parental nAch and race do not directly influence parental desires for their offspring's education. Indirectly, race influences "parental desires" through parental education, parental I.Q., and parental occupation, for a total influence that remains weak (-.131).

A quite substantial 25 percent of the variance in the respondent's number of siblings is explained by the model. Directly, parental I.Q. (-.223), parental education (-.232) and race (.214) each contribute about equal amounts. Indirectly, race also contributes through parental I.Q. and through parental education (directly and through interpretive variables) a small amount. The majority of the influence then that race would seem to have on number of siblings is direct but the indirect influence is also important. The total Beta for race and number of siblings is a substantial +.323. The correlation between parental desires for their offspring's education and number of siblings is -.2170. Because these variables are believed to be developed in no clear time order in relation to each other, the correlation is merely noted. The correlation has

the direction that might be expected, however, in that the negative value indicates that parental desires for their offspring's education are lower in families with more children.

Figure 4 adds the respondent's nAch and the respondent's I.Q. About 18 percent of the variance in respondent's nAch is accounted for. Directly, this is through number of siblings (-.239), parental nAch (.218), and educational desires of the parent (.179). Race is not directly related nor are any of the other variables in the model. Indirectly, race influences respondent's nAch through number of siblings, parental nAch and parental desires for offspring's education. The total indirect influence, then, of race on respondent's nAch is not very substantial (-.133).

Respondent's I.Q. has an explained variance of about 19 percent. Primarily, the direct influence was parental I.Q. (.314) and, to a much lesser extent, parental education desires (.159). Race is not directly related but influenced respondent's I.Q. through parental I.Q. and, weakly, through parental desires for offspring's education for a mild total indirect influence (-.136).

It is interesting to note the lack of influence that routinely might be expected: parental education, parental occupation, and number of siblings. These relationships could have been influenced by the adjustment of respondent's I.Q. that was made for respondent's education. More likely, the relationships usually found are spurious. Respondent

I.Q. and respondent nAch have a correlation of .2642. As with parental I.Q. and parental nAch, these variables have no clear time order so they are entered in the model together. The correlation is about the same for offspring and parents and is in the expected direction of higher I.Q. corresponding to higher nAch.

Figure 5 shows the completed model with the respondent's educational achievement as the dependent variable. A substantial 41 percent of the variance is explained. Parental education is the strongest direct influence (.264), followed by respondent's nAch (.223), educational desires the parent has for his/her offspring (.21), parental occupation (.141) and number of siblings (-.12). Surprisingly, the expected relationship with I.Q. was either profoundly affected by the adjustment on I.Q. made for years of schooling or else was spurious.

Race is not directly related with respondent's educational achievement but, as has been shown, influences each of the five directly related variables. However, as race has relatively little explanatory power for most of these variables, the path coefficients are small and even their cumulative effect is rather weak. In decreasing order of influence, race influences respondent's educational achievement through parental education, parental I.Q., number of siblings, respondent's nAch, parental desires for their offspring's education and parental occupation. The total influence in the model is a moderate -.182.

## Part 2: Influences on Educational Achievement

In this part of the chapter, the direct and indirect influence that each independent variable has on the dependent variable, respondent's educational achievement, will be noted.

Parental nAch has a modest Beta of about .125 with parental educational achievement. All of this influence is, as we have seen, indirect; mainly through offspring nAch (.056) and parental education (.050) and slightly through parental education desires (.009), number of siblings (.005) and parental occupation (.005).

Number of siblings has a slightly larger influence on respondent's educational achievement with a Beta of -.165. Most of this influence (-.109) is direct but -.056 is through number of siblings depresses out effect on offspring nAch.

Parental occupation is the next most influential variable in the model. Most of its influence (.132) is direct with some (.035) also accumulating through parental occupation's influence on parental education desires. A small amount (.007) is gained through this variable's indirect influence on offspring nAch.

Race is the next most influential variable on offspring educational achievement with a Beta of -.182. As noted above, all of this influence is indirect and operates by race's influence on parental education (.063), number of siblings (.035), offspring nAch (.032), parental educational

desires (.029), and parental occupation (.023).

Parental I.Q. has a Beta of .226 with offspring educational achievement. As with race, all of parental I.Q.'s influence is indirect. In order, parental I.Q. influences educational achievement: through parental education (.094), parental education desires (.060), number of siblings (.033), offspring nAch (.030), and, finally, parental occupation (.009).

Offspring nAch is the third most influential variable on offspring educational achievement. All of this variable's influence is direct and totals .244.

The second most influential variable on offspring educational achievement is the parental desires for their offspring's education. Out of a total influence of .267, most of the influence (.220) is direct. The remainder is indirect and comes from parental education desires influence on offspring nAch.

Parental education is the most influential variable on educational achievement with a total Beta of .405. About two-thirds (.278) of this influence is direct while another third (.127) is indirect. The indirect influence comes from parental education's influence on parental education desires (.052), and, about equally, the variables influence on: parental occupation (.026), number of siblings (.025), and offspring nAch (.024).

Offspring I.Q. has only a spurious relationship with educational achievement.

Variables in the model that account for the explained variance in offspring educational achievement are, then, in order of increasing influence: parental nAch (.125), number of siblings (-.165), parental occupation (.174), race (-.182), parental I.Q. (.226), offspring nAch (.244), parental education desires (.267), and parental education (.405).

## Part 3: Interpretation and Summary

It has been shown that parental education has the strongest influence on offspring educational achievement. While some of this influence is mediated by other variables and the cumulative effect of these paths are significant, most of the influence of parental education is direct. Of the total Beta (.405) that parental education has with offspring educational achievement, the direct portion is .278 while only .127 is interpreted by mediating variables. However, the interpreted portion will be discussed first, then the causes of the bulk of the influence will be speculated upon. These indirect influences through which parental education influences offspring education are unsurprising, apart from their relative weakness compared to the direct relationship noted.

Higher parental education is mildly related to higher educational desires for their offspring, and there is some tendency for these desires to lead to higher achievement. The total Beta is only about .063. Similarly, higher parental education has some impact upon parental occupational status, which also leads to higher educational achievement

for the offspring, but the impact is weak (.034). Parental education is negatively related to number of offspring produced, and there is a weak negative relationship that this variable has with offspring educational achievement. The total Beta is small (.038). More indirect paths through which parental education influences offspring education have been outlined in Part 2 of this chapter. While all are in the expected direction, they are weak due to the generally weak path coefficients among the variables in the model.

The direct influence that parental education has on offspring education is more than twice the indirect influence through all the mediating variables so the argument that parental education influences offspring education primarily through these variables must be rejected. It is neither the higher occupational status that higher parental education causes nor the probably higher disposable income available from fewer competing offspring that accounts for this link. The relationship between parental education and offspring education is also little mediated by attitudinal variables like educational expectations parents have for their children or, more subtly, the socialization of children into high achievement motivation. Parental education has not been found to be causally related to offspring I.Q. (the apparent relationship is spurious, caused by the strong relationship parental I.Q. has with both parental education and offspring I.Q.), and, in any case, is irrelevant because the relationship between offspring I.Q. and offspring

educational achievement itself is spurious. It is necessary to conclude that the model is largely unsuccessful in explaining how parental education influences offspring educational achievement. It does seem that the relationship is not much influenced by the mediating variables of parental occupation, parental education desires, number of offspring, offspring nAch, or offspring I.Q.

Attempting to explain this linkage requires, then, leaving the model and can therefore be only conjectural. Perhaps some direct role modeling takes place, where offspring come to view educational achievement as the appropriate route for achievement rather than some alternative route. Related to this is the possible limitation of the parental educational desires variable since it cannot measure intensity and these desires. Perhaps the desires are deeply held and impressed upon the offspring or perhaps they are merely conforming to cultural norms without much belief that they have application to the real world. It seems possible also that parents with higher educational achievement could provide more direct aid in learning or coping with school or providing a home atmosphere where studying is encouraged. None of these alternative explanations can be tested with the model or the data set. Some probably cannot be tested at all. The model is fairly successful in accounting for parental education, with 22 percent of the variance explained despite the few variables that preceed it in the model. As noted, parental I.Q. has the strongest relationship with a

coefficient of .338, while race and parental nAch contribute about equal amounts (-.2 and .181 respectively). However, as previously noted, these relationships should not be mistaken for causal ones because they have not, in the model, been tested for spuriousness. The strong relationship between parental I.Q. and parental education may be an artifact of relationships not analyzed in the model.

