
Attitudes and

Facilitation in the

Attainment

of Status

by

RUTH M. GASSON
University of Cambridge

ARCHIBALD O. HALLER
University of Wisconsin, Madison

WILLIAM H. SEWELL
University of Wisconsin, Madison

*Published by the Arnold M. and Caroline Rose
Monograph Series, American Sociological Association.*

THE ARNOLD AND CAROLINE ROSE
MONOGRAPH SERIES IN SOCIOLOGY

A gift by Arnold and Caroline Rose to the American Sociological Association in 1968 provided for the establishment of the Arnold and Caroline Rose Monograph Series in Sociology. The conveyance provided for the publication of manuscripts in any subject matter field of sociology. The donors intended the series for rather short monographs, contributions that normally are beyond the scope of publication in regular academic journals.

The Series is under the general direction of an editorial board appointed by the Council of the American Sociological Association and responsible to the Publications Committee of the Association. Competition for publication in the Series has been limited by the Association to Fellow, Active and Student members.

THE ARNOLD AND CAROLINE ROSE
MONOGRAPH SERIES IN SOCIOLOGY

Under the General Editorship of
ALBERT J. REISS, JR., Yale University
and the Editorial Board
BERNARD BARBER, Columbia University
G. FRANKLIN EDWARDS, Howard University
EDWARD L. McDILL, John Hopkins University
NORMAN B. RYDER, Princeton University
ARTHUR L. STINCHCOMBE, University of California (Berkeley)
HARRISON C. WHITE, Harvard University

Library of Congress Number 70-183-122
International Standard Book Number 0-912-764-03-1

© American Sociological Association
1722 N St. N.W.
Washington, D.C. 20036

Acknowledgements

This monograph is one in a series of research reports growing out of a longitudinal study of the status attainment process, directed by William H. Sewell. This research program has been supported by grants from the National Institute of Health, U.S. Public Health Service (M-6275); the Social Rehabilitation Services, Social Security Administration; the University of Wisconsin College of Agricultural and Life Sciences; and the Research Committee of the Graduate School of the University of Wisconsin. We wish to acknowledge the computational services of the University of Wisconsin Computer Center and the generosity of the Kellogg Foundation for providing a fellowship for Ruth M. Gasson's year at Wisconsin. We thank Donald J. Treiman, Robert M. Hauser, Lylas Brown, and some anonymous readers for their valuable criticisms, suggestions, and help.

Ruth M. Gasson
Archibald O. Haller
William H. Sewell
Madison, Wisconsin
August 1972

List of Tables

<i>Table</i>	<i>Page</i>
1 Zero-Order Correlations between Pairs of Attitude and Facilitation Variables	18
2 Linear and Curvilinear (Dummy Variable) Coefficients of Determination of Selected Independent Variables on Status Attainment	19
3 Regressions to Test Hypothesis of Multiplicative Interaction between Attitude and Facilitation Variables	19
4 Zero-Order Correlations between Variables Used in the Model	26

List of Figures

<i>Figure</i>	<i>Page</i>
1 Additive Model to Show the Relationship of Behavior to Attitude and Facilitation	6
2 Interaction Model Showing the Relationship of Behavior to Attitude and Facilitation	8
3 Curvilinear Model of the Relationship of Behavior to an Antecedent Variable	10
4 Curvilinear Interaction Model of the Relationship of Behavior to an Attitude and a Facilitator	11
5 Educational Attainment by Significant Others' Influence	20
6 Educational Attainment by Mental Ability	20
7 Educational Attainment by Educational Aspiration	21
8 Educational Attainment by Socioeconomic Status	22

Introduction

List of Figures

<i>Figure</i>	<i>Page</i>
9 Occupational Attainment by Socioeconomic Status	23
10 Occupational Attainment by Occupational Aspiration	24
11 Occupational Attainment by Educational Attainment	24
12 Educational Attainment by Educational Aspiration, Significant Others' Influence Controlled	27
13 Educational Attainment by Significant Others' Influence, Level of Educational Aspiration Controlled	27
14 Educational Attainment by Educational Aspiration, Mental Ability Controlled	28
15 Educational Attainment by Mental Ability, Level of Educational Aspiration Controlled	28
16 Educational Attainment by Educational Aspiration, Socioeconomic Status Controlled	30
17 Educational Attainment by Socioeconomic Status, Level of Educational Aspiration Controlled	30
18 Occupational Attainment by Occupational Aspiration, Socioeconomic Status Controlled	32
19 Occupational Attainment by Socioeconomic Status, Level of Occupational Aspiration Controlled	32
20 Occupational Attainment by Occupational Aspiration, Educational Attainment Controlled	34
21 Occupational Attainment by Educational Attainment, Level of Occupational Aspiration Controlled	34

ATTITUDES AND FACILITATION IN THE ATTAINMENT OF STATUS

To say that "behavior is a function of the person and of his environment" is to imply that both personality and environmental factors contribute to behavior and that they combine in a specific way. This monograph explores the implications of several possible forms of the relationship. Several models, leading to a more general one, are presented and developed to account for the way in which personality and environmental variables might combine to result in a certain type of behavioral outcome, namely the attainment of a position in the educational or occupational prestige hierarchy. Data are provided to illustrate and evaluate each model. Implications for external inducement of behavior are considered.

A recent paper (Warner and DeFleur, 1969:153-154) distinguished three views currently held of the nature of the relationship between prejudicial attitudes (an aspect of personality) and acts of discrimination. (a) The postulate of consistency: As summarized by Turner (1968:3), "Given opportunity, the absence of countervailing attitudes and an appropriate situation, one predicts behavior from attitude on the basis that behavior is a direct reproduction of attitude." (b) The postulate of independent variation: Merton (1949:102-103) has challenged the postulate of consistency in the

area of racial attitudes and stated that there was no reason to assume that attitudes and behavior would be consistently related. "Stated in formal sociological terms, this asserts that attitudes and overt behavior vary independently. Prejudicial attitudes need not coincide with discriminatory behavior." (c) The postulate of contingent consistency. ". . . Such interactional concepts as norms, roles, group memberships, reference groups, subcultures, etc., pose *contingent* conditions which can modify the relationship between attitude and action." (Warner & DeFleur 1969:154)

Warner and DeFleur (1969:154) come down on the side of the postulate of contingent consistency, citing experimental evidence to show that neither the postulate of consistency nor that of independent variation was tenable. "[t]here was no simple way in which actions towards an object could be accurately predicted from knowledge of the relevant attitudes alone. Clearly, an adequate theory of attitude must take into account the intervening situational variables which modify the relationship between attitudes and action."

Yinger (1965:45) made a similar point. "In short, a person has many tendencies to behave . . . Which one will be acted upon cannot be predicted by knowledge of the individual alone because each requires a facilitating environment. Behavior is never in an environmental vacuum. The principle of multiple possibilities applies equally to situations. Their meaning for behavior cannot be defined independently of the individuals who experience them, for the same cue or the same force will affect persons with different tendencies differently."

Investigators of behavior have tended to concentrate on one type of variable alone, as noted by Vroom (1963:571). "Some emphasize personality, conceived as the relatively enduring psychological properties of an individual, as the locus of the basic causes of behavior while others look to the environmental variables such as group structure, communication, and role. Few have investigated environmental and personality determinants of behavior simultaneously."

Inkeles (1959:273) stressed the need for the two disciplines, social psychology and sociology, with their different analytic foci, to come together to explain behavior. Full understanding of any social situation and its probable consequences requires a knowledge of the main facts about the social structure and of the personalities operating in that structure. Psychologists tend to emphasize the personality components of behavior and minimize the impact of the social structure while sociologists generally try to account for action in terms of a prior state of society. Durkheim (1951), for example, looked exclusively to social structural factors to account for differential tendencies toward suicide. Inkeles (1959) called for the integration of both sets of factors into a larger explanatory scheme: ignoring either makes it difficult to explain why a given state of society leads to a certain type of behavior at some times but not at others, or why the same person under different circumstances acts differently.

While many writers recognize the contribution of both types of variables, there is still the tendency to view one set as fundamental and the other as mediating, a channel through which the impulse for action flows and which

may add or subtract a little from the final outcome. Warner and DeFleur (1969), DeFleur and Westie (1963), seem to have regarded attitudes as the prior influence, to be modified by social structural factors. On the other hand, the social psychological theory underlying linear path analysis of attainment behavior, while not made explicit, seems to be a version of Newcomb's early (1950:30-33) position in which organismic and sociological factors are thought to be independent variables whose influence on overt behavior is mediated by intervening social psychological variables such as attitudes. In this tradition, Duncan, Featherman, and Duncan (1972: Chs. 6-7) have employed personality traits such as need achievement and level of aspiration in their recursive model of occupational attainment, to mediate the prior variables, such as the education of one's parents or one's own level of intelligence. Featherman's (1971) analysis of the Blau-Duncan (1967) data has the same overall design, testing the adequacy of certain values as intervening variables. Both reports concluded that these indicators of motivation did not have a powerful role in explaining how achievement is related to background factors, though it is still possible that better indicators might be found. Developing this approach, Sewell, Haller, and Portes (1969) and Sewell, Haller, and Ohlendorf (1970) gave attitude variables a more positive role in their path model for the process of educational and occupational attainment. Aspirations were still regarded, however, as transmitting the influence of the prior variables—family socioeconomic status, significant others' influence, mental ability and academic performance—on the dependent variables—education and occupational attainment.

The present analysis examines hypotheses proceeding from a different position. It posits two types of independent variables, attitudes and facilitating factors, which are considered necessary to account for subsequent states of behavior. Neither set is regarded as being more fundamental than the other and either may have the effect of limiting attainment. The educational or occupational prestige hierarchies which emerge through human interaction and represent shared definitions of reality function as sets of possible goals. The dependent variables, the behavioral outcomes in which we are interested, describe the differences in levels of attainment of persons with respect to these hierarchies. The attitude variable is defined in terms of the dependent variable. Individuals holding a concept (however imperfect) of present realities and future possibilities, organize their activity in an attempt to realize specific goals. In this sense we speak of behavior as being motivated. This orientational antecedent of behavior, the subject's attitude toward the objects, here limited ranges of the educational or occupational hierarchies, serves as one category of independent variable, and is measured by level of aspiration. A level of aspiration describes the sector of the hierarchy a person has chosen as his goal: he may actively work toward this end or more passively allow himself to arrive there.

The members of the second class of independent variable, the facilitators, are determined in light of both the attitudinal and behavioral outcome variables. Attitudes or aspirations can only be enacted in a context or environment. Here we extend the concept of facilitators to cover any variables which might reasonably influence the expression of aspirations in attainments. With

occupational status attainment as the outcome variable and level of occupational aspiration as the attitude variable, for example, it includes background factors such as age, race, socioeconomic status of origin, community of residence, education and occupational history. It also embraces cognitive factors pertaining to the individual: his mental ability, Mead's (1934) notion of the self-concept, and also the appropriate expectations of significant others. Collectively these are termed facilitating variables; they also serve as independent variables in the paper. These variables generally are only indirectly under the control of the individual and they vary in the degree to which they influence the expression of an attitude variable in behavior.

These definitions underline the interdependence of the two classes of variables for determining the relevant behavior—in this case the attainment of status. On one hand, the attitude variable (aspiration) can be expressed in the relevant behavior only within the field of facilitation, while, on the other hand, facilitation without at least a moderately high level of aspiration could not result in very high levels of attainment. As used herein, facilitation is not the same as opportunity. Variables describing an opportunity structure would be those standing for the availability of positions at various levels of either the educational hierarchy or the hierarchy of occupational prestige. More generally, an opportunity structure is a concept describing the availability of statuses within the structural variable with respect to which outcomes in behavior occur. (We do not use the concept in this analysis.) In the narrower context the work deals with the implications of the relationship between aspiration and facilitation for status attainment but it is suggested that the model might have wider application. As Warner and DeFleur (1969) suggested, social structural variables might include a multiplicity of interactional concepts such as reference groups, significant others, peer groups, roles, subcultures and voluntary organizations, while the list of facilitating variables in the personality category might be expanded to cover such concepts as beliefs and values, inner-and other-directedness, need for approval, alienation and status anxiety—in fact any variables influencing the expression of aspirations in attainment.

We began the analysis which the present monograph reports with the above theoretical formulation in mind. In general, it is our hope that we can contribute testable theories of behavior which are applicable to the real world in which human beings formulate and attempt to attain goals. We had hoped to improve the theory of status attainment and thus to increase the amount of status attainment variance we are able to explain. Previously, we and others have used linear regression models to provide a plausible casual explanation of levels of educational and occupational attainment and to account for variance in them. We have found that educational attainment is a major determinant of occupational attainment level and that the linear antecedent system is quite successful in accounting for educational attainment level. Specifically we can account for about 40 percent of the variance in occupational attainment and about 57 percent of the variance in educational attainment (Sewell, Haller, and Ohlendorf, 1970:1022). Though this may be quite exceptional in the study of individual social behavior, it is still far from being a complete explanation.

To raise the amount of explained variance we might look to new variables, to better measures of present variables, or to new ways to combine variables. We do not hold out much hope for the first and second possibilities (except that role relationships in early adulthood might help account for levels of occupational attainment, but probably not for educational attainment). At the specific level of research in the attainment of status, the present paper is an attempt to use the general lines of thinking indicated above to suggest new ways to combine variables and thus to learn whether this avenue will improve scientific understanding.

In the ensuing sections of the analysis we have used the theory to suggest ways of combining variables. We have examined the nonlinear combinations suggested by it, but we have also examined nonlinear combinations not suggested by this particular theory. To anticipate the results: we found no compelling evidence to abandon linear models; we have found some justification (but no strong practical reason) to support, at some levels, a decelerating relationship compatible with but not anticipated by the theory; and we have found little evidence to support the theory (although we now believe that feedback of the level of facilitation on the level of the attitude might well make the latter dependent in part upon the former, thus reducing the nonlinear accelerating effects of the combination of the two).

Additive model

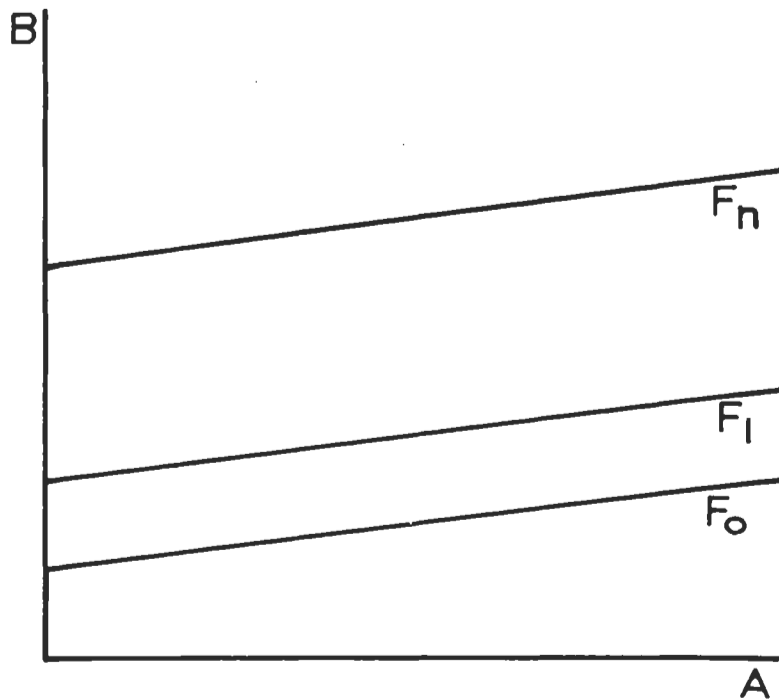
What form of function will best explain how attitudinal and facilitating variables determine behavioral outcomes? Multiple linear regression analysis, on which path models are based, assumes an additive combination. Attainment is estimated by summing each variable, weighted by its respective regression coefficient. Educational attainment, for instance, might be estimated from a constant, *plus* a quantity of the respondent's mental ability, *plus* a quantity of his family's socioeconomic status, *plus* so much aspiration, and so on. This is in line with the notion of contingent consistency, attainment being neither independent of nor wholly dependent upon a single variable. Given the level of facilitation, behavior will vary directly with strength of attitude, and *vice versa*.

A simple additive model for predicting behavior is shown in Figure 1. In this and the following diagrams, only one attitude and one facilitating variable can be shown at a time but in the real world there would be no such limitation.

In the case of individuals with the same level of aspiration, differences in facilitation are translated directly into different levels of attainment, and conversely those starting with the same amounts of facilitation reach differing statuses, depending on the strength of their attitudes.

There would appear to be limitations to the additive model. It implies, for example, that variables can readily be substituted for one another. The model would suggest, if mental ability were facilitating educational performance, that an individual with minimal intelligence could compensate for this shortcoming if his aspirations were sufficiently high and that he thereby might achieve as well as does another, who has moderate ability but lower aspira-

Figure 1.—Additive model to show the relationship of behavior to attitude and facilitation



Note: A, F, and B indicate attitude, facilitation, and behavior, respectively.

tions. Such an outcome is not impossible but is unlikely. The fundamental drawback is the assumption of constant slopes of the regressions. Differences in attainment between individuals on two planes of facilitation are regarded as remaining constant over all levels of aspiration and *vice versa*. The additive model does not allow for interaction in the statistical sense between the attitude and facilitator prior to the act but treats each as making an independent contribution to the predicted behavior.

Empirical evidence does not always support this stand; several investigators have demonstrated the mediating influence exerted by one set of variables on the other. Thus Warner and DeFleur found that persons with given verbal attitudes behaved rather differently depending on the social structural conditions. They concluded that an adequate model of behavior must take into account the intervening forces which alter the contingencies in action among persons with given attitudes. Inkeles (1959:263-264) made the point more specific, advocating that the relevant behavior be treated as the outcome of the interaction of the sociological and psychological variables: "Combined effects of personality and structural variables may produce effects far more massive than might be suggested by a simple additive approach to the two 'independent' variables."

Although their recursive model, with the usual additive assumptions, was successful in accounting for more than half the variance in educational attainment and over one-third in occupational attainment of young men, Sewell, Haller, and Portes (1969) and Sewell, Haller, and Ohlendorf (1970) did not reject the possibility that other models, incorporating somewhat different social psychological assumptions, might be better. They suggested that enduring attitudes, such as educational and occupational aspirations, might function as independent forces, expressing themselves in relevant overt types of behavior to the degree that other personality and situational variables permit. This would imply that the social structural and intrapersonal factors not only produce aspirations but also function as differential facilitators of the expression of aspiration in attainment. Going one step further, they suggested that the combined effects of aspirational and facilitating variables would produce nonlinear curves of influence on behavior variables and that a nonlinear system of statistical analysis treating interaction effects might prove a more useful tool than the model they presented. (Sewell, Haller, and Portes, 1969:91).

Interaction model

A linear model handling multiplicative interaction is given in Figure 2. A_0, A_1, \dots, A_n representing levels of attitude is predicted from an equation of the form:

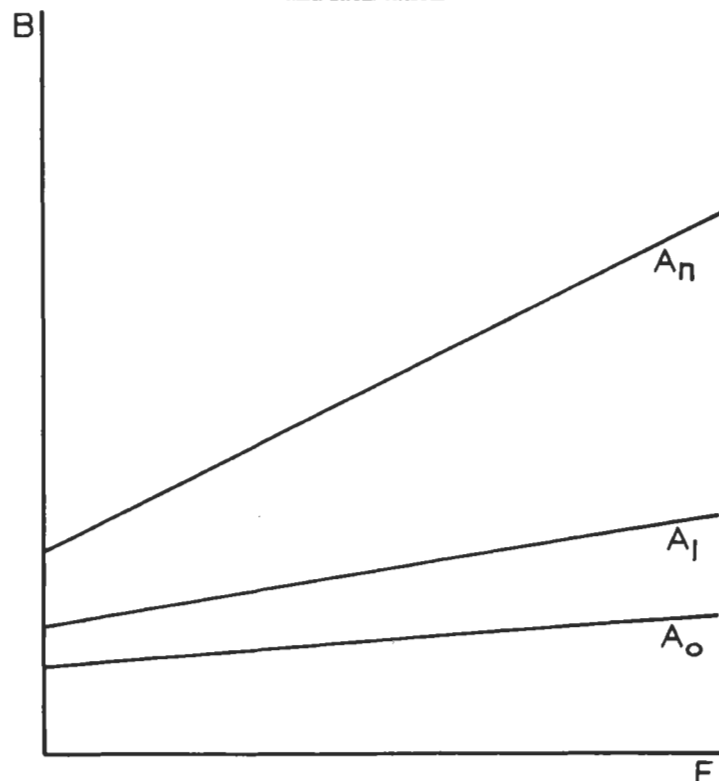
$$B = f_1 (F) + f_2 (A) + f_3 (F \cdot A)$$

where $(F \cdot A)$ is the interaction term.

With this formulation, one variable modifies the relationship between the other and the dependent behavior, this relationship being specific to each category of the first. A low value of one variable depresses the relationship while a high value enhances the effect of the other. Attainment rises more rapidly with increasing facilitation among ambitious people than among those with lower aspirations; persons enjoying greater facilitation show greater behavioral response to increases in motivation than those who are held back by limited facilitation. Combining high aspiration with high facilitation gives much higher levels of attainment than might be predicted from the additive model while low facilitation with low aspiration leads to lower attainment.

The additive model suggested that a high level on one variable could compensate for a low value on the other. Here, instead, a low value on one detracts from the effect of the other. With lower aspiration, for example, an individual's attainment would be restricted even given adequate facilitation, whereas an individual with higher aspiration would probably exploit the potential for action more fully. Similarly, adequate facilitation may allow the full expression of the aspiration while its absence might curtail it. Inkeles (1959:273) provided an appropriate illustration: "For lack of appropriate motivation, those who are otherwise eligible may not use the opportunities for mobility to maximum advantage. Among those who are eligible, some will make the effort, others will not. Of those who strive, some will have the capacity, some will not."

Figure 2.—Interaction model showing the relationship of behavior to attitude and facilitation



Note: A, F, and B indicate attitude, facilitation, and behavior, respectively.

Curvilinear model

A limitation of the linear interaction model is the assumption that when one variable is controlled, equal increments of the other will elicit a constant response in the dependent variable. Suppose family income to be a relevant facilitator for educational attainment: the model suggests that unit changes in income, at a given level of aspiration, have the same power to increase the number of years of education completed, irrespective of current income. It is more plausible to argue that the efficacy of income will vary from one level to another; in other words, that the income elasticity of demand for education depends upon the level of income. In the first place, if a family with a very low income has an increase in the funds at its disposal, essential items like food and clothing probably will have high priority. As income rises beyond the bare subsistence level, the higher education of the children may be seen as a possibility and it will be accepted that funds should be set aside for college. Within a certain range, the level of education planned might be very sensitive to the level of wealth. If the family moves still higher up the scale,

however, it is unlikely to reserve the same proportion of income for education, because after a point more money cannot secure anything better.

In the second place, while the educational hierarchy has been visualized as a continuum, it is not infinite. There is a lower limit, representing no formal education, and for all practical purposes an upper limit also. The occupational prestige scale similarly has upper and lower limits: positions at the top are the most desirable, and there are fewer of them; hence competition is keen. Therefore, to achieve each successive step up the ladder will call for greater effort. Increments of a given factor will have diminishing marginal returns in terms of attainment. In the previous example, this would mean that a given sum to be devoted to increasing educational attainment would have greater impact on a youth who would otherwise be unable to attend college than on the son of a wealthy family who had already graduated from a university high in prestige. To take another case: suppose the prestige level of the father's job is used to predict the son's occupational attainment. Over a considerable range the son's attainment might be sensitive to increases in facilitation of this nature, until finally, increments in his father's status have no further effect upon his achievement. This would be because the son is already at such a high level that there are few positions higher and parental influence alone is not sufficient to secure them. Stated another way, the attainment variable becomes progressively less sensitive to changes in aspiration or facilitation, or the "elasticity of response" decreases at higher levels.

These examples have involved a possible curvilinear relationship between a facilitator and attainment. It is perhaps harder to visualize a situation in which attitude is the independent variable but, in theory, if an attitude could be incremented by discrete amounts, the same relationship could apply. Figure 3 expresses the curve relationship between an independent variable and attainment.