Parental desire for the offspring's education has the second strongest impact on offspring educational achievement of the variables in the model. Almost all of this impact is direct, as only .047 of the total Beta of .267 is mediated by another variable, offspring nAch. This finding indicates the important role that parental expectations or desires have on the offspring because they operate independently of motivation or ability. It is not necessary for these parental values to be implanted in the offspring in the form of a generalized need to achieve for them to have an impact on the offspring. Nor is it necessary for the offspring to have higher ability (as measured by offspring I.Q.) for these desires to be implemented by the offspring. The model is unable to provide further information as to how this occurs. Perhaps the nAch variable, which was designed to be a generalized measure of motivation toward achievement, is less useful here than more commonly used indexes which attempt to measure educational motivation (or, perhaps, more clearly, motivation toward achieving levels of schooling). Unfortunately, the model is unsuccessful in explaining very

much of what influences parental desire for offspring's education as indicated by the rather small explained variance of 16 percent. Most of the influence that is explained comes about equally from parental education and parental I.Q., and most of it directly. Parental I.Q. is the strongest influence, with parents scoring higher on the I.Q. test having higher desires for the children's educational achievement. While the direct Beta is .195, indicating that this linkage is present regardless of the parental education or occupation, these variables also are interpretive for a small additional Beta of .079. Therefore, parental I.Q. operates to influence educational desires in both ways, so that they support each other. Parental I.Q. influences parental desire for offspring's education via parental occupation only through the interpretation of parental education.

Parental education is almost as influential as parental I.Q. in explaining parental desire for the offspring's education. As has been demonstrated, parental education has a strong direct influence on educational achievement and this indirect path through parental desire is the most influential of its indirect paths. It indicates that parents with higher educational achievements tend to have higher desires for their offspring's educational achievements. Most of the influence is not mediated by parent's occupation, indicating that even if the parent has been relatively unsuccessful in using education to further

occupational status, the desire for offspring's education exists.

Parental occupation status is the third and most influential variable in explaining parental education desires. Its influence, with a coefficient of .157, is considerably weaker than parental education (.235) or parental I.Q. (.274). Not surprisingly, higher parental occupation is related to higher education desires for one's offspring.

Race has a Beta of -.131 with parental education desires, indicating that black parents in the sample have slightly lower desires or expectations than do whites. All of this influence is indirect and is about equally divided among parental education (-.04), parental I.Q. (-.06), and parental occupation (-.04). None of these influences are very strong but the patterns are consistent: black parents have lower educational levels, measured I.Q.'s, and occupational status. Each of these leads to slightly lower educational desires for their offspring. The paths by which the next most influential variable, race, influence offspring's educational achievement have already been outlined in detail in Part 1 of this chapter. In summary, the findings are that there is no direct independent relationship and that the indirect relationships are small but incremental. The influence through parental education and parental I.Q. are about equal at -.060. Educational achievement is also influenced by race through number of siblings

(.039), offspring nAch (-.03), parental occupation (-.030), and parental educational desires (-.031).

Offspring achievement motivation (nAch) is the next most influential variable in the model, with a Beta of .244 on offspring educational achievement. It is nearly as influential as parental education desires but operates almost entirely independently of it. This indicates that high desires for one's offspring education do not necessarily lead to high nAch (the coefficient between the variables is only .179), but both have independent effects upon offsprings' educational achievement. Unfortunately, the model is not very useful in explaining where nAch comes from because only 18 percent of the variance is explained. This is especially disappointing, given the seven variables that preceed nAch in the model and the potential explanatory power one would expect them to have. What variance is explained is primarily by socialization variables rather than social status variables like parental education, occupation, or race. The strongest influences on offspring nAch are about equal in strength: number of siblings (-.231) and parental nAch (.230). Having more siblings decreases the level of measured achievement motivation independent of parental occupation or education. This would seem to indicate that it is not the relative material deprivation that one experiences because of competing siblings that reduces the nAch level. That number of siblings influences offspring nAch independently of parental nAch (and other variables in

the model) indicates that the relationship between number of siblings and nAch is probably not spurious and therefore not caused by some other variable. It would seem then that this relationship is probably caused by some feature of the different family dynamics that occur in larger families. As has been noted, a substantial 25 percent of the variance in number of siblings was explained. Race has a substantial Beta of .323 with number of siblings, mostly direct, while parental education and parental I.Q. also have strong relationships (-.232 and -3.01). Blacks tend to have larger families of orientation, partly because they tend to have slightly lower I.Q., but mostly for reasons that the model does not provide information on. Parental education and parental I.Q. seem to have independent effects upon number of offspring produced. These three variables, then, explain much of the variance in number of siblings which is the most influential variable on offspring nAch in the model.

Parental nAch is nearly as influential on offspring nAch as number of siblings but, as has been demonstrated, operates independently. While a small amount of the influence of parental nAch on offspring nAch is transmitted through parental education (and hence numerous other paths), most of its influence is direct. This hints at a kind of reliability for the instrument. More importantly it shows that a basic attitude that influences educational achievement may be transmitted intergenerationally without interpretive

variables, especially since parental nAch (except minutely through parental education) influences no other variable in the model.

Parental educational desire has a coefficient of .191 with offspring nAch, all of it direct. The relative weakness of this link, considering that both variables are about equally responsible for the explained variance in educational achievement, supports the argument that each variable taps something that is quite different in the respondents. Although parental educational desires preceed the offspring's nAch in time order, they do not seem to have a great deal of influence on it, indicating that it is possible for the offspring to develop high motivation without high parental desires and low motivation despite high desires. However, as we have noted, both contribute to offspring educational achievement in the same direction.

Race has a coefficient of -.133 with offspring nAch, indicating that black offspring tend to have slightly lower achievement motivation than do white offspring. While there is no direct influence, race does slightly influence parental nAch, parental desires for their offspring's education, and especially number of offspring. As noted, even the cumulative impact here is not very substantial. All impacts, however, are in the same direction. Parental education and parental I.Q. have even less impact on offspring nAch. Both of them operate primarily through number of siblings and, slightly, through parental education desires.

Achievement motivation remains largely elusive. Although it is the third most influential variable in the model for predicting educational achievement, the variables in the model that precede it have little ability to account for it. The most influential variables on nAch in the model, however, do seem to be, in a sense, attitudinal. Number of siblings influences offspring nAch even independently of what would mostly determine the economic conditions under which the family would live. The most plausible argument then would seem to be something about the way larger families tend to distribute power, control behavior, or structure relations. Perhaps these adaptions to the larger family become generalized so that one is less demanding of others. Parental nAch and parental education desires are the next most influential, and both attitudes exist somewhat independently of the structural conditions of the parents and offspring. The weaker influences on offspring nAch are all structural variables: race, parental education, parental I.Q., and parental occupation and, in comparison with the attitudinal variables, these have much less influence. Because so much less of the variance in offspring nAch is explained than one might expect, it is perhaps inappropriate to suggest that the model tells us much at all about the origins of nAch. It does indicate that attitudes are more influential than statuses, but also that achievement motivation is produced by processes we know little of or else vary enormously.

Parental I.Q. is the fourth most influential variable in accounting of the variance in offspring educational achievement. As noted, all the influence is indirect and none, surprisingly, is through the offspring's I.Q. despite the relatively strong direct path between parental and offspring I.Q. This is because, as has been noted, offspring I.Q.'s relationship to educational achievement is spurious. These indirect relationships emphasize how dependent parental I.Q. is upon other variables to be influential upon the offspring educational achievement. Parental I.Q.'s impact takes three routes: parental education, number of siblings, and parental education desires. Because parental education has an impact on almost all of the variables that antecede it in the model, and has a direct impact upon education achievement, parental I.Q. has many small but cumulative effects upon educational achievement for the offspring. Similarly, parental I.Q. influences number of siblings and parental education desires, both of which are directly related to educational achievement for the offspring and influence other variables that are influential. About half of the influence parental I.Q. has is through parental education desires.

Parental occupation has a total coefficient of .182 with offspring educational achievement. Most of this total is direct (.132) with a small amount indirect through the only other antecedent variable that parental occupation is related to in the model, parental education desires. Through

parental education desires directly, and indirectly via offspring nAch, Betas of .034 and .008 are added to the total influence of parental occupation. That most of parental occupation's influence is direct rather than mediated indicates that it is probably not attitudes in the child that are influenced by parental occupation. Rather the relationship is caused by something more simple like material resources to devote to the offspring or providing a material environment in which educational achievement could occur. Alternately, there might be a subtle role modeling that occurs, but this seems somewhat unlikely given the rather moderate relationship between parental education and parental occupation. If an income variable for the parent were available, it might be possible to test these relationships. Since it is not, however, the causes will have to remain conjectural. Little of the variance in parental occupation is explained by the model, only 7 percent. Parental education was the most influential (.196), followed by race (directly and indirectly), with a total coefficient of .172. Higher parental education, then, had a mild influence on higher occupational level while race had still milder effect, with blacks having lower status occupations.

A larger number of siblings had a negative effect upon offspring educational achievement, with a total coefficient of .165. About two-thirds of this influence was direct and the other third was via offspring nAch. A- noted in the examination of the influences on respondent nAch, it would

seem likely that the dampening effect of number of siblings is due to something about the family dynamics rather than a relative shortage of material goods because parental occupation is not in the linkage. Number of siblings has a strong influence on offspring nAch, and the direct relationship between the variable and educational achievement is probably also an attitudinal link.