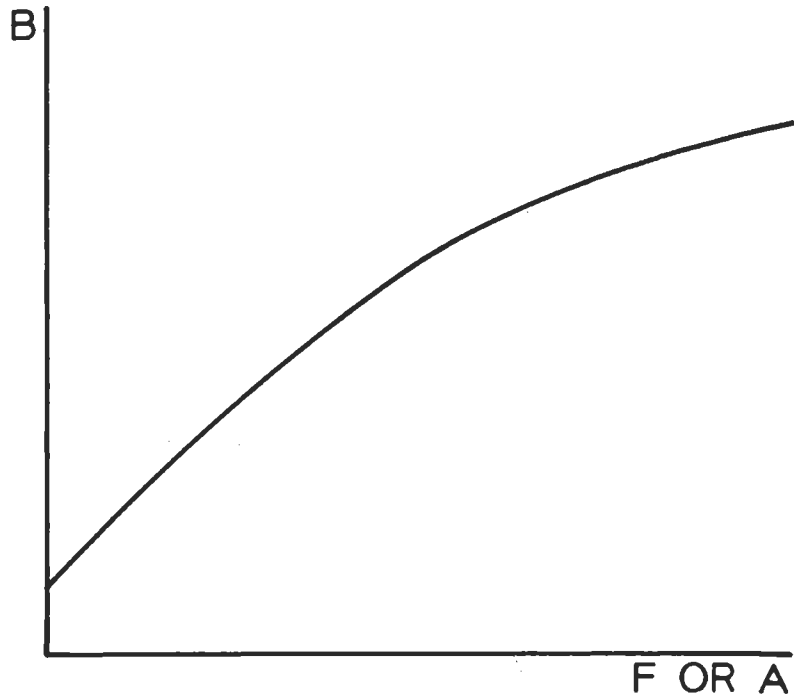
If there were no diminution of the number of positions at the top of the hierarchy, this form of relationship, a curve approaching a ceiling, would not apply. In a time of rapid technological change, for instance, when job opportunities for graduates are expanding faster than the supply, competition among them for the occupations of high status might be no more fierce than it is among those vying for the occupations of lower prestige—and might indeed be less severe. In such circumstances, increases in education would facilitate increasing occupational attainment at an accelerating rather than a decelerating rate.

Curvilinear interaction

Fitting together the two previous models results in a curvilinear interaction model (Figure 4), the implications of which are:

- 1) At each level of attitude, the facilitator has a unique relationship with the attainment variable; at each level of facilitation, the attitude variable has a unique relationship with the attainment variable.
- 2) Each relationship is positive and nonlinear, so that increments in the

Figure 3.—Curvilinear model of the relationship of behavior to an antecedent variable



Note: A, F, and B indicate attitude, facilitation, and behavior, respectively.

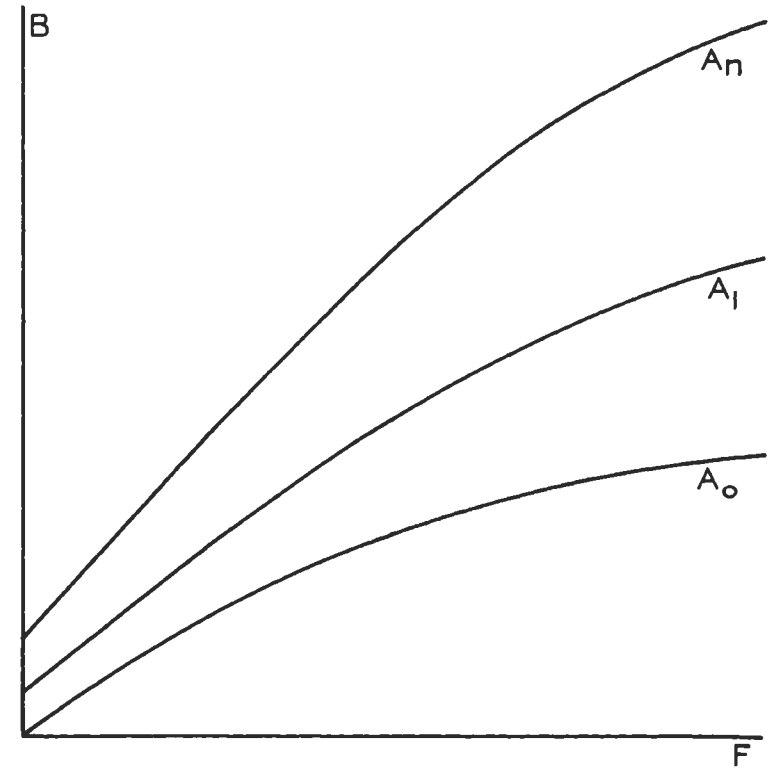
independent variable add successively less to attainment, finally reaching a ceiling where no further improvement can be made.

3) An increase in facilitation always has more impact on subjects with higher aspirations; raising aspirations is always more effective in improving attainment among those with better facilitation.

4) With increasing facilitation, the difference in behavior between low and high aspirers becomes more marked; as attitude strength increases the behavior of those low and high in facilitation diverges. The curve imposes a ceiling, however, so that the gap does not widen indefinitely.

With the linear interaction model, individuals who score high on both facilitation and aspiration would be expected to perform much better than on the additive assumption. With the curve setting a ceiling on attainment, however, those high on both variables are deflected from the highest attainment and may not in consequence achieve much more than would be assumed from the additive model. Variance in behavior of a population is therefore somewhat curtailed, compared with that predicted from the linear model.

Figure 4.—Curvilinear interaction model of the relationship of behavior to an attitude and a facilitator



Note: A, F, and B indicate attitude, facilitation, and behavior, respectively.

Clustering—correlation of attitude and facilitation variables

The present model would allow some individuals to be high on one variable and low on the other: high aspirers may have low facilitation and *vice versa*. As indicated elsewhere (Haller and Miller, 1971:30-33), when the subject's knowledge of his own abilities and interests, and the potentials and limitations of his particular environment changes, he will try to bring his aspirations and facilitation into line. To a limited extent, an individual may try to manipulate his facilitating resources to correspond with his aspirations. For example, he may study in his spare time to attain higher qualifications in order to further his career. Much more frequently, it will be his aspirations which will be adjusted. If he realizes that his parents cannot support him through a long and expensive training he may cease to aspire to a professional career; or a boy with above-average intelligence or high socioeconomic status may discard his dream of becoming a craftsman or laborer. It is perhaps easier to change one's attitude or aspiration and indeed it is often the case that the individual is willing to change his aspiration in one sector of behavior because there are

many other sectors in which he can or must act and he realizes that it would be pointless to waste effort on impossible goals.

One consequence of this feedback of facilitation and aspiration on one another will be a clustering of individuals such that their attitudes conform in general with those of others with similar facilitation. Groups who score high on facilitation will be expected to show high mean levels of aspiration; those low on facilitation will usually have lower ambitions and thus will attain lower goals. This does not mean that aspirations are reduced to the more fundamental level of facilitators but rather that there will be few instances where the two are wildly incongruent.

This realistic appraisal and adjustment of attitudes and facilitators is thought to be a sign of maturity. Ginzberg *et al.* (1951) suggested that the realistic phase of occupational choice occurs in the 17th and 18th years. Higher correlations between aspirations and facilitating factors would therefore be anticipated for youths than for children. High correlations are expected where the subject perceives a given facilitator to be crucial for attainment. Closer agreement is also expected between pairs of variables most relevant to current behavior. Among young children a high correlation may be found between educational aspiration and the educational climate of the home. Among older youths, who are beginning to develop their own views and plans—which are not necessarily the same as their parents' expectations for them—greater agreement is predicted between levels of educational aspiration and academic ability. Youths about to start work are probably more realistic than school children in relating short-term occupational aspirations to the jobs available, while neither group would be realistic with regard to plans for retirement. Here we suggest a temporal sequence, most clustering occurring between facilitating and attitudinal variables most relevant to current goals.

In the terms of Yinger's (1965:244-266) model of the relationship between prejudice, racial discrimination and structural supports, clustering would imply that persons bounded by the same structural supports would be similar in their individual tendencies; few would fall into the area of poor prediction described by Warner and DeFleur (1969). Yinger's model allows that, through the mediating influence of the structural supports, an extremely prejudiced person, the all-weather illiberal, would not discriminate against Negroes in a liberal environment where strong support was given to non-discrimination. Under the clustering assumption, the all-weather illiberal who was continuously exposed to a cultural climate supporting nondiscriminatory behavior and who was constrained to alter his actions might eventually modify his attitude, also. This need not be a one-way process as the entry of a large number of prejudiced persons into a liberal community might change the prevailing climate of opinion there.

It is suggested, then, that attitudes will be continuously modified to bring them somewhat into line with the potential for action afforded by the environment and to a much lesser extent, facilitation will be manipulated to allow a fuller expression of aspirations. Taken to its extreme conclusion, this would result in a perfect correlation between attitude and facilitation variables.

Yinger (1965:38) has noted that “. . . under conditions in which socio-cultural structure and individual experience are relatively stable and repetitive, *either* a purely sociological *or* a purely psychological approach to personality is effective, because the constructs of each are likely to be adequate *indexes* of the variables studied by the other.”

In reality, however, people lack perfect knowledge and in any case the circumstances change. Particularly among adolescents in the process of making career decisions, the situation will be far from stable and at least some individuals will not have reconciled their aspirations with the potential for action available to them. A “half-way house” is expected, where clustering is present but not complete.

Under the interaction assumption, being high on one variable results in greater variance in attainment, but with clustering the range of positions open to those highest in facilitation or aspiration might be almost as restricted as it is to those starting at the bottom. While it may be difficult for the son of an unskilled worker to rise above the prestige level of the highest blue-collar occupations, for example, it may be as hard for the son of a family of high status to fall below the level of the lowest white-collar occupations.

Clustering would tend to mask the effect of interaction. If all individuals with a given level of aspiration were equal in facilitation, it would not be necessary to consider facilitation in predicting the relevant behavior. A single regression of the relevant behavior on attitude would give as good an estimate as a series of regressions within each type of facilitation.

Net effect of interaction, curvilinearity, and clustering

So far each influence on the attainment process has been treated in isolation. In practice, all might occur simultaneously and only the net effect would be observed. Under varying circumstances one set of factors or another may become the most salient for behavior. Interaction suggests that those high in both facilitation and attitude will perform better than would be predicted from the sum of the individual effects while the notion of a decelerating curve is that high attainment will be restricted. Although interaction takes into account the effects of facilitators and attitudes separately, with clustering the relevant behavior would be partially predictable from either, taken alone. Some of the conditions under which one set of influences predominates rather than another may be specified.

Clustering assumes a pair of variables each making a significant contribution to attainment and perceived by the subject as necessary for this attainment. In the case of behavior occurring close to the present, clustering is likely to be more pronounced than in that of actions to be taken in the more distant future. Interaction is expected to show most clearly where each of a pair of variables has a strong effect on behavior but where clustering is not marked. If the variables are highly correlated, so that each explains virtually the same variance in the relevant behavior, it is unlikely that an interaction term will be able to account for much additional variance. Curvilinearity is expected where there is an effective upper limit on attainment. It would not be predicted where the ceiling is so remote that opportunities for short-run up-

ward mobility are virtually unrestricted. Strong clustering would obscure the curvilinear effect because only segments of each curve would be found.

Hypotheses arising from the models

We bypass the simple additive model and proceed directly to the others.

1. Clustering.

Individuals in the process of status attainment adjust aspirations to bring them into line with the potential for action provided by their facilitation and try to manipulate facilitation to enable them to fulfill their aspirations. High correlation is therefore predicted between pairs of facilitating and attitude variables relevant to a given behavior. This correlation is expected to be higher among more mature subjects, between variables perceived as crucial for attainment, and between variables most relevant to current decisions.

Hypothesis 1. The correlation between a given facilitator and the corresponding attitude is positive and significant.

2. Curvilinearity.

Educational and occupational prestige scales being regarded as continua of increasing difficulty, at lower levels of attitudinal and/or facilitating variables small increments of either will yield large increments in status attainment; at progressively higher levels of either independent variable given increments have a diminishing effect on status attainment.

Hypothesis 2. The slope of the regression of attainment on attitude or facilitation becomes progressively less steep at higher levels.

3. Interaction.

Each independent variable mediates the relationship between its corresponding pair and behavior. Being low on one variable depresses the relationship of the others to attainment; being high enhances it. This effect is expected to be most apparent in pairs of variables having strong predictive power for attainment and in situations where clustering and curvilinearity are less marked.

Hypothesis 3. Multiplicative interaction of facilitating and attitude variables accounts for a significant proportion of the variance in attainment behavior.

4. Curvilinear interaction.

Combining the curvilinear and interaction effects, the final model of attainment against aspiration with facilitation variables intervening is a set of curves which spread out and level off at higher levels of aspiration; graphs of attainment against facilitation with an attitude variable intervening assume the same form.

Hypothesis 4. The regression of attainment on an attitude variable within categories of a relevant facilitator is a set of curves with positive slopes which become less steep and diverge at higher levels of aspiration. The regression of attainment on a facilitating variable within categories of the corresponding attitude variable is a set of curves with positive slopes, becoming less steep and diverging at higher levels of facilitation.

Data

Tests of the hypotheses have been carried out using data from the Wisconsin study of educational and occupational aspirations and achievement. The data were obtained from an extensive questionnaire survey of all high school seniors in Wisconsin public, private, and parochial schools in 1957 (Little, 1958) and from a follow-up study conducted in 1964 of a one-third random sample of these students (Sewell and Shah, 1967). The 1957 survey obtained information concerning the students' educational and occupational aspirations, measured intelligence, family socioeconomic status, and related topics. In the follow-up, a mail questionnaire was used to obtain information on the educational and occupational attainments of the students as of the summer of 1964. The present study is concerned with the 4,388 male students for whom data are available at both times (87.9 percent of those in the 1957 cohort sample). Various tests have been carried out which indicate that the respondents to the 1964 survey are not a biased sample of the 1957 sample cohort.

Educational and occupational attainments in 1964 are the dependent variables and 1957 levels of educational and occupational aspirations are the attitude variables. Facilitating variables have been selected on theoretical grounds and by reference to the recursive model of attainment behavior constructed by Sewell, Haller, and Portes (1969) from the same data set. Taking only those respondents who were sons of farmers, they used seven variables to predict occupational attainment, namely the socioeconomic status of the family, the respondent's mental ability, his academic performance in high school, the influence exerted on him by significant others to attend college, his levels of educational and occupational aspiration (all obtained in 1957) and the highest level of education he had reached by the time of the follow-up.

The authors found that, after aspiration level, significant others' influence was the most powerful predictor of educational attainment, followed by academic performance, level of occupational aspiration, socioeconomic status and measured intelligence. Essentially the same results were found when the path model was applied to males from several other residential backgrounds (Sewell, Haller, and Ohlendorf, 1970). Significant others' influence, socioeconomic status and measured intelligence have been used here as facilitators for educational attainment.

Significant others' influence is an index of the respondent's perceptions of the encouragement he receives from significant others to attend college, a variable which will be most relevant to college plans for those in their senior year at high school. The three types of significant others considered are parents, teachers, and peers. Parents and teachers may be perceived as having expectations for the respondent's further education. Peers may be somewhat less likely to define a role for the respondent in this way but if they are planning to go to college, they will act as models for the subject.

The respondent's intelligence has a bearing on his educational attainment. In the matrix of regression coefficients for the path model, academic performance, that is grade point average, was found to have a stronger predictive power than measured mental ability. Here, however, mental ability is used

in the belief that it is less subject to societal influences than academic performance.

Family socioeconomic status was found by Sewell, Haller, and Portes (1969) to have only a weak predictive effect on the educational attainment of farm boys. This is not surprising as the variance in parents' education and income would typically be low for farm boys and father's occupation would explain no variance. Elsewhere Sewell and Shah (1967) and Sewell, Haller, and Ohlendorf (1970) have shown that family socioeconomic status has more influence upon college plans and performance in other residence groups, and Blau and Duncan (1967) have employed measures of socioeconomic status in path models to predict attainment. An index of socioeconomic status is therefore employed as the third facilitator for educational attainment.¹

In predicting occupational attainment, education and socioeconomic status are the facilitators used, though others might also have been chosen. Significant others' influence and intelligence have not been used because their greatest relevance is to educational attainment.

This gives three models to test the hypothesis for educational attainment and two for occupational attainment, as follows:

- A. Educational attainment is predicted by
 - 1) Significant others' influence and level of educational aspiration
 - 2) Mental ability and level of educational aspiration
 - 3) Socioeconomic status and level of educational aspiration
- B. Occupational attainment is predicted by
 - 1) Socioeconomic status and level of occupational aspiration
 - 2) Educational attainment and level of occupational aspiration.

Defining the variables

1. Occupational attainment (OCCATT)—the prestige level of the respondent's occupation in 1964, scored from 00 to 99 on Duncan's (1961) socioeconomic index.
2. Level of occupational aspiration (LOA)—the Duncan (1961) socioeconomic index score of the occupation to which the respondent aspired in 1957. The variable was divided into five categories, with scores in the intervals of 00-19, 20-39, 40-59, 60-79, and 80-99, and treated on a five-point scale.
3. Educational attainment (EDATT)—the highest level of vocational or college education the respondent had obtained in 1964. Five categories were employed to distinguish respondents with no post-high school education, those who had attended vocational school, those who had attended or were attending college but had no degree, those with a bachelor's degree, and those with some post-baccalaureate training.

¹The present theory in no way predicts a correlation among the facilitators; neither does it deny such a correlation. For the most part facilitations are just the "givens" against which the attitudinal variables function. There is thus little point in attempting to construct multivariate indexes of facilitation from these variables.

4. Level of educational aspiration (LEA)—school plans in 1957. Four categories of this variable comprise respondents who planned no further education, those planning vocational, trade or business school, those planning to go to a state or teachers' college and and those intending to enter a university or liberal arts college.
5. Significant others' influence (SOI)—a weighted combination of the respondent's perceptions of encouragement from teachers, counselors, and parents regarding his college plans, and perception of his friends' college plans. Scores were divided into four categories with approximately equal frequencies.
6. Mental ability (MA)—percentile rank on the Henmon-Nelson test, which is administered on a state-wide basis in the junior year at high school. This was divided into five categories with scores between 00 and 19, 20-39, 40-59, 60-79, and 80-99.
7. Socioeconomic status (SES)—a weighted combination of parents' education, father's occupation and mean parental income for the years 1957 to 1960. Dividing the population into approximately equal groups gives categories with scores in the ranges of 00 to 19, 20 to 25, 26 to 32, and 33 and up.

Results

1. Clustering.

The hypothesis is that the correlation between pairs of facilitating and attitude variables relevant to a given behavior is positive and significant. As Table 1 shows, each pair is positively and highly significantly correlated (r 's ranging from 0.37 to 0.62; $p < 0.05$). Therefore Hypothesis 1 is not rejected.

2. Curvilinearity.

To test the hypothesis of curvilinearity, the regression of the relevant attainment variable against each independent variable treated as a set of dummy variables has been compared with the regression against each regarded as a continuous variable. Strictly speaking, the relationship would be said to depart from linearity only where the regression using the dummy variables explains significantly more variance than the simple linear regression. Because dummy variables introduce error variance, this turns out to be a very stringent condition and only two regressions, of educational attainment on level of educational aspiration (Fig. 7) and of occupational attainment against education (Fig. 11) depart significantly from linearity. (See Table 2.) In both figures the predicted curve may be seen. In the other five cases (Figs. 5-6, 8-10) the relationship is adequately described by a linear function, although several of the non-significant curves (Figs. 9 and 10) tend to follow the same pattern. The relationship of mental ability to educational attainment (Fig. 6) appears to be of an accelerating form contrary to the hy-

TABLE 1

Zero-Order Correlations between Pairs of Attitude and Facilitation Variables.

Behavior	Facilitator	Attitude	Zero-Order Correlation of Attitude & Facilitator	r ²
EDATT	SOI	LEA	.573	.328
EDATT	MA	LEA	.430	.185
EDATT	SES	LEA	.402	.162
OCCATT	SES	LOA	.366	.134
OCCATT	EDATT	LOA	.622	.387

Abbreviations:

EDATT	Education Attainment
OCCATT	Occupational Attainment
SOI	Significant Others' Influence
MA	Mental Ability
SES	Socioeconomic Status
LEA	Level of Educational Aspiration
LOA	Level of Occupational Aspiration

pothesis. The evidence is suggestive and the hypothesis cannot be rejected outright. (For further evidence, see Figures 12 to 21, in which the curves are presented for various control categories. Clearly there is some evidence of curvilinearity in some of these lines.)

3. Interaction.

To test the hypothesis of multiplicative interaction, regressions have been fitted to the form:

$$B = a + f_1 (F) + f_2 (A) + f_3 (F \cdot A)$$

Interaction would be indicated where the coefficient f_3 of the interaction term ($F \cdot A$) was positive and significant. As Table 3 shows, there are three significant interactions but only two of these, between mental ability and level of educational aspiration and between significant others' influence and level of educational aspiration, are positive. Between socioeconomic status and level of occupational aspiration the interaction is contrary to the hypothesis, being negative, and the negative coefficient of the interaction between educational attainment and level of occupational aspiration only just fails to reach significance. The fifth example, linking socioeconomic status and level of educational aspiration with educational attainment, fails to support the hypothesis. Again, the hypothesis is neither strongly supported nor completely

TABLE 2

Linear and Curvilinear (Dummy Variable) Coefficients of Determination of Selected Independent Variables on Status Attainment

Independent Variables	Status Attainment Variables	Coefficients of Determination		F	P
		Linear (r ²)	Curvilinear (R ²)		
Significant Others' Influence (SOI)	Educational Attainment (EDATT)	.284	.279	*	ns
Mental Ability (MA)	Educational Attainment (EDATT)	.236	.228	*	ns
Level of Educational Aspiration (LEA)	Educational Attainment (EDATT)	.471	.487	68.807	<.05
Socioeconomic Status (SES)	Educational Attainment (EDATT)	.175	.157	*	ns
Socioeconomic Status (SES)	Occupational Attainment (OCCATT)	.109	.091	*	ns
Level of Occupational Aspiration (LOA)	Occupational Attainment (OCCATT)	.232	.228	*	ns
Educational Attainment (EDATT)	Occupational Attainment (OCCATT)	.385	.395	24.136	<.05

* Theoretically $R^2 > r^2$. In practice, the categorizations used in dummy variables analyses sometimes yield R^2 values slightly lower than r^2 .

TABLE 3

Regressions to test Hypothesis of Multiplicative Interaction between Attitude and Facilitation Variables

Behavior	Facilitator	Attitude	Standardized regression coefficient	F-ratio for interaction term
EDATT	SOI	LEA	+ .2275	23.188
EDATT	MA	LEA	+ .1637	28.157
EDATT	SES	LEA	— .0212	0.548
OCCATT	SES	LOA	— .1690	16.584
OCCATT	EDATT	LOA	— .0730	3.45

Abbreviations: See Table 1

(Critical level of $F = 3.84$ $p < 0.05$)

Figure 5.—Educational attainment by significant others' influence

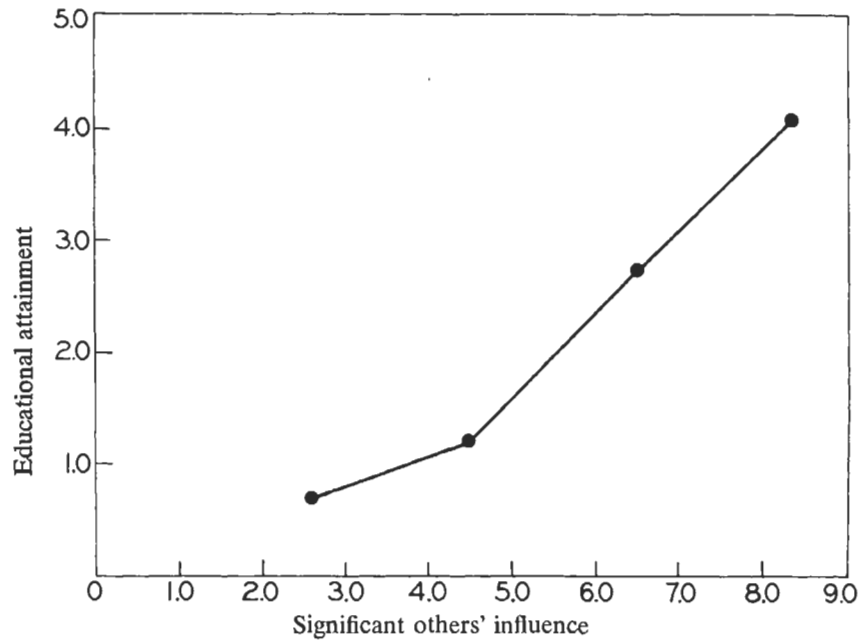
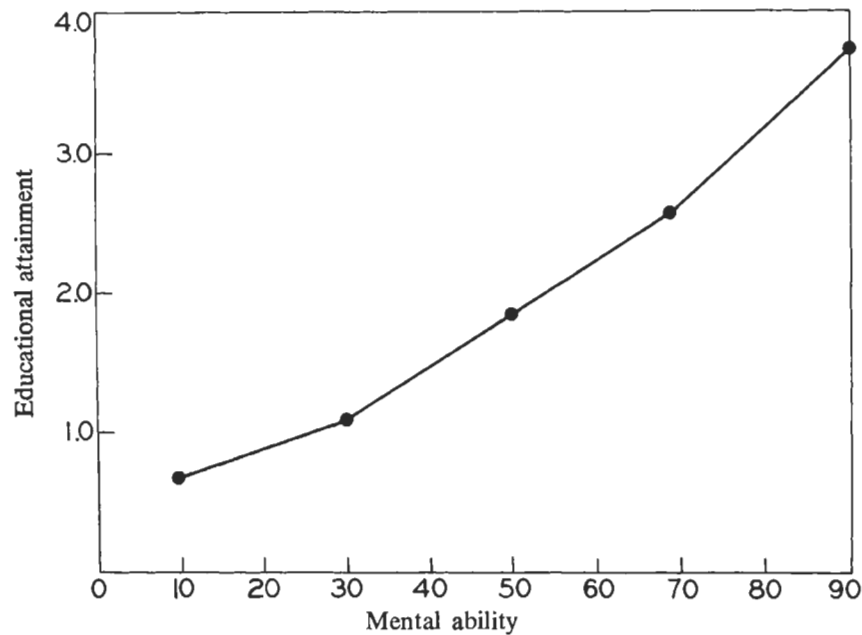