The final variable that influences offspring educational achievement is parental nAch. The total coefficient is small at .125, all of which is indirect via parental education (.073) and via offspring nAch (.052). While the coefficient that parental nAch has with parental education is mild (.181), because parental education is so influential, more of parental nAch's influence is through this variable. Parental nAch is an important influence on offspring nAch, especially because so little of that variable's variance is explained, but the link to offspring educational achievement is weak. Parental nAch, in summary, influences offspring educational achievement only weakly and only through other variables. Parental nAch is related only to two variables in the model, parental education and offspring nAch. This is somewhat surprising, perhaps, since one might expect that it would have had an independent relationship with parental occupation, parental education desires, or number of siblings. It may be that these variables (especially parental occupation) have an interactive effect over the life cycle, so that parental nAch is reduced (or raised) given the

relative success or failure of the subject during his/her lifecycle.

In summary, the two variables that explain the most variance in offspring educational achievement are both "education" variables: parental education and parental educational desires. Almost all of the latter's influence is direct while two-thirds of the former's is. As noted, parental education is also influential through increasing parental education desires, increasing parental occupational status, and decreasing the number of offspring. The direct and relatively high coefficient that parental educational desires has with offspring educational achievement indicates the ability of parents' desires to influence their offsprings' achievements regardless of ability or generalized achievement motivation. The most direct relationship parental education has with offspring education cannot be explained by the model but its existence is striking. While a considerable proportion of the variance parental education is explained (22 percent), problems with possible spuriousness prevents much real explanation. In contrast, there is little likelihood of spurious explanation of the variance in parental educational desires, but much less of the variance is explained.

Offspring nAch was nearly as influential as parental educational desires but influences mostly independently of them. Because it is directly antecedent to educational achievement in the model, all of its influence is direct.

Unfortunately, as noted, the model is unsuccessful in accounting for much of the variance in offspring nAch despite the seven variables that precede it in the model. Offspring nAch is apparently important but the model indicates little about what kind of families are likely to produce it.

Parental I.Q. is the next most important influence on offspring educational achievement and operates indirectly, mostly through influencing the education level of the parent, the educational desires of the parent and, more weakly, the number of offspring.

Race has important influences on offspring educational achievement, all indirect through six different variables. Each of the indirect coefficients is small but they have a cumulative effect. Black parents have less education, lower measured I.Q.'s, more offspring, children with lower nAch scores, lower desires for their offsprings' education, and lower occupational status.

Parental occupation's influence on educational achievement is mostly direct, indicating that higher occupation status influences achievement without the mediation of ability, generalized nAch, educational desires, or family size. Little of the variance in parental occupation is explained. Number of siblings is nearly as influential as parental occupation. Most of its influence is also direct, but in contrast, much of the variance in this variable is explained by parental I.Q., parental education, and race.

Parental nAch has only slight influence on educational achievement, all indirect and about equally divided between influencing through offspring nAch and parental education.

# CHAPTER V

## DISCUSSION

This chapter has three goals as it attempts to relate the findings of this study to previous research that was discussed in the review chapter. The first topic explored will be whether nAch (need for achievement) is causally related to educational achievement. Secondly, whether nAch serves as an interpretive variable for parental characteristics will be discussed. Stated another way, is nAch a link through which parents pass on their position in the stratification system to their offspring? Finally, the bulk of the chapter will be a comparison of the results of this research with some other models of socioeconomic achievement based generally on the "Wisconsin model."

As reviewed above, several studies have attempted to link nAch with mobility. Because the instrument used for measuring nAch was a projective test requiring considerable time to administer and skill in interpreting, few of these studies were of adequate sample size or representativeness to require consideration here. Two exceptions, both by the same author, Crockett (1964, 1966), and using the same national probability sample that included a projective nAch

instrument were reviewed in the literature chapter. In both studies, Crockett found higher levels of occupational attainment and college completion for males with higher nAch even when father's occupation prestige was controlled. As noted above, however, Crockett's findings are weakened by possible time-order problems because nAch scores on the respondents whose mobility was being measured were not collected until the respondents themselves were adults. While nAch is believed to be a relatively stable personality feature, this assumption has not been adequately tested, and interactive effects between success or failure and nAch scores must be considered possible.

The present model attempts to control this interactive effect through limiting the analysis to men under 26 who headed households. Because men under 26 were unlikely to have reached their occupational level peak, educational achievement was selected as the dependent variable. With these reservations excepted, Crockett's findings would seem to be confirmed as a level of nAch was found to be a significant influence on educational achievement, independent of other variables. As noted, while it is not nearly as significant as parental education and ranks only third out of nine independent variables with a coefficient of .244, the second through fourth variables were nearly equally influential (parental education desires for their offspring was second at .267 and parental I.Q. was fourth at .226). Path analysis' strongest virtue, the ability to uncover spurious

relationships was, of course, unavailable to Crockett who used three variable tabular analyses on a limited number of variables. While precise judgments are impossible to make, it would seem that Crockett tended to infer somewhat exaggerated effects for nAch, possibly because of undiscovered spurious effects. The findings of this research are that while nAch is important, it is only one of several important forces that influence achievement.

A second issue this study has attempted to address is whether nAch is an interpretive variable between parental statuses and offspring achievements. This issue is the outcome of linking the relationship between nAch and achievement noted above and several studies, reviewed in the literature chapter, that suggest that nAch level is intergenerationally produced. Among these studies are Douvan (1956), Rosen (1956), and Morgan et al. (1962), all of which reported a positive correlation between offspring nAch and parental socioeconomic status. Only one study, Rosen (1959), was intergenerational, measuring both parental and offspring nAch and also controlling for race and ethnicity. Rosen found social class to be much more important than race or ethnicity in determining offspring nAch except among Jews.[1] Most of these studies, however, were unable to or made little attempt to control for spurious relationships, which can, of course, be treacherous.[2]

The findings of this dissertation do not support a strong link between parental statuses and nAch. First, only

18 percent of the variance in offspring nAch is explained, which is especially disappointing considering the number of variables (seven) that precede it in the model and what one might expect their potential explanatory power to be. Consequently, although offspring nAch has influence on educational achievement, this dissertation explains little of what produces various levels of it. Secondly, those variables that do explain much of the variance in offspring nAch are largely not social status variables but rather social psychological ones. The most influential are number of siblings, with a coefficient of -.231, parental nAch (.230), and parental educational desires for their offspring (.191). As noted earlier, parental occupation plays little role here, even through number of siblings, strongly suggesting some socialization process outcome rather than limited resources. Parental characteristics that produce levels of offspring nAch, then, are largely attitudinal and exist apart from their social statuses. In summary, this study explains little of how offspring nAch level is produced, and what little it does explain suggests that parental statuses are not very influential even in shaping a psychological environment that might foster nAch in their offspring. The connection between parental statuses and offspring nAch reported by other researchers should be considered carefully.

For several reasons it would be unfruitful to compare the results obtained in this research on a path-by-path basis with those found in other applications of the Wisconsin

model. First, the results here have been reported as standardized coefficients so that the relative impact of the variables within the model presented can be more accurately analyzed. It is misleading, however, to compare standardized coefficients from one sample to another, particularly if the variables are constructed in rather different ways (as is the case here). While the unstandardized coefficients obtained in this research could also be presented, there would be little point to it because for other reasons, this type of comparison would still be misleading. Most researchers employing the Wisconsin model have implicitly or explicitly been concerned with the discovery of whether social psychological variables act as interpretive variables between "ascribed" features of a respondent's life chances (parental social statuses and "mental ability") and the respondent's achievements. Consequently, most other researchers have indexed the components of socioeconomic status available in that data set into a single variable. In contrast, this research has been an attempt to discover which of the social statuses interact with the interpretive variables and in what pattern the interaction takes place. Only limited comparisons are possible, then, because, in a sense, the subject of this investigation has not been much explored by others.

Secondly, comparisons between this research and others are dubious because of the different variables used in the various models. This is not so much a problem when the variables are attempts to measure similar things (as nAch is

an attempt to measure "ambition" or "aspirations" in a more sophisticated manner), but some models contain variables for which there is nothing comparable in the "5,000 Families" data set, and this research introduced several variables not used by others but available here. "Academic performance," for example, is a crucial variable to some of the studies reviewed, both as an interpretive and independent variable. There is unfortunately nothing at all like it available from the "5,000 Families." In contrast, parental I.Q. was found to be an important interpretive variable in this dissertation's findings. It is unique to this data set.

Some variables were operationalized rather differently here than in other research. Perhaps the most important example of this was the treatment of I.Q., which varies in replications of the Wisconsin model and further still in this research. First, I.Q. was "discounted" in this analysis by the number of school years completed in order to reduce the interactive effect common in verbal based I.Q. measurement. Second, the location of I.Q. in the model relative to other variables varies. In the original Wisconsin model, proposed in Sewell et al. (1969), it is co-independent with parental socioeconomic status. Other replications make it dependent upon parental socioeconomic status. In this dissertation, it is has been placed so that it is dependent upon the parental statuses, attributes, and attitudes, and co-independent with offspring nAch only toward offspring educational achievement.

Finally, some of the models presented in the literature review section take a different strategy in assessing the impact of race by developing different and parallel models for each race. Direct comparisons with the findings reported here are impossible, of course, but this technique provides insights not obtainable using the single model strategy employed here. The two techniques compliment each other, and comparisons will be made to place the findings of the present study in context.

This chapter, then, cannot be a direct comparison between these findings and those reviewed in the literature section. Instead, the relative influence the variables had on each other and the patterning of the influences in several of the Wisconsin models will be compared with the relative influence and patterning found in this research. The economy and efficiency of the various models will also be compared.