Figure 6.—Educational attainment by mental ability

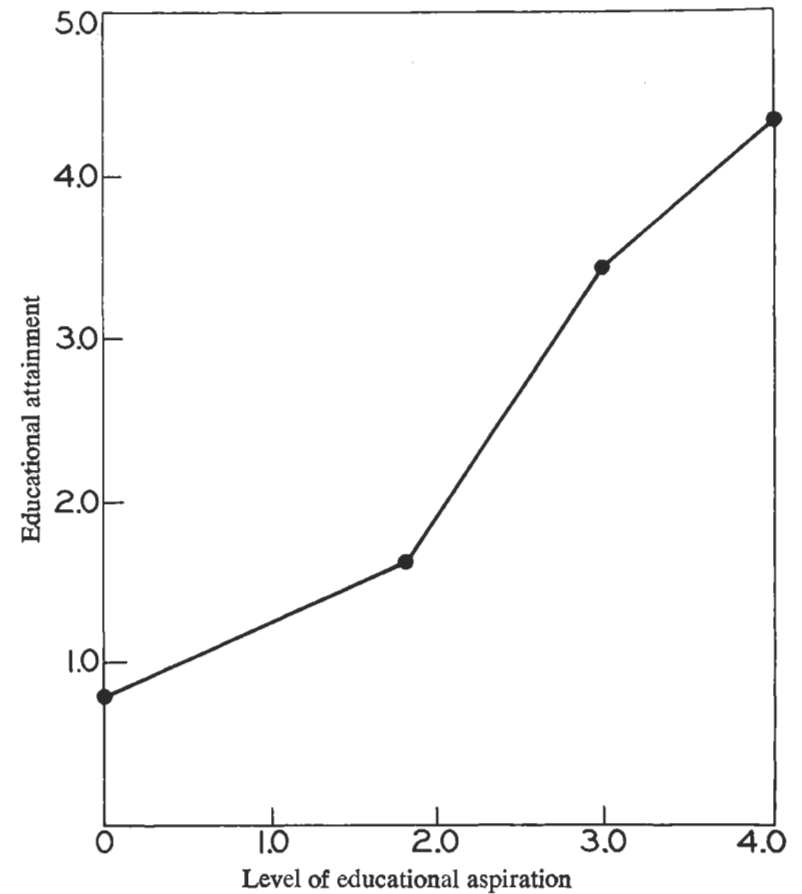


rejected but it is noted that the predicted interaction term adds to the variance explained in two out of five cases.

4. Curvilinear interaction.

To investigate the possible joint effects of interaction and curvilinearity, regressions of attainment against each facilitating variable represented as a set of categories have been run within each category of the corresponding aspiration variable and *vice versa*. The hypothesis requires that the resulting set of curves diverge and flatten out at higher levels of the independent variable. None of the ten curves fits this pattern; some show interaction and the others, curvilinearity. No significance tests were performed and the hypothesis was rejected. (The curves are presented in Figures 12 through 21.)

Figure 7.—Educational attainment by educational aspiration



Discussion of the results

1. Clustering.

The hypothesis that the correlation between each facilitator and its corresponding attitude variable is positive and significant is supported. As suggested, clustering is most marked between pairs of variables with most relevance to current attainment. At the time of measuring aspiration, the respondents were about to start college or their first job. At such a time, the encouragement of significant others would be an important facilitator of further education. Within a few years, educational qualifications would help to establish the youths in their first jobs and this variable proves to be highly correlated with level of occupational aspiration.

2. Curvilinearity.

The second hypothesis is that the relationship between each predictor and attainment is in the form of a curve with a positive but decreasing slope at

the top. In only two of the seven cases does such a curve predict attainment significantly better than a straight line. In five out of seven cases, however, a ceiling effect can be detected, implying that over the range considered the independent variable has a diminishing power to raise attainment.

Curves for the two aspiration variables and significant others' influence also showed an initial floor effect, which might be an artifact, since nonrespondents on these variables were coded in the lowest category, where their scores on the dependent variable might serve to raise the average of the group. It may also be argued that the curvilinearity arises because the categories of the independent variables do not represent equal intervals. If, for instance, the difference in terms of educational aspiration levels is in a real sense greater between plans for vocational school and plans for teachers' college than it is between the latter and university, then the dependent variable would be expected to show less response to the final increment in aspiration. While this

Figure 8.—Educational attainment by socioeconomic status

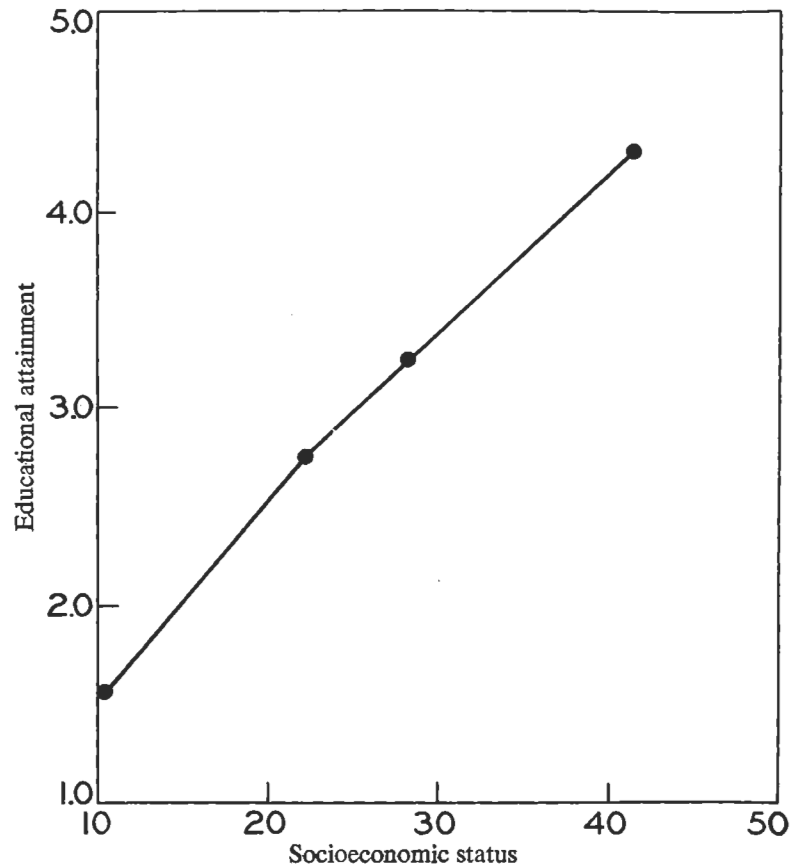


Figure 9.—Occupational attainment by socioeconomic status

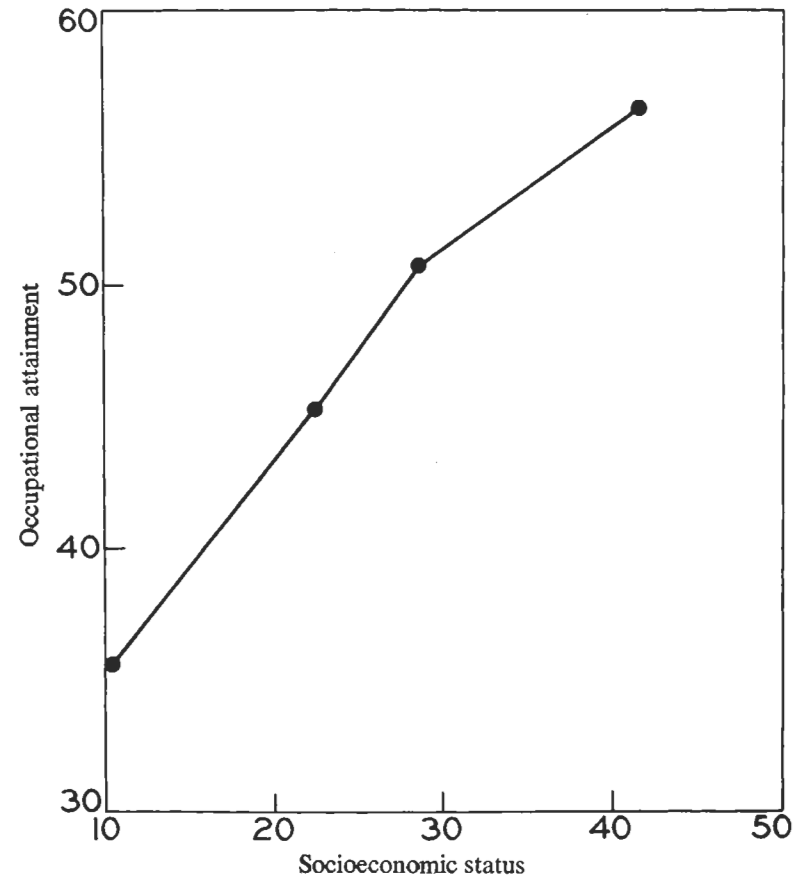


Figure 10.—Occupational attainment by occupational aspiration

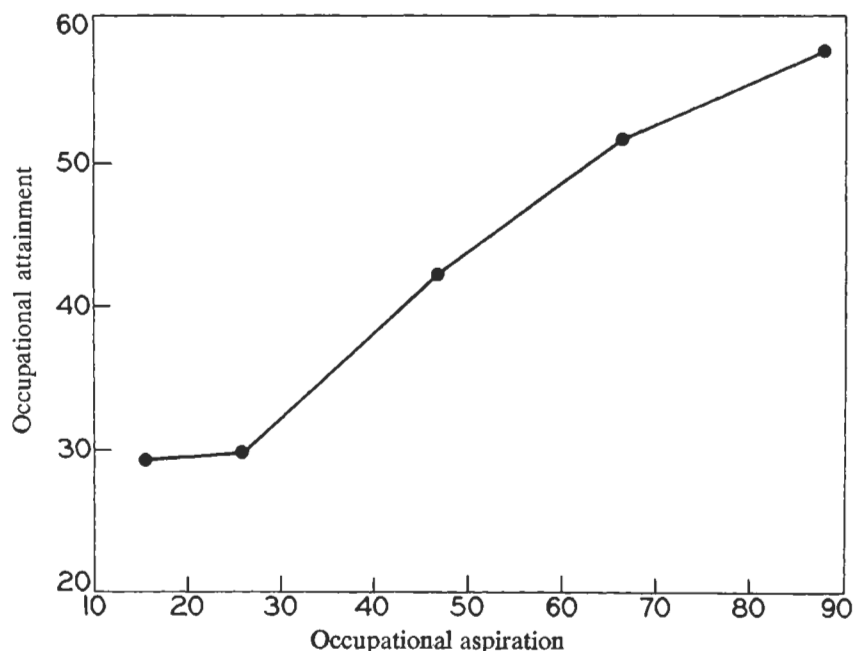
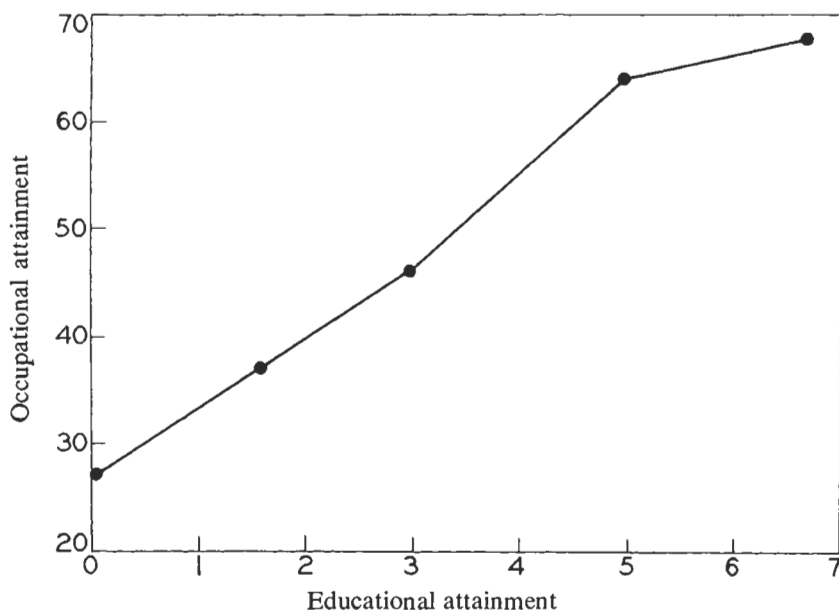