Sewell et al. (1969) explained a higher proportion of the variance in educational achievement with a more parsimonious model. Although only six variables precede educational achievement in Sewell et al.'s model (some of the variables, like socioeconomic status are, however, index variables with potentially more explanatory power), the model explains 50 percent of the variance in educational achievement compared with 42 percent for the model presented here. Further Sewell et al.'s model is more efficient with only a few quite strong path coefficients "soaking up" almost all the explained variance and most of the influences of the

independent variables are mediated by interpretive variables. In contrast, the findings presented here indicate many relatively weak influences on educational achievement, with most of the influences operating directly rather than through the medium of interpretive variables.

Sewell et al. found educational attainment is influenced most strongly by "level of educational aspiration," followed by "significant others' influences" and, more weakly, academic performance and socioeconomic status. Most of the explained variance is based on the level of educational aspiration, with academic performance only half as influential and socioeconomic status only one-seventh as much. "Significant others' influence" has a coefficient with educational attainment that is about two-thirds of the size of the coefficient for "level of educational aspiration," but Sewell et al. believe this path to be "theoretically debatable" since they expected all of the influence of "significant others' influence" to be channelled through educational aspirations. They avoid the obvious "post-hoc" explanation that significant others can influence one's actions without influencing the attitudes that precede it.

The model presented here has no comparable variable for "level of educational aspiration" for the offspring respondent because a more generalized variable measuring "achievement motivation" was used instead. This variable was the third most influential, about two-thirds as much as the most influential (parental education), but only marginally

less so than "parental education desires." Both the present study and Sewell et al. find, then, that an internalized social psychological variable is of importance. The greater effect in Sewell et al. was perhaps due to the fact that the variable used was more specific to the effect. Also, Sewell et al.'s sample were high school seniors who presumably had already acted on their aspirations (Alexander et al., 1974). The two models differ, however, in their ability to predict aspirations/motivation, with the explained variance for Sewell et al.'s educational aspirations a relatively high 36 percent while the present study's explained variance for offspring nAch is a more modest 18 percent. But virtually all the explanation for level of educational aspiration in Sewell et al. comes from "significant others' influence," which as we have seen is a rather flawed variable. Since the level of significant others' influence is self-reported by the respondents, we would expect that they would tend to bring their perception or reporting of these influences in congruence with their own aspirations.

The higher explained variance for educational achievement in Sewell et al. and the more efficient use of the interpretive paths can be attributed, then, at least in part, to the lack of really causal relationships among the variables. The high correlation between "significant others' influence" and "educational aspirations" is probably due in part to the fact that mostly the same effect was being measured. The high correlation between "educational

aspirations" and "educational achievement" is due, largely, to the effect that either planning to go or not to go to college must have had on both variables.

The strikingly weak, direct relationship Sewell et al. found between socioeconomic status and educational achievement is possibly also an artifact of this confusion. The coefficient reported was a weak .05 compared with this model's direct coefficient between parental education and offspring education of .278 and parental occupation and offspring education of .132. By interpretively placing the variables "significant others' influence" and "ambition," which are highly correlated with educational achievement but do not cause it, Sewell et al. have "soaked up" most of the direct correlation between socioeconomic status and academic achievement. This is reflected in the .22 coefficient SES has with "significant others' influence," and while the Beta coefficient for socioeconomic status and educational aspiration without "significant others' influence" is not reported, the zero-order coefficient is a substantial .26.

Alexander, Ecland, and Griffin (1974) found that class rank and aptitude had the strongest consequences for educational achievement, followed by educational expectations, peer plans, and father's occupation. About 45 percent of the variance in educational attainment is explained. The expectations parents and teachers had for the youths had little impact, and no status variable had much impact apart from father's occupation. The most striking difference

between Alexander et al.'s findings and this research is the impact of aptitude on educational achievement found in each model. In Alexander et al., only class rank was more important, while in the model developed here the relationship between offspring I.Q. and educational achievement was found to be spurious. Offspring I.Q. is located in both models in a similar interpretive position between parental status and offspring educational achievement. Only the location of parental educational expectations differs between the models since it is potentially an interpretive variable between aptitude and achievement in Alexander et al., and indicated as a causal variable for offspring I.Q. in the present model. It is unlikely that this difference accounts for the different findings because in Alexander et al. aptitude has a coefficient of only .014 with parental expectations, and parental expectations have but a coefficient of .24 with educational achievement.

In contrast, in this research, parental expectations has a standardized coefficient of .165 with offspring I.Q. and a coefficient of .267 with educational achievement. If it were merely the particular placement of the parental influence variable in the model that caused the different results, the aptitude-parental expectations link in Alexander et al. would probably be stronger.

Also, it is unlikely that the difference in results of the impact of I.Q. on achievement was due to the "discounting"of I.Q. scores that was applied in the present

analysis. This technique, which attempts to compensate for the interactive effect that schooling has on I.Q., is necessary mainly because of time-order problems inherent in a single-shot survey (as was the data source for this study). Because the data used by Alexander et al. were longitudinal, this problem is much less important. Problems of cultural bias exist in both instruments but cannot be responsible for the different results.

The only remaining probable explanations for the difference, other than sampling and research design, are not very satisfactory. First, the parental social status variables used by Alexander et al. were obtained from the 1970 followup to the 1955 data and were self-reported by the respondents rather than obtained from their parents. Perhaps the fifteen year gap interacts with the self-reporting so as to bring the parental statuses more in congruence with the respondent's present statuses and therefore decrease their explanatory power compared with aptitude.

Alternately, perhaps the mobility system changed somehow in the ten to seventeen year age gap between the ETS sample and the "5,000 Families" sample. The conditions for mobility would have to have changed radically to decrease the influence of aptitude and increase the influences of parental social statuses. This change, at least at the magnitude required to explain the different outcomes, seems unlikely.

Wilson and Portes (1974) was an attempt to replicate Sewell et al. (1969) using a national data set from the 1966

Youth in Transition Project. As a replication, it shares variable construction problems already noted: the "significant others' influence" is reported by the respondent and educational aspirations are not measured until the respondents are high school seniors. Wilson and Portes were able to account for about 42 percent of the variance in educational achievement and, compared to Sewell et al., found reduced effects of intervening social psychological variables ("significant others' influence" and self-assessment) and increased direct effects of "objective" variables: parental status, academic performance, and mental ability.

As noted in the literature review chapter, "significant others' influence" on educational achievement was entirely mediated by educational aspirations, but this influence was much less than that reported by Sewell et al. Socioeconomic status and mental ability had significant effects on educational attainment net of "significant others' influence" and other intervening variables. Academic performance was the strongest determinant of educational achievement, and it operates both directly and by shaping aspirations. Mental ability had a powerful influence on academic performance.

Since the data set used for this research lacks a variable comparable to the "academic performance" variable that is central to the findings reported by Wilson and Portes, discussion comparing the results must be limited. In

addition, Wilson and Portes are mainly concerned with comparing the impact of social status variables with that of social psychological ones and do not break down the effects of the various components of their measure of socioeconomic level. They found, in decreasing order of total (direct and indirect) influence on educational achievement, the variables: academic performance, mental ability, socio-economic status, educational aspiration, and significant others' influence. The social psychological variables each had less than half the impact of academic performance or mental ability.

A comparison of the effects reported in Wilson and Portes with those reported here highlights several similarities and a major discrepancy: the influence of mental ability. First, in both models, parental social statuses are of greatest importance in determining educational achievement, and most of their influence (or parental education desires) or educational aspirations (or nAch). Second, significant others' influence and nAch occupy about the same relative positions in the influence hierarchy. However, in Wilson and Portes the influence of this variable is entirely indirect (via educational aspirations), in the model presented here almost all of the influence is direct rather than through offspring nAch. Probably this difference is due to several differences between the two research projects. First, as noted, "significant others' influence" is reported by the respondent in Wilson and Portes rather than by the

"significant others." As noted earlier, there is a strong tendency for the respondent to report his influences so that they are in congruence with his own aspirations. Second, educational aspirations as used by Wilson and Portes is more specific to the significant others' influence variable in that they are both "educational." In contrast, nAch was designed to measure a more generalized "need for achievement" and one might expect it would be less correlated with the preceding variable. Finally, the model developed in this dissertation contains another kind of "significant others' influence" in the parental nAch variable. This variable explains most of the small amount of variance that is explained in offspring nAch.

Educational aspirations and offspring nAch are about equally influential in determining educational achievement. They are in similar positions in the influence hierarchy.

The sharpest difference between the findings of Wilson and Portes and the present research are in the relative influences of mental ability and I.Q. As noted, in Wilson and Portes, mental ability is second only to academic performance in influencing educational achievement, while in the model developed here, the influence of I.Q. was found to be spurious. It is only possible to speculate why this distinction should be so striking. Possibly the distinction is caused by the fact that the present model contains several other variables not present in Wilson and Portes that are correlated with offspring I.Q. and are influential on

educational achievement. Race and parental I.Q. clearly play this role because they are the third and fifth most influential variables upon educational achievement and are highly correlated with offspring I.Q. It cannot be established that the relationship noted in Wilson and Portes is indeed spurious but these results suggest that this is certainly possible.