Figure 11.—Occupational attainment by educational attainment



argument might be applied in the cases of educational aspiration, significant others' influence and educational attainment, it would be a coincidence if all three had been coded in the same noninterval pattern. (In fact, the patterns are not the same: the curve of educational attainment against educational aspirations shows the steepest jump between plans for college and plans for vocational school only, whereas for education as the independent variable predicting occupational attainment, the break is between college graduation and attending college without obtaining a degree.) Further, the same tendency toward a curve is observed in the three regressions using occupational aspirations and socioeconomic status as independent variables, where categories are closer to an interval scale. The fact that the same tendency is seen in six different situations provides some support to the hypothesis of curvilinearity. However, it must still be concluded that the departures from linearity are not great by usual standards and in most research situations justify the linear assumptions.

3. Interaction.

The hypothesis that the multiplicative interaction of a facilitator and attitude will make a significant contribution toward explaining behavior is not wholly rejected. In the process of educational attainment, the effects of level of aspiration and significant others' influence or of level of aspiration and mental ability appear to reinforce one another so that individuals high in both achieve more than would be expected from a sum of the individual effects and those low in both achieve less than would be predicted from an additive model. Levels of attitude alter the contingencies for action of those at given levels of facilitation, and *vice versa*.

Contrary to the hypothesis, interaction involving occupational aspiration is negative; here, individuals high in both aspiration and facilitation will achieve less than would be expected on an additive assumption. One possible explanation might be that as facilitation increases, aspiration rises disproportionately so that those who score high on facilitation would hold unrealistically high hopes. A more likely suggestion is that occupations high in prestige require a longer period of preparation. The respondents with high aspirations who have attended college will be only at the beginning of their careers at the time of the follow-up and thus a long way from their goals while those who aspired to humble positions and had started to work immediately on leaving school would have had seven years in which to find their niche and might have made progress within it. It is a drawback of these data that differences in attainment would probably be minimal at this particular stage in the respondents' careers. Another study, after an interval of ten or fifteen years, might show more substantial variation in occupational attainment attributable to background, education, and aspiration.

Again contrary to our expectation, there is no obvious inverse relationship between interaction and clustering. The pair of variables most highly correlated, educational attainment and level of occupational aspiration, shows no significant interaction while the pair next highest in correlation, significant others' influence and level of educational attainment, has a significant positive

interaction. Even though the two variables are explaining much of the same variance in behavior, when combined their product explains significantly more. High educational aspirations are fostered by strong pressure from significant others to attend college but, even so, individuals high on both variables attain still more than would be predicted from a sum of the separate effects. On the other hand, the lowest correlation does not go with the smallest interaction effect. It was also anticipated that interaction and curvilinearity will be incompatible but this is not found to be so, possibly because the curve effect is not strongly developed.

4. Curvilinear interaction.

The fourth hypothesis concerns the combined effects of curvilinearity and interaction. Among each pair of attitude and facilitation variables, one clearly has a stronger relationship to attainment, as can be seen in the table of zero-order correlations (Table 4). When the variables are combined, the influence of the more powerful one will predominate. Level of educational aspiration, for instance, has a higher correlation with educational attainment than have mental ability, significant others' influence or socioeconomic status. When level of aspiration is treated as an independent variable, as in Figures 12, 14, and 16, its curvilinear relationship with educational attainment is not obscured by the interventions of the facilitators. In each case the sets of curves remain tightly bunched and run parallel with never more than 1.3 points separating the highest and lowest categories on the 9-point scale of educational attainment. None of the facilitators is powerful enough to affect differentially the relationship between aspiration and attainment. Similarly, education is more closely related to occupational attainment than level of occupational aspiration, which in turn is more highly correlated than socioeconomic status. This means that, apart from the small effect on the Y-intercept, level of occupational aspiration does not differentially affect the form of the curvilinear relationship between education and occupational attainment (See Figure 21) and, in turn, changing the level of socioeconomic status is not suffi-

TABLE 4

Zero-Order Correlations between Variables used in the Model

	OCCATT	EDATT	LOA	LEA	SOI	MA	SES
OCCATT	—	.620	.482	.471	.397	.363	.331
EDATT		—	.622	.686	.533	.486	.418
LOA			—	.768	.528	.445	.366
LEA				—	.573	.430	.402
SOI					—	.352	.318
MA						—	.288
SES							—

Abbreviations: See Table 1

Figure 12.—Educational attainment by educational aspiration, significant others' influence (SOI) controlled

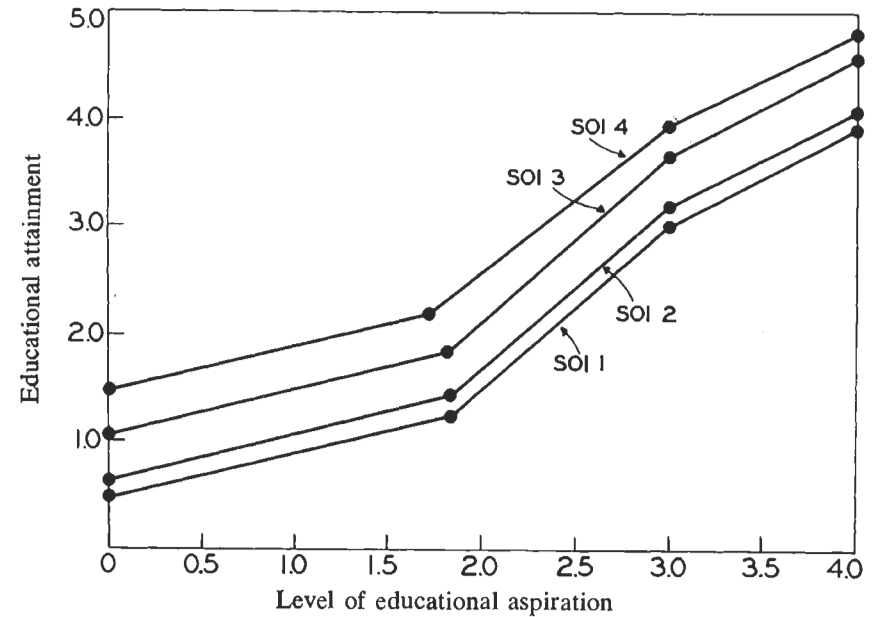


Figure 13.—Educational attainment by significant others' influence, level of educational aspiration (LEA) controlled

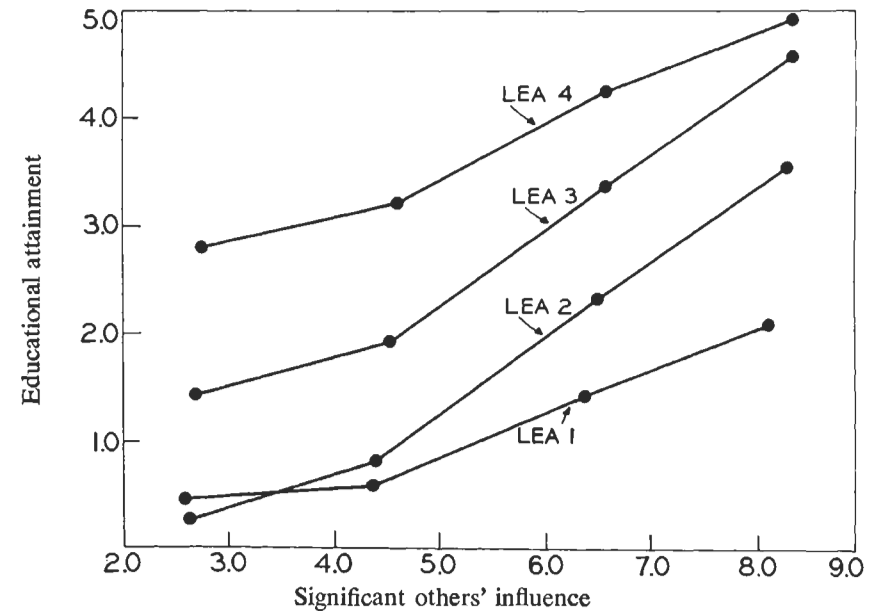


Figure 14.—Educational attainment by educational aspiration, mental ability (MA) controlled

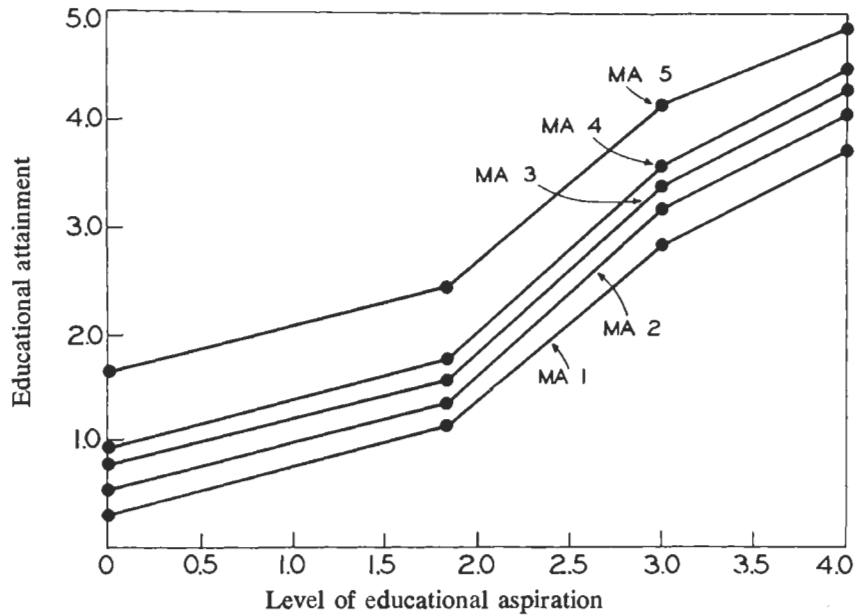
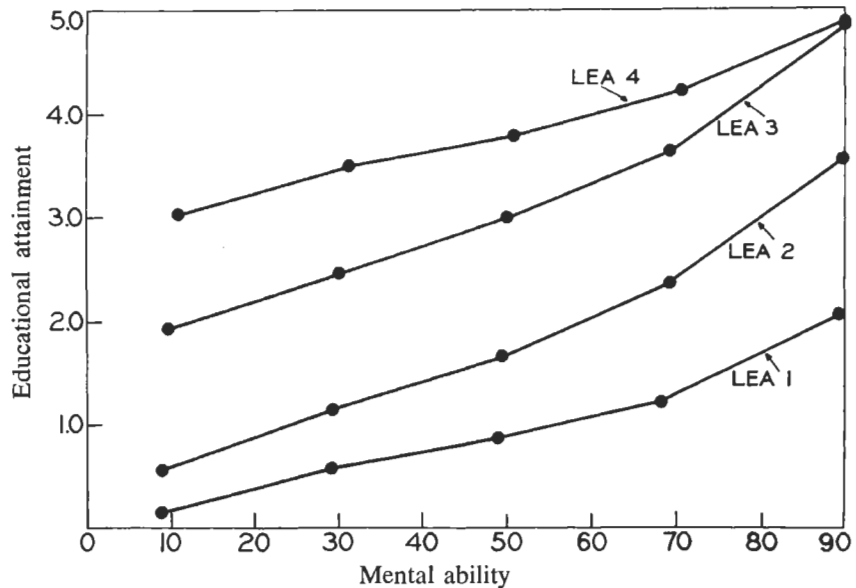


Figure 15.—Educational attainment by mental ability, level of educational aspiration (LEA) controlled



cient to alter the curvilinear relationship between level of aspiration and attainment (Fig. 18).