Portes and Wilson (1976) use the model and data developed in the work just discussed, adding, in two different ways, the important variable of race. First, they add race to the model as a dummy antecedent variable preceding the other variables in time-order. In construction then, this first model is much like the one developed here. The second approach taken by Portes and Wilson in their 1976 article is to attempt to develop separate models for whites and blacks. Because this second approach is substantially different than the one taken here, a comparison of results will be made only with the first approach. The results of Portes and Wilson's second approach are reported in the literature chapter.

Portes and Wilson find that adding race to their previously developed model has small but nontrivial effects on all endogenous variables except educational attainment. Unlike the research presented here, however, the impact of race is split, with blacks having lower parental socioeconomic level and lower mental ability but <u>higher</u> educational aspiration, academic performance, significant others' influence,

and self-esteem. In effect, in Portes and Wilson the negative and positive effects of race cancelled each other out in the final variable: educational achievement. Portes and Wilson conclude that the differences in white and black educational attainment were not due to discernible discrimination but to "initial and historically conditioned disadvantage." (p. 423)

The results presented in this dissertation contain both similarity and contrast to Portes and Wilson. First, in contrast, the results obtained in this model indicate the consistently negative effect that being black has on all the variables that influence educational achievement. Therefore, race has mild, but many incremental effects that lead to a relatively strong negative influence on educational achievement. The way these effects are patterned, however, has some similarity to Portes and Wilson in that most of the effect is on parental status characteristics rather than on the characteristics of the offspring.

The variables most influenced by race were number of siblings, parental I.Q., parental education, and parental occupation. With the exception of number of siblings, which is not a variable in the Portes and Wilson model, all of the variables were part of the "socioeconomic level" variable that Portes and Wilson found had a strong negative relationship with being black. The limited influence that race had on offspring I.Q. in the present model can perhaps be explained by a similar tentative explanation that was offered for I.Q.'s limited impact on educational achievement compared

to the findings in Wilson and Portes (1975): that the relationship is mitigated by the influence of the parental I.Q. variable, which does not appear in Portes and Wilson.

Race has a relatively weak negative impact on variables similar to those for which Portes and Wilson found small positive influences: parental education desires for the offspring, parental nAch (significant others' influence); and offspring nAch (self-esteem and educational aspirations). The findings of this dissertation, then, are substantially similar to those of Portes and Wilson in that race is found to have no direct relationship with educational achievement and that most of its influence is through structural status variables like parental education and parental occupation. In contrast with Portes and Wilson, however, the influence of offspring I.Q. was found to be spurious, but the link between parental I.Q. and parental education as was found to be the most important link between race and offspring educational achievement. Race has a strong negative relationship with parental I.Q. That offspring I.Q. does not serve as an interpretive variable between parental I.Q. and educational achievement indicates that it is perhaps not the offspring's own "mental ability" that influences educational achievement, as Portes and Wilson indicate, but that the parents' "mental ability" is important in some other way.

The findings reported by Kerckhoff and Campbell (1977) are difficult to compare with those reported in this research because of the different strategies employed and goals sought.

Kerckhoff and Campbell, it has been noted, developed separate models for each race rather than incorporating race as a dummy variable as was done here. Also, they were more concerned with how aspirations were related to educational achievement in the context of how the respondent was evaluated by schools, both academically and as a discipline problem. Consequently, most of the interpretive variables used have no counterparts in the data set employed here. These quite substantial differences make direct comparison difficult. Kerckhoff and Campbell's work, however, is of high quality with careful operationalization of variables, relatively clear time order among them, and a high explained variance in educational achievement for both blacks and whites. A comparison of the two works can permit clearer understanding of each strategy's limitations and strengths as well as a better understanding of the influence of race on educational achievement.

Kerckhoff and Campbell found that white educational achievement was a relatively orderly process from parental education through the interpretive variables (except junior high school discipline) to educational achievement. For blacks, in contrast, little variance was explained by parental education (father's education was an insignificant influence; mother's education explained about 10 percent) and only high school grades had much direct influence on achievement. Among blacks, while earlier grades had some influence on high school grades, reported discipline problems and

educational expectations were more influential. Unfortunately, neither variance in the latter two variables was much explained for blacks.

In the model developed here, race had many small but incremental effects on educational achievement, so that while there was no direct influence, its total indirect influence made it the fifth most influential variable in the model. Parental education was by far the most important but parental education desires for their offspring, offspring nAch, and parental I.Q. were nearly tied, with Betas of .267, .244, and .226 respectively. Race trailed not far behind with -.182. The indirect influence race had on educational achievement was through parental education, parental I.Q., number of siblings, offspring nAch, parental occupation, and parental education desires. The distinctive usefulness of each strategy can be shown by recognizing that usually both strategies are employed on a data set in a research project.

Sewell and Shah (1967) pioneered what has become the standard technique for comparing two populations, using path analysis in their research on differential college attendance rates among males and females. First, the technique used here, sex was inserted as a dummy variable in the model, and second, Kerckhoff and Campbell's strategy, separate models for each gender were computed and the mtric coefficients compared. Each technique has its advantages relative to specific goals, the former technique being useful for indicating the interaction of the ultimate independent variable

with other variables in the model. For example, Kerckhoff and Campbell report that among both blacks and whites, number of siblings has little influence on educational achievements.[3] In contrast, in the present study, number of siblings was the third most important way that race influences achievement. This seeming contradiction is not, in fact, one at all, for Kerckhoff and Campbell have compared whites only to other whites and blacks only to other blacks. What Kerckhoff and Campbell have demonstrated is that within social groups, number of siblings has little independent influence.[4] Kerckhoff and Campbell report, however, substantial differences in black and white mean family size in their sample (6.27 and 3.22 respectively) so the finding developed here, that number of siblings is an interpretive variable between race and achievement, seems quite plausible. Comparing whites to blacks, number of siblings may influence achievement while not influencing it much within each group.

The same example can serve to illustrate the advantage of separate models. Kerckhoff and Campbell demonstrate that respondents in their sample from black families with fewer children had no higher achievement because of it. While this finding is obscured by Kerckhoff and Campbell's peculiar operationalization of the family size variable (c.f. note 3), the methodological point can still be made. Because the slopes that represent the relations among the variables are different for whites and blacks, and the single model combines the slopes (with the white responses

determining most of it because of their proportional preponderance), it is clearly inappropriate to claim that a single model can indicate causal relationships within a population group.

Having pointed out the peculiar uses of each strategy and the difficulties of making comparisons between the present findings and those of Kerckhoff and Campbell, it is appropriate now to attempt to synthesize the results of the two studies. Both studies show that parental education is of much greater importance than parental occupation in predicting respondent educational achievement. These findings and this study's attitudinal findings, that parental education desires and number of siblings are also important (and are not much predicted by parental occupation), indicates that probably income and occupational modeling by the respondent have little impact on educational achievement. Instead, there is possibly some direct influence the parents exert over the offspring, encouraging <u>educational</u> achievement. While Kerckhoff and Campbell report offspring I.Q. to be influential among both blacks and whites, this study's finding is that the real causal variable seems to be parental I.Q. It would be premature to suggest that one can generalize from this isolated finding,[5] but it does support the notion presented above that the parental environment, as it particularly relates to education, has much influence on achievement.

Of the remaining variables in Kerckhoff and Campbell's model, only "educational expectations" is similar to a variable in the present research: respondent nAch. Here, race was found to have a quite modest dampening influence on respondent nAch, with a coefficient of -.136. All of the influence race had on respondent nAch was indirect; most was through number of siblings and parental nAch. Consequently, race had a quite modest negative influence on achievement through respondent nAch.

Kerckhoff and Campbell report that educational expectations play rather different roles in the black and white achievement models. For whites, the explained variance for expectations is a quite substantial 42 percent. This reflects the general tendency reported by Kerckhoff and Campbell for the whites' achievement to flow from the parental social statuses and I.Q. through interpretive variables, in this case mainly through junior high school grades. Whites' expectations have little impact on senior high school grades but are one of several important influences on educational achievement.

For blacks, in contrast, little variance in educational expectations is explained (only 14 percent), mostly by junior high school grades, family size, and mother's education. The lack of explained variance in black expectations is another instance of the often noted phenomena that blacks tend to have "inappropriate" expectations, given their social background and mental ability, compared to whites.

Expectations among blacks, however, have a much stronger influence on senior high school grades than among whites. Since Kerckhoff and Campbell report that for blacks senior high school grades are much more influential on achievement than for whites, expectations are an important indirect influence for blacks.

Comparisons are difficult here because of the different nature of the variables: nAch and educational expectations. The former variable was selected for this study because of the hope that it would tap underlying psychological motivation more directly and avoid confusing conformity to social values with a disposition to act on those values. Because of the flawed way that expectations or ambition has been operationalized in the studies reviewed above, it is difficult to evaluate nAch's comparative efficiency. While Kerckhoff and Campbell's use avoids these flaws, because they use the dual model strategy, the comparison is still obscure. It is impossible to conclude from what is available whether nAch would follow the same pattern that educational expectations does in Kerckhoff and Campbell's findings. It may well be that for whites nAch is less crucial to educational achievement than it is for blacks because of the way that their social statuses of origin "carry them through" to levels of achievement, so that for blacks nAch is of greater importance. It is similarly plausible, however, that because nAch is more "underlying," that this would not be found to be the case. The surprisingly

low explained variance for nAch in the present model makes any conclusion that much more unjustified.

Kerckhoff and Campbell's work demonstrates the lack of relevance of the social psychological versus structural arguments concerning the nature of the achievement process. It would seem that for whites the process is largely structural, while for blacks the process cannot be explained in such a manner. It is premature, however, to suggest that social psychological variables would provide the explanations. Such a possibility seems consistent with the unexplained source of the effect that discipline problems and expectations have on achievement for blacks.

Kerckhoff and Campbell's work has not been compared here because of the direct comparison that can be made with the results of this research, but rather because the comparison demonstrates some of the limitations of the present work and of path analysis in general. Educational achievement is obviously a complex process and no research, including this study, has illuminated it very completely. The present work would be greatly improved if variables indicating the respondent's evaluations and achievements in the educational process had been available as they were in Kerckhoff and Campbell. That work, in contrast, lacks adequate social psychological variables for both the offspring and parent that might provide explanation of why the interpretive variables act so differently for whites and blacks.

The comparison with Kerckhoff and Campbell also makes it clear that both strategies in the use of path analysis are necessary. Including race as a dummy variable, as was done in the present study, allows the exploration of the main effects of race on each of the endogenous variables. The development of separate models for each race illustrates how, given these main effects, the achievement processes differ for each race. The present study would have been much more meaningful if this latter strategy could have been used.

# CHAPTER VI

# CONCLUSIONS AND SUGGESTIONS

## Conclusions

This final chapter is a discussion of how successful this research has been in reaching the goals noted in the introduction. Following that, some suggestions for future research conclude the chapter. This work has had three major questions as goals: (1) How are levels of educational achievement affected by parental characteristics? (2) How does race influence educational achievement?, and (3) Is achievement motivation (nAch) a useful interpretive variable between parental characteristics and offspring achievement?

Because this present research was based upon a relatively small and potentially unrepresentative sample, the conclusions that are drawn here should be considered, at best, as tentative. These, and problems with variable construction, typically plague researchers doing secondary analysis including most of those cited above who have also worked in the "Wisconsin model."

This research indicates that parental characteristics seem to have a strong impact on offspring educational achievement. Unlike earlier research on similar path models,

however, the model developed in this dissertation is not characterized by a few clear, strong paths of influence. Instead, this model shows many influences, direct and indirect, but the patterns which they follow seem relatively clear. First, parental characteristics that are obviously "educational" (parental education, parental desires for their offspring's education, and parental I.Q.) tend to influence offspring educational achievement the most and their influence is (except for that of parental I.Q.) direct. Parental characteristics that are not obviously "educational" (number of siblings, parental occupation, and parental nAch) tend to be much less influential and are mostly indirect, operating through interpretive variables. Second, the offspring characteristics that were expected to be interpretive, offspring I.Q. and offspring nAch, do not fill this function well. Offspring I.Q.'s strong zero-order correlation of .2644 with educational achievement was demonstrated to be spurious. Offspring nAch, in contrast, is the third strongest influence on educational achievement, but largely independently rather than interpretively, because it is so little explained by antecedent variables. The conclusion, then, is that the higher parents' own educational achievement is and the stronger the aspirations they have for their offspring, the more education that offspring is likely to achieve. The model is unable to explain the linkage but it seems that it is not very much through a generalized need for achievement developed in the offspring. The linkage seems

also not to be through the fact that better educated parents have more resources to use to ensure their offspring's education because of the weak interpretive relationships parental occupation and number of siblings have between parental education and offspring achievement.

Race has only small, indirect effects on educational achievement but these small effects are cumulative, making race the fifth most influential variable on educational achievement. Black parents tend to have lower educational achievement, lower measured I.Q., and less prestigious occupations. Their offspring tend to have less achievement motivation and more siblings. All of these characteristics lead to lower educational achievement. That all of the influence of race was indirect also suggests that "overt" forms of discrimination are not very important in explaining the difference in white-black educational achievement.

A final goal of this dissertation has been to explore the use of achievement motivation as an interpretive variable. In a sense, the history of the Wisconsin model has been a series of attempts to discover a meaningful social-psychological interpretive variable between parental characteristics and offspring achievements. Variables that have been operationally flawed have been relatively successful at this, while more carefully constructed variables have not been very successful. This research illustrates the latter case, for although achievement motivation seems to be an important variable in predicting educational achievement,

the model is unsuccessful in accounting for much of the differences in levels of it. This finding is a particular surprise because of the seven powerful variables that precede it in the model. The variables that do influence offspring nAch seem logically related (number of siblings, parental nAch, and parental desires for their offsprings' education), and this seems to give the measure used some validity. However, because about 82 percent of the variance in nAch is unaccounted for, its interpretive utility is quite limited.

## Suggestions for Future Research

Intergeneration research is difficult and expensive, yet it seems necessary in order to discover some of the ways that inequality is perpetuated in our society. The present research was successful largely in a negative sense for it did not disclose how parental status is transmitted, but rather demonstrated some ways that it is not. Future research should concentrate on the schooling process rather than generalized personality traits and their causes as was done here. Kerckhoff and Campbell (1977) is a good example of this, with their use of the respondent's grades at different points in time and a measure of discipline problems. As noted earlier, it is unclear what meaning these variables have, that is, why should discipline problems be important for blacks but not for whites? However, it is clear that educational achievement is distinctly "educational" and

therefore research should concentrate upon the interaction of the parents and offspring in the schooling process.

Methodologically, a larger sample size than that used here would have permitted the two-model strategy as well as the single model that has been employed here. Both these techniques seem crucial for understanding an intergenerational process, especially where institutions possibly treat members of each group in different ways.

Achievement motivation remains largely elusive. While it clearly has some impact on educational achievement, this research has been largely unsuccessful in accounting for its differential distribution. Earlier research on the origins of this concept has almost certainly been flawed because of time-order problems and spurious relationships. Certainly it is important enough to deserve better, but achievement motivation probably has lesser role compared to institutional evaluation and the interaction of people with institutions.

## FOOTNOTES

[1]Careful reading of Rosen (1959) raises serious doubts about the reliability of the data collection, however, and his findings should be used with care.

[2]As noted above, projective measures of nAch may be especially subject to the influence of verbal skills. Entwistle (1972) argues I.Q. is the contaminating effect but her point is clearly about verbal skills used to measure I.Q.

[3]This lack of relationship number of siblings has to achievement reported by Kerckhoff and Campbell could, in part, be due to the fact that the variable was entered into the equation at the same time as the other socioeconomic status variables. This strategy, of course, makes it impossible to discover if it serves as an interpretive variable between status and achievement. It only demonstrates it has little <u>independent</u> effect.

[4]A further confusion is that Kerckhoff and Campbell actually use "family size" rather than "number of siblings." These are rather different things, especially as black families in their sample were much more likely to have an absent father. A family comprised of a father, mother, and two offspring would be coded the same as a mother and three offspring, for example. Certainly number of offspring is the important variable rather than family size (operationalized in this manner).

[5]The finding is unique, of course, because there seems to be no other Wisconsin model study that includes both parental and offspring I.Q.

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# APPENDIX A

# TABLES AND FIGURES

TABLE 1

MEANS AND STANDARD DEVIATIONS OF VARIABLES FOR SAMPLE AND BY RACE

| Variables | Sample | | Whites | | Blacks | |
|---|---|---|---|---|---|---|
| | $\bar{X}$ | SD | $\bar{X}$ | SD | $\bar{X}$ | SD |
| Number of Siblings | 4.4 | 2.5 | 3.6 | 2.3 | 6 | 2.1 |
| Education desired for Offspring[a] | -2.95 | 1.4 | -2.8 | 1.3 | -3.2 | 1.6 |
| Parental Occupation[a] | -6.3 | 2.1 | -5.8 | 2.2 | -7.2 | 1.5 |
| I.Q. | 7.7 | 2.8 | 8.3 | 2.6 | 6.5 | 2.8 |
| Parental I.Q. | 6.7 | 3.8 | 7.8 | 3.2 | 4.6 | 3.9 |
| nAch | 8.9 | 2.6 | 9.1 | 2.5 | 8.7 | 2.9 |
| Parental nAch | 8.3 | 2.8 | 8.5 | 2.7 | 7.8 | 2.9 |
| Education | 4.4 | 1.5 | 4.6 | 1.5 | 3.9 | 1.3 |
| Parental Education | 3 | 1.6 | 3.3 | 1.7 | 2.4 | 1.3 |
| N = | 220 | | 146 | | 74 | |

[a]"Education desired for offspring" and "parental occupation" are coded by SRC in reverse order of custom. The variables were transformed by $x/-1 = x_1$, for inclusion in the model.