When the weaker predictor is treated as the independent variable and its relationship on attainment plotted within categories of the more powerful, interaction appears but the tenuous curvilinearities disappear. As shown by Figures 13, 15, and 17, the relationships of mental ability, socioeconomic status and significant others' influence to educational attainment are differentially affected by the level of educational aspiration and, similarly for predicting occupational attainment, level of occupational aspiration interacts to a slight extent in the regressions on categories of socioeconomic status (Fig. 19), while education interacts in the relationship between aspiration level and attainment (Fig. 20). These results are the complement of the first set, suggesting again that the joint effect of a facilitating and an attitudinal variable will reflect the influence of the more powerful predictor. Hence to find an example which shows both a curvilinear relationship and the intervening effect of another variable will be fortuitous, being dependent on the variables having roughly equal predictive power.

In those examples predicting educational attainment with level of aspiration intervening, multiplicative interaction would account for the steeper slope of the middle categories, as compared with the low. Individuals not planning on post-high school education make less use of facilitating factors to further their education than do those intending to go to vocational school, so the more facilitation, the greater the discrepancy in observed behavior. The group planning on teachers' college or state college achieve higher than those aspiring to vocational school but the differential is unaffected by the level of facilitation. Finally, those respondents with highest aspirations achieve considerably more than those with lower aspirations at lower levels of facilitation but little better when facilitation is greatest. The explanation must be that at higher levels of aspiration it is harder to sustain the same rate of improvement in attainment; compared with those of moderate aspiration, the most ambitious people require more resources to raise their attainment by the same amount. Time may be considered as a facilitating resource here; respondents with high aspirations to education or occupation need more years in college, as well as more ability and more financial support, in order to achieve their targets. Facilitation in various forms thus becomes a limiting factor in the further attainment of those with high aspirations, whereas of those with low facilitation the aspiration level itself appears to be limiting.

Similarly, the process of occupational attainment may be limited by the low aspirations of certain individuals, regardless of facilitation, while others with moderate aspiration are more responsive to changes in socioeconomic status. The most ambitious again do not sustain their initial lead over the less ambitious, requiring larger increases in facilitation of one kind or another to achieve their full potential.

Last, as illustrated in Figure 20, those whose education finished with high school graduation are less able to benefit from increases in level of occupational aspiration than those who at least at some time attended vocational school or college. At the other extreme, college graduates perform better than

Figure 16.—Educational attainment by educational aspiration, socioeconomic status (SES) controlled

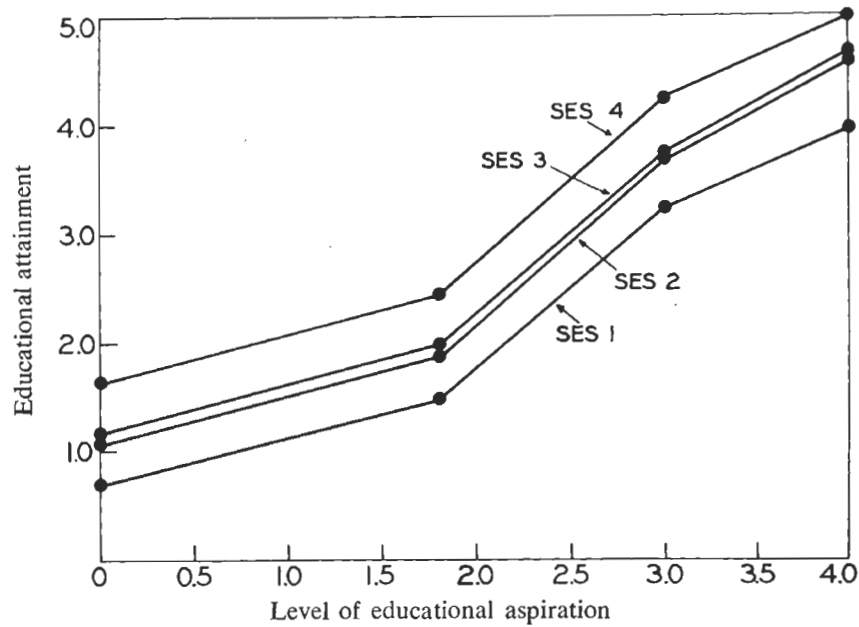
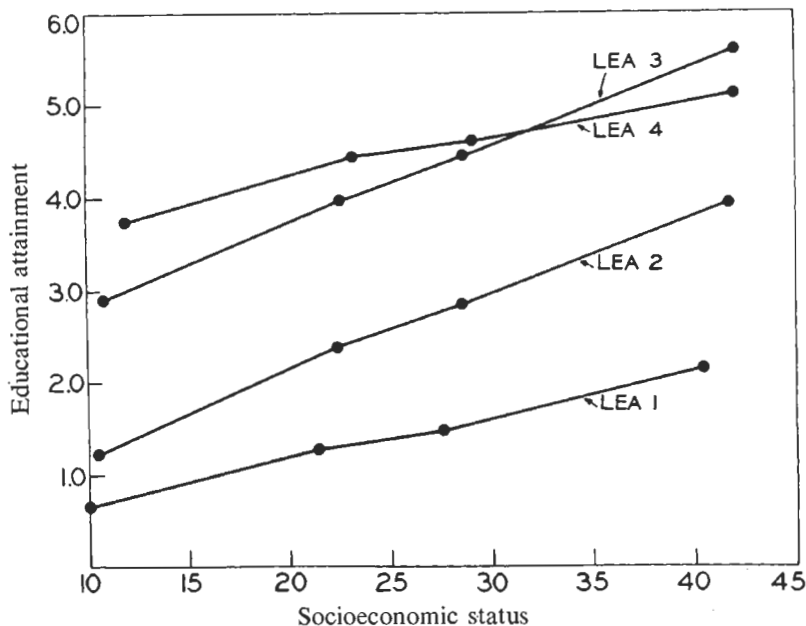


Figure 17.—Educational attainment by socioeconomic status, level of educational aspiration (LEA) controlled



nongraduates at lower levels of aspiration but this advantage is eroded as occupational aspiration rises; that is to say, larger increments of ambition are needed to raise the occupational attainment of those who already score high in facilitation than of those who score lower.

As the simultaneous effects of curvilinearity and interaction at all combinations of attitude and facilitation levels are not—and are not likely to be—observed, the following propositions are put forward in place of Hypothesis 4.

(i) In any pair of attitude and facilitation variables used to predict attainment, the stronger of the two intervenes to alter the form of the (possibly curvilinear) relationship between the other and the dependent variable, but the weaker does not affect the form of the relationship of the stronger with attainment.

(ii) Treating the more powerful variable as intervening, multiplicative interaction serves to depress the responsiveness of those in the lowest category to increments in the independent variable, as compared with those in higher categories.

(iii) While multiplicative interaction enhances the responsiveness of those in the highest category to increments in the independent variable over and above its effect on those in the middle categories—in fact the top group becomes more subject to the curve effect and its performance is restricted—larger increments of the independent variable or of another limiting factor are required to sustain the same rate of achievement. The principle of variable factor proportions, more commonly known as the law of diminishing marginal returns, appears to operate here.

If facilitation and attitude variables combine in this way, the overall effect will be little different from that predicted by straight addition of the variables. Taking the whole population, positive interaction between attitude and facilitation in the case of those at the lowest and middle levels of one variable are compensated for by negative interaction between middle and highest categories. Individuals in the highest category will be held back from the highest attainment by the limiting proportions of the complementary variable or possibly of other variables outside the attitude-facilitator pair under consideration, giving rise to the curve effect. Individuals classed as lower in attitude or facilitation will not have reached this ceiling, so the overall effect may prove to be linear. Subjects in the top category of both variables would be expected to achieve *more* than the additive effect due to interaction but *less* due to the limiting proportions of variables; therefore the net result may well be approximately the same as in the additive model.

Practical implications

In programs designed to raise levels of status attainment, certain implications of the present model could be important. Assuming, for instance, that individuals are grouped according to their level of educational aspiration and that facilitation is regarded as the independent variable to be manipulated, it may be found that each group reacts differently. Those in the category of

Figure 18.—Occupational attainment by occupational aspiration, socioeconomic status (SES) controlled

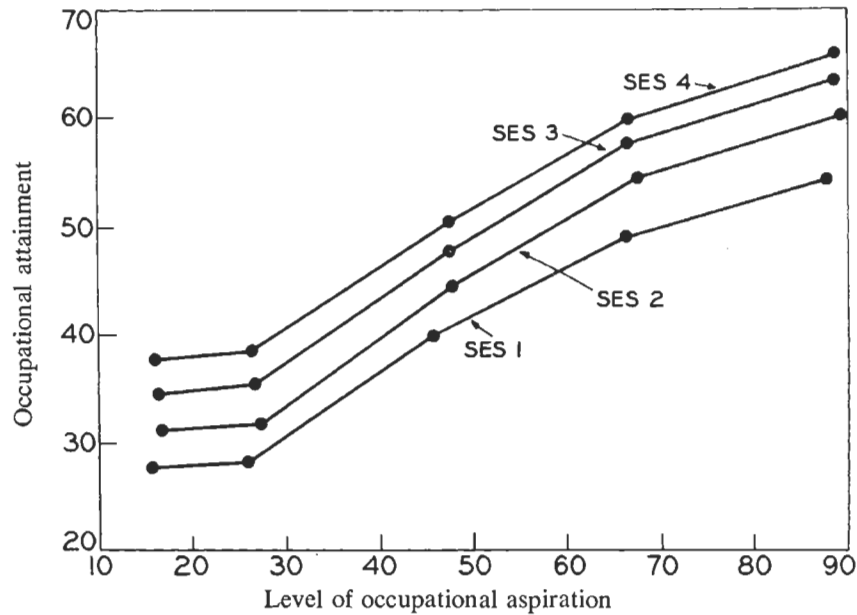
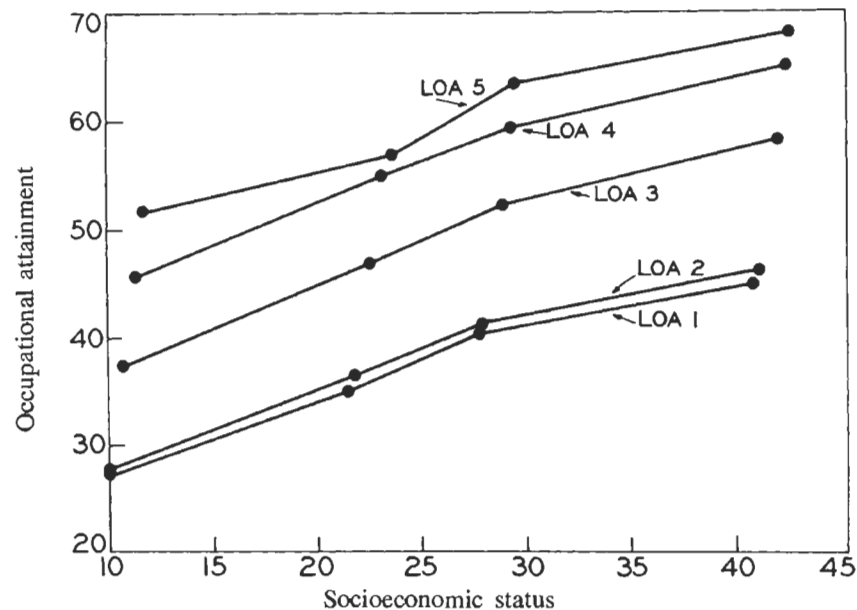


Figure 19.—Occupational attainment by socioeconomic status, level of occupational aspiration (LOA) controlled



low aspiration may respond feebly to increases in facilitation; however much facilitation is improved without directly manipulating aspirations—by building new schools, employing more highly-trained teachers, extending the syllabus, offering scholarships—some children will consistently fail to achieve their full potential because of low aspirations. To some extent the influence of facilitation on aspiration (indicated by the correlations noted in testing hypotheses regarding clustering) will probably intervene to raise such students' attainment. But aspirations are evidently not a simple reflection of facilitating variables. For this reason, improving the social structural conditions will have greater impact upon those whose aspirations are already higher; removing one obstacle to better attainment without tackling the other may therefore serve to *widen* the gap between the ambitious and the apathetic.