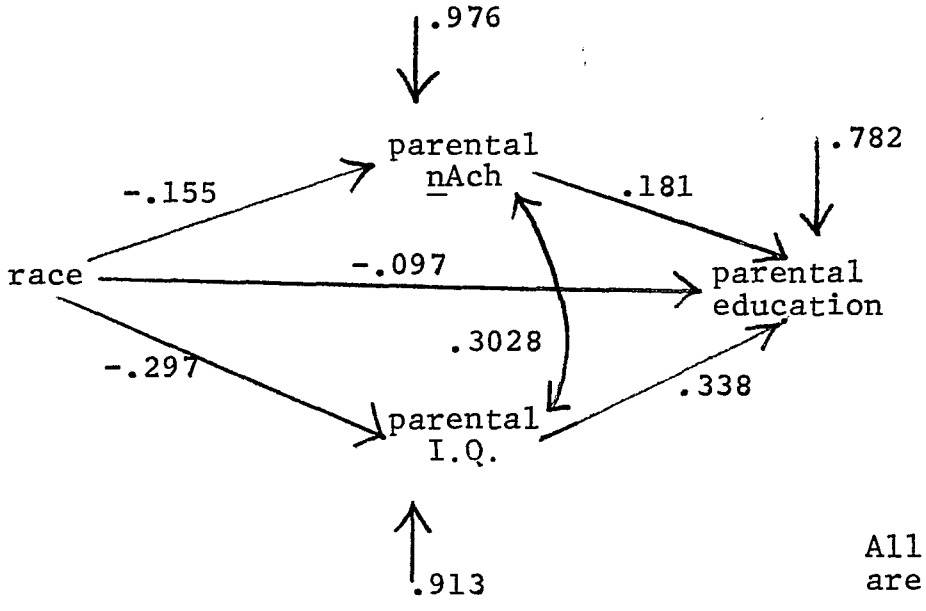
TABLE 2

ZERO-ORDER CORRELATIONS

| | Race | PnAch | P IQ | P Ed | P Occ |
|---|---|---|---|---|---|
| Race | | -.1555 | -.2970 | -.2250 | -.1721 |
| Parent nAch | | | .3028 | .2981 | .0456 |
| Parent I.Q. | | | | .4210 | .1243 |
| Parent Education | | | | | .2252 |
| Parent Occupation | | | | | |
| Parent Education Desires | | | | | |
| Number of Siblings | | | | | |
| Offspring nAch | | | | | |
| Offspring I.Q. | | | | | |
| Offspring Education Achievement | | | | | |

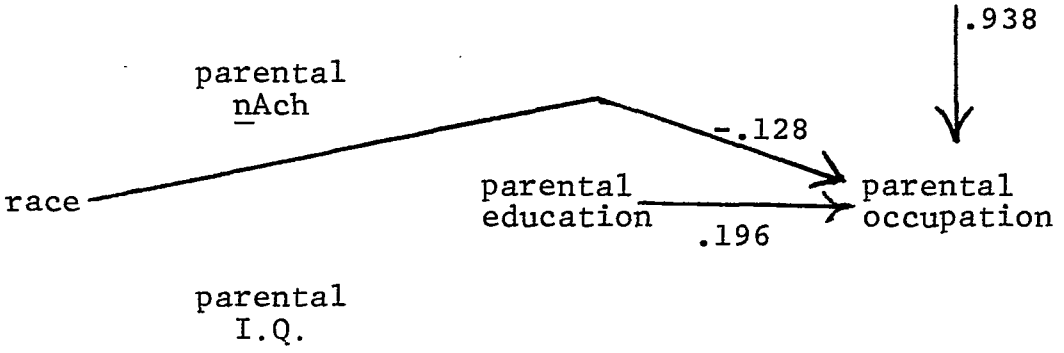
TABLE 2 (Continued)

| | P Ed D | # sibs | nAch | IQ | Ed A |
|---|---|---|---|---|---|
| Race | -.1031 | .3324 | -.0778 | -.1795 | -.1418 |
| Parent nAch | .1071 | -.1616 | .2700 | .0986 | .2138 |
| Parent I.Q. | .3011 | -.3841 | .2102 | .3813 | .3093 |
| Parent Education | .3226 | -.3741 | .2106 | .2461 | .4709 |
| Parent Occupation | .2274 | -.1906 | .0449 | .1565 | .3033 |
| Parent Education Desires | | -.1628 | .2652 | .2517 | .4190 |
| Number of Siblings | | | -.2963 | -.1246 | -.3459 |
| Offspring nAch | | | | .2732 | .4108 |
| Offspring I.Q. | | | | | .2644 |
| Offspring Education Achievement | | | | | |




All path coefficients are standardized and are significant at the .05 level

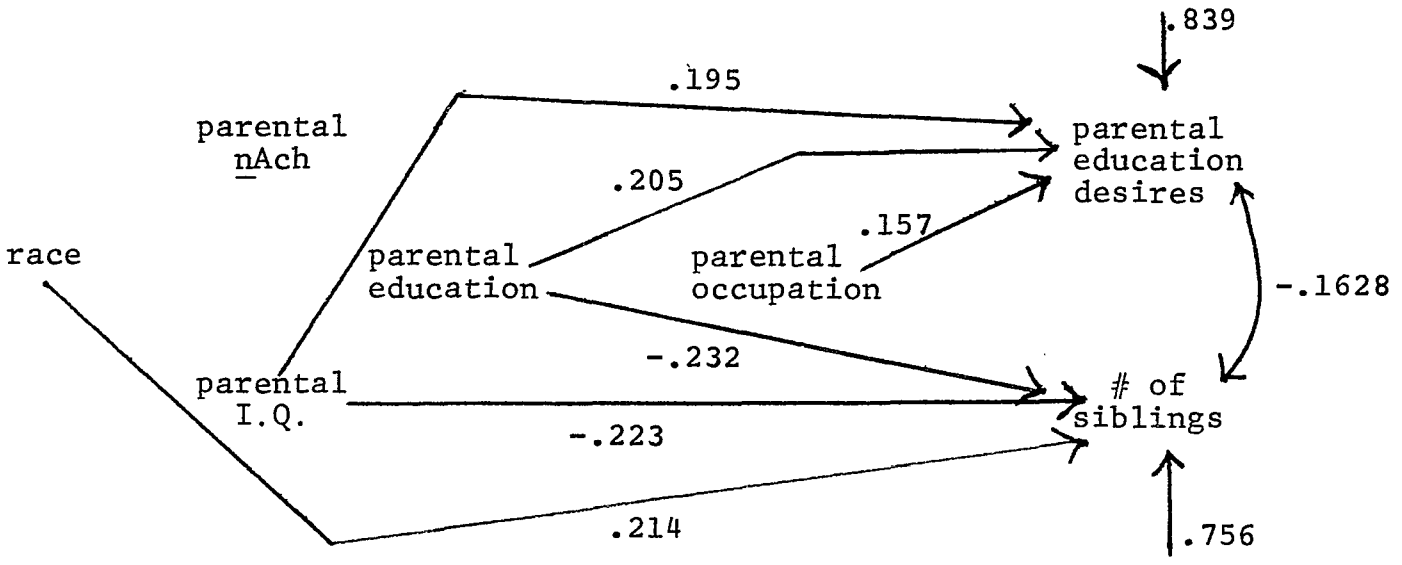
Fig. 1.--Path model showing the direct effects of race on parental nAch and parental I.Q. and race, parental nAch, and parental I.Q. on parental education.




All path coefficients are standardized and are significant at the .05 level

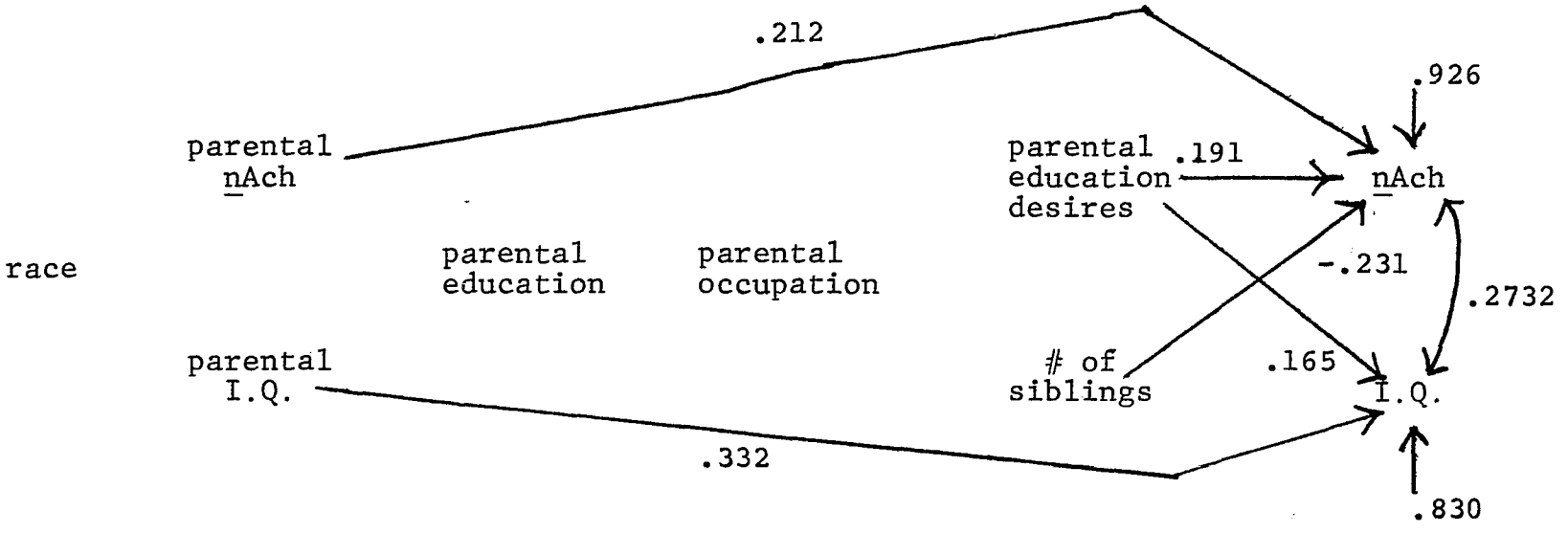


Fig. 2.--Path model showing the direct influences of race, parental nAch, parental I.Q., and parental education on parental occupation.




All path coefficients are standardized and are significant at the .05 level

Fig. 3.--Path model showing the direct effects of race, parental nAch, parental I.Q., parental education, and parental occupation on parental education desires and number of siblings.




All path coefficients are standardized and are significant at the .05 level

Fig. 4.--Path model showing the direct effects of race, parental nAch, parental I.Q., parental education, parental occupation, parental education desires and number of siblings on offspring nAch and offspring I.Q.

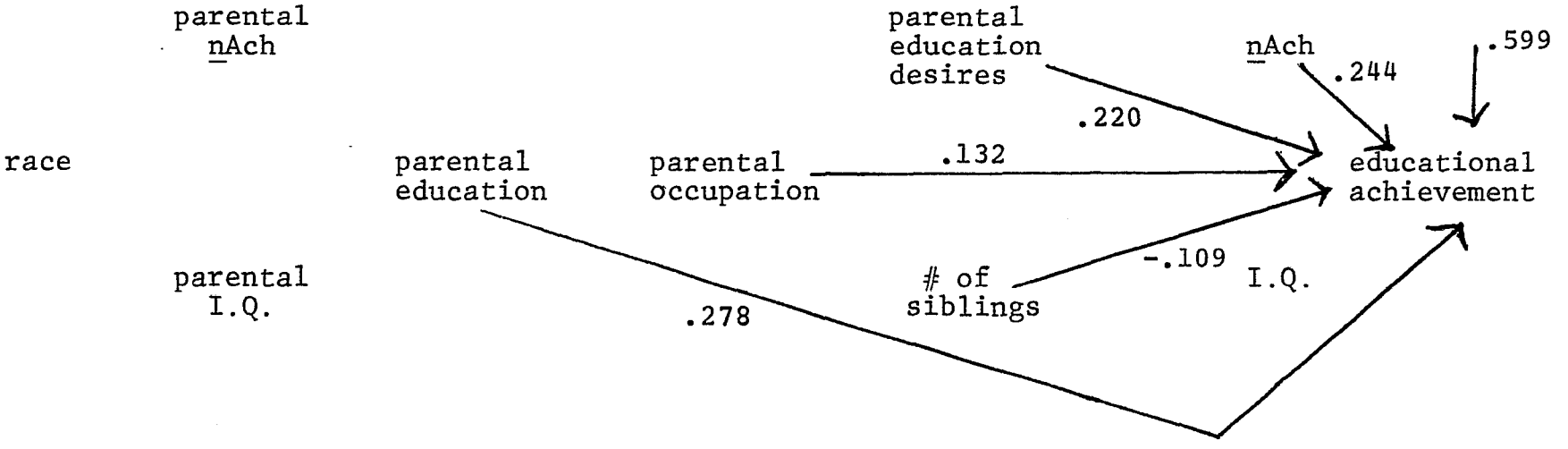



Fig. 5.--Path model showing the direct effects of race, parental nAch, parental I.Q., parental education, parental occupation, parental education desires, number of siblings, offspring nAch, and offspring I.Q. on offspring education achievement.

# APPENDIX B

## TWO STATISTICAL MEASURES

# Appendix B

## Two Statistical Measures

This research uses only two statistical devices for explaining the model developed: product moment correlation coefficient (r) which are converted into coefficients of determination ($r^2$) and regression coefficients or slope (b) which are converted to standardized coefficients (Beta). This appendix is a brief explanation of the use of each device. Computing formulas may be found in the SPSS Manual (Nie et al., 1975).

### Coefficient of Determination ($r^2$)

The product moment correlation coefficient (r) is a measure of association usually used with at least interval scale variables. It measures the degree to which points in a regression analysis "hug" the regression line and therefore how accurately a dependent variable may be predicted from an independent variable. Correlation coefficients, then, measure the strength of a relationship. The square of the correlation coefficient is the proportion of total variance in the dependent variable that is "explained" by the linear relationship with the independent variable. Mathematically, the coefficient of determination is the ratio of variance of the dependent variable on the regression line to the total variance of that variable.

Standardized Coefficients (Beta)

The regression coefficient or slope (b) is a measure of the steepness of the regression line and therefore shows the impact or effect of an independent variable on a dependent variable. An unstandardized regression coefficient is the number of units the dependent variable changes for every change of one unit in the independent variable. Because, however, in the model presented in the present research, independent variables have unequal numbers of units, comparison of the impact of each variable would be misleading. For this reason, the regression coefficients were converted to standardized coefficients (Betas) so that change is measured in standard deviation units. A Beta, then, is the number of standard deviations the dependent variable changes for every change in one standard deviation in the independent variable.

These two statistical measures have different but complimentary uses. The coefficient of determination measures how much of the dependent variable is accounted for by the independent variables while standardized coefficients permit the comparison of the several impacts of independent variables.

# APPENDIX C

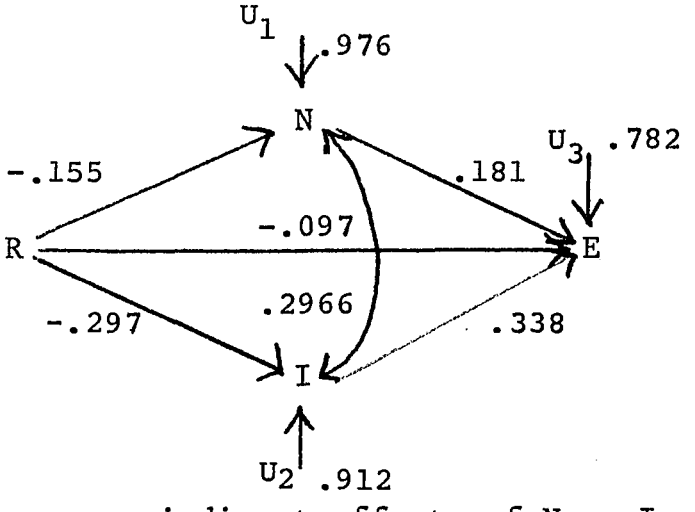
## COMPUTING INDIRECT EFFECTS

## Appendix C

### Computing Indirect Effects

The ability to measure indirect as well as direct effects is one of the strengths of path analysis for an antecedent variable may have considerable influence on the ultimate dependent variable without much direct effect. This appendix is an explanation of the method used for computing these indirect effects. The method is drawn directly from Kenny (1979) who adopted it from Alwin and Hauser (1975).

For our example we can use Figure 1 from the dissertation which is reprinted here using R for race, N for parental nAch, I for parental I.Q. and E for parental education. This disturbance elements on the endogamous variables are labeled $U_1$, $U_2$, $U_3$.




Note that there are no indirect effects of N or I on E, only direct effects. Also note, however, the R has direct

effects and indirect effects on E through both N and I. This figure could also be represented as a set of equations:

$$N = -.155R + .976\ U_1 \qquad (C:1)$$

$$I = -.297R + .912\ U_2 \qquad (C:2)$$

$$E = .181N + .338I - .097R + .782\ U_3 \qquad (C:3)$$

To find the indirect effect R has on E via N, take equation C:3 and substitute equation C:1 for N.

$$E = .181\ (-.155R + .976\ U_1) + .338I - .097R + .782\ U_3 \qquad (C:4)$$

$$= -.028R + .177U_1 + .338I - .097R + .782U_3 \qquad (C:5)$$

The indirect effect of R on E via N is then -.028.

To find the indirect effect R has on E via I, take equation C:3 and substitute equation C:2 for I:

$$E = .181N + .338(-.297R + .912\ U_2) - .097R + .782\ U_3 \qquad (C:6)$$

$$= .181N - .100R + .308\ U_2 - .097R + .782\ U_3 \qquad (C:7)$$

The indirect effect of R on E via I is therefore -.100.

The <u>total</u> effect of R on E is the sum of these indirect effects (-.028 - .100 = -.128) plus the direct effect (-.097) or -.225. This tells us that race has more

indirect effect on parental education than direct effect. Further, most of this indirect effect is through the influence race has on parental I.Q.