It appears from these data that those in the middle categories of aspiration would always make the most effective use of any improvements in facilitation. Respondents higher in aspiration soon tend to reach a ceiling so that increments in facilitation are less effective in furthering their already high attainment. To increase the performance level of the high-high group, some other factors, perhaps not considered in the model, would have to be overcome. It is suggested that the time available to enact the behavior may be one such limitation.

This raises the question of ultimate objectives of programs whose goal is to influence status attainment. Should the goal be the most economical use of resources or the raising of the levels of attainment of those who are now likely to be low achievers? A nonselective program to improve the facilitation of further education, for example, seems bound to draw greatest response from those who are not subject to other constraints of either low aspirations or decreasing marginal returns. Such an approach would achieve maximum economic efficiency. If, on the other hand, the goal is to raise the attainments of potentially low achievers, then it might be necessary to raise their levels of aspiration and then to channel other aid specifically to them. To enhance the attainment of the most gifted entails the discovery of the particular factor which is limiting their further achievement, and making up the deficiency.

Conclusions

This study attempts to extend knowledge of attainment behavior by examining the statistical logic of the relationships among aspiration variables (a class of attitudinal variables), facilitating variables, and attainment behavior. Models to predict attainment behavior from aspiration and facilitating variables were tested using data on the process of educational and occupational attainment in 4,388 youths who were Wisconsin high school seniors in 1957. It was found that attitudes and facilitators tend to be positively correlated. The hypotheses that the relationships between each independent and dependent variable take the form of a curve with a positive but decreasing slope and that there is multiplicative interaction between attitudes and facilitators were at best only weakly supported. An hypothesis derived from the two preceding ones was rejected.

Figure 20.—Occupational attainment by occupational aspiration, educational attainment (EDATT) controlled

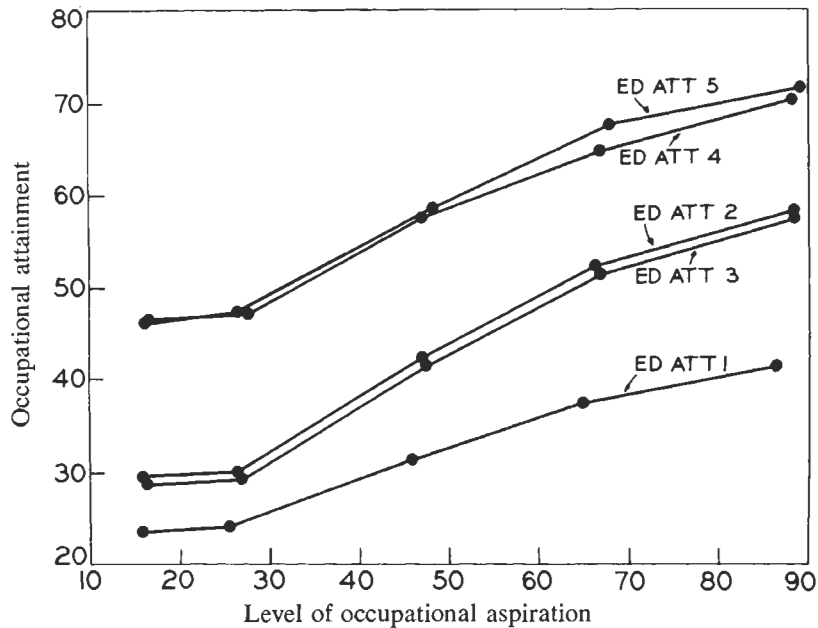
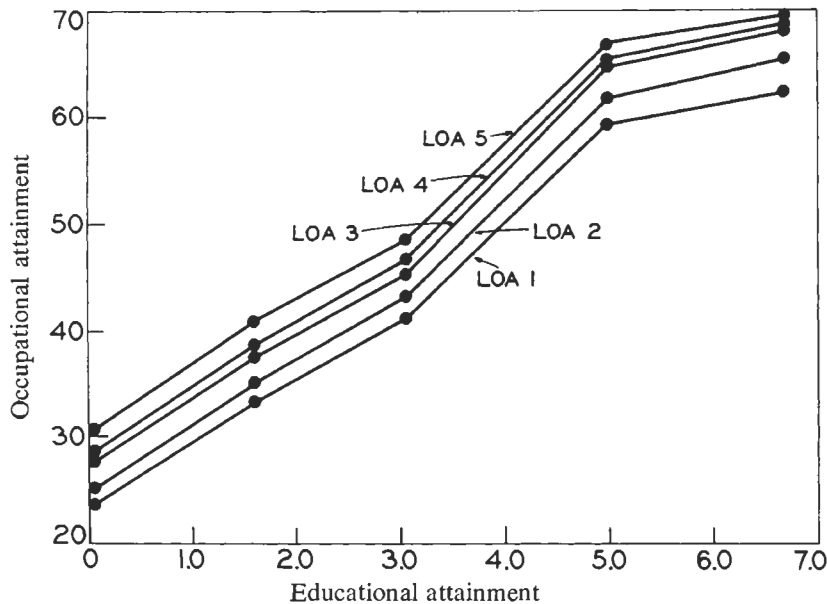


Figure 21.—Occupational attainment by educational attainment, level of occupational aspiration (LOA) controlled



For most research purposes, an additive model with its assumptions of linearity and no interaction is fully justified and provides a parsimonious description of the process of status attainment. Although models involving interaction and curvilinearity may sometimes be more precise than additive ones, the latter are effective and simpler to use.

Here it maybe useful to make the distinction between parsimony in research operations and theoretical simplicity of concepts. It is possible for a theory to be conceptually simple yet, at least in its earlier stages, not easy to test, while a competing theory might be conceptually complex and yet lend itself to a simple and predictively efficient set of research operations. Here we began with a theoretical position which employs simple concepts, which explains the observed linear relationships among sets of variables in the process of educational and occupational attainment (for example, as described by Sewell, Haller, and Portes, 1969 and by Sewell, Haller, and Ohlendorf, 1970), which predicts nuances of relationships not anticipated by linear systems, and which, in explaining phenomena in this domain, may be more comprehensive than other positions. Under some circumstances the practical implications of such a system would differ from those of the more conventional additive model. The model with which we began is parsimonious and consistent; it explains the observed correlations at least as completely as others; and it makes new and seemingly valid predictions. It would seem that the set of concepts and interrelations proposed might improve our understanding and prediction of behavior in other domains. For this purpose we briefly review the theoretical implications of our findings.

First, when the relevant behavior is the achievement of a position on a continuum of difficulty, we predict that increments in a given predictor variable will elicit a diminishing response. This principle rests on two premises. One is that to increase the level of one variable in a system means decreasing the proportions of the other variables with which it interacts, hence limiting its effectiveness. The other premise is that positions higher on a prestige continuum are fewer and more desirable, hence more difficult to attain.

Second, when behavior is predicted from more than one class of variable, as exemplified in the statement: "Behavior is a function of the person in his environment," interaction can be expected among the variables. The effect of one variable on behavior is modified by the level of another variable. Knowledge of the levels of both will improve the explanatory power. In the present study, the variables with stronger predictive power over the behavior variable were found to modify the effects of the weaker predictors; but the reverse was not the case.

Next, there is evidence (Figs. 10, 12, 13, 14, 16, 18, 20), albeit ambiguous, of an accelerating slope at the low end of the curve. As our initial theory would dictate, this may mean that attitudes and facilitation have an increasingly powerful effect on behavior (at least until the point of diminishing returns sets in). Researchers should be alerted to the possibility that this curve may obtain among similar classes of variables in other domains of behavior. If so it might be worthwhile to investigate the present theory more thoroughly.

Finally, insofar as an individual is aware of his attitude toward an object (in this case the attitude was a level of aspiration and the object a position on a hierarchy) and of the variables which influence its manifestation in overt behavior, he may try to modify the supporting variables and will adjust his attitude to bring each more nearly into line with the other. This feedback results in positive correlations between the two classes of independent variables. These correlations will be imperfect because of incomplete knowledge on the part of the individual and possibly because attainment in a given sector is important to some but less important to others. It is informative to speculate about the logical implications of the individual's degree of awareness of the relation between his attitude and the facilitation offered by the surroundings: the greater the awareness, the higher the feedback and the higher the linear correlation between attitude and total facilitation; the lower the awareness the lower the feedback and the correlation. This implies that (until the point at which the diminishing effects set in) the lower the awareness the higher the degree of positive multiplicative interaction effects.

Since survey research methods are less than ideal for testing such proportions, experimental research should now be designed to provide more appropriate, precise, and rigorous tests of this and other possible theories of attainment behavior. Preferably this research would be carried out in such a way as to resolve the general questions of relationships between the main classes of variables discussed here: attitudes, facilitators and behavior.

REFERENCES

- Blau, Peter M. and Otis Dudley Duncan
1967 *The American Occupational Structure*. New York: Wiley: 165-172.
- DeFleur, Melvin L. and Frank Westie
1963 "Attitude as a scientific concept." *Social Forces* 42 (October): 17-31.
- Duncan, Otis Dudley
1961 "A socioeconomic index for all occupations." Pp. 109-138 in Albert J. Reiss, Jr. (ed.), *Occupations and Social Status*. New York: Free Press.
- Duncan, Otis Dudley, David L. Featherman, and Beverly Duncan
1972 *Socioeconomic Background and Achievement*. New York: Seminar Press.
- Durkheim, Emile
1951 *Suicide*. New York: The Free Press.
- Featherman, David L.
1971 "The socioeconomic achievement of white religio-ethnic groups: social and psychological explanations," *American Sociological Review* 36 (April): 207-222.
- Ginzberg, E., S. Ginsburg, S. Axelrad, and J. L. Herma.
1951 *Occupational Choice: An Approach to a General Theory*. New York: Columbia University Press.
- Haller, Archibald O. and Irwin W. Miller
1971 *The Occupational Aspiration Scale*. 2nd edition. Cambridge, Massachusetts: Schenkman Publishing Co.
- Inkeles, Alex
1959 "Personality and social structure." Pp. 249-276 in R. Merton, L. Broom, and L. Cottrell, (eds.), *Sociology Today*. New York: Basic Books.
- Little, J. Kenneth
1958 *A Statewide Inquiry Into Decisions of Youth About Education Beyond High School*. Madison: University of Wisconsin, School of Education.
- Mead, George H.
1934 *Mind, Self and Society*. Chicago: University of Chicago Press.
- Merton, Robert K.
1949 "Discrimination and the American creed." Pp. 99-126 in Robert M. McIver (ed.), *Discrimination and National Welfare*. New York: Institute for Religious and Social Sciences.
- Newcomb, Theodore
1950 *Social Psychology*. New York: Dryden Press.
- Sewell, William H., Archibald O. Haller, and George W. Ohlendorf
1970 "The educational and early occupational status attainment process: replication and revision." *American Sociological Review* 35 (December): 1014-1027.
- Sewell, William H., Archibald O. Haller, and Alejandro Portes
1969 "The educational and early occupational attainment process." *American Sociological Review* 34 (February): 82-92.
- Sewell, William H. and Vimal Shah
1967 "Socioeconomic status, intelligence and the attainment of higher education." *Sociology of Education* 40 (Winter): 1-23.
- Turner, Ralph H.
1968 "Is the concept of attitude obsolete?" Paper presented at the meeting of the Pacific Sociological Association, San Francisco (unpublished).
- Vroom, Victor M.
1963 "Some personality determinants of the effects of participation." Pp. 571-577 in N. Smelser and W. T. Smelser (eds.), *Personality and Social Systems*. New York: Wiley.
- Warner, Lyle G. and Melvin L. DeFleur
1969 "Attitudes as an interactional concept: social constraint and social distance and intervening variables between attitudes and action." *American Sociological Review* 34 (April): 153-169.
- Yinger, J. Milton
1965 *Toward a Field Theory of Behavior*. New York: McGraw-Hill.