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1979

CONTEXTUAL ANALYSIS OF
SELF-CONCEPT OF ACADEMIC ABILITY

By

Joseph Passalacqua

A THESIS

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ABSTRACT

CONTEXTUAL ANALYSIS OF SELF-CONCEPT OF ACADEMIC ABILITY

By

Joseph Passalacqua

Self-concept research has consistently demonstrated a positive relationship between measures of individual self-concept and individual achievement. Thus concern with self-concept, particularly academic self-concept, is based upon the assumption, that enhancement of the self-concept of students in a given class or school will generally improve the achievement of students in that class or school. Yet, until recently there has been little empirical evidence which analyzes the relationship of aggregated self-concept of academic ability and achievement across schools.

A recent study of elementary schools reveals a negative relationship between aggregated self-concept of academic ability and aggregated school achievement. The correlation between school mean self-concept of academic ability and school mean achievement in reading and mathematics in a random sample of sixty-eight Michigan Elementary Schools is $-.549$. This reversal in sign which occurs at an aggregate or ecological level of analysis is representative of what has been termed the "ecological phenomenon." The aim of this analysis is the explanation of this phenomenon, as it occurs

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in Michigan Public Elementary Schools and possibly other
social groups.

The theoretical frameworks underlying this explanation were explicated under the rubrics of symbolic-interaction, reference group theory, and role theory; of which symbolic interaction was the major theoretical perspective posited.

Self-concept research is based on many different measures and somewhat varied definitions of the construct. For reasons cited in this section it is not possible to generalize across these diverse measures and definitions. Thus, the review of literature included general findings from these studies and the consistent positive relationship found between individual measures of self-concept and individual performance.

The phenomenon under investigation here refers specifically to the self-concept of academic ability. Thus, this review includes findings of studies which have specifically used this as a measure of self-concept at an individual level. Studies measuring the relationship between individual self-concept of academic ability and individual achievement, in various populations and over time, report correlations in the range of .45 to .70.

The sample consists of ninety-one elementary schools, sixty-eight randomly selected from that universe of Michigan Elementary Schools containing fourth and fifth grade students. For the purpose of this and other analysis it was necessary to augment the number of black schools. An additional

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twenty-three black schools were randomly selected from that universe in order to have a sub-sample of thirty predominately black schools. Thus, sub-samples of white schools, black schools and higher S.E.S. and lower S.E.S. white schools were identifiable.

The instrument employed in this study was designed to examine relationships between self-concept of academic ability and measures of antecedent and consequent variables such as intelligence, school achievement, and perceptions of the evaluations of significant others. The use of simple correlational analysis was used to measure the strength of these relationships, at an aggregate level in various school populations. These school populations varied along race and socioeconomic status, indicators. Further, the multiple regression technique was employed to estimate the contribution of school composition (race and S.E.S.) to the variance explained on self-concept of academic ability.

The findings indicate that the self-concept of academic ability is a meaningful predictor of achievement only within the context of a specific school social system. Thus, generalization made across specific social groups or school social systems are inappropriate. Further, the data indicates that the norms which characterize black schools and the patterns of interactions which communicate the norms and evaluations may not be comparable to those of white schools.

DEDICATION

Nicholas and Margret Passalacqua

Who encouraged their children to
strive, and to work to the best
of their abilities in achieving
the goals that they set for
themselves.

Joseph Passalacqua

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INTRODUCTION

Over the past decade there has been an overwhelming interest, on the part of researchers and educators, in the phenomenon of self-concept (for references to current studies see Purkey, 1978). This fascination with self-concept has been fostered by empirical evidence which links the construct to academic performance (Shavelson et al., 1976). Self-concept has been valued as the educational outcome, as well as an important factor for interpreting achievement outcomes.

The demonstration by Brookover, et al., (1962, 1965, 1967) that individual self-concept of academic ability is significantly and highly related to individual school achievement, as well as other research on self-concept, has led many educators to focus on the enhancement of self-concept as both a goal in itself and a means of achieving other educational objectives (Purkey, 1970). The general recognition of the construct's importance, has specifically affected educational theory and practice. Many innovations have been designed to improve educational outcomes by focusing on the improvement or development of the self-concepts of disadvantaged students (Fantini and Weinstein, 1968). Thus the significance of self-concept has been reinforced by evidence that individual self-concept, particularly self-concept in academic roles, is positively related to individual achievement (Shavelson, 1976).

Further, concern with academic self-concept is based upon the assumption that enhancement of the self-concept of students in a given class or in a given school will generally improve the achievement of students in that class or school (Purkey, 1978).

PROBLEM

Until recently there has been little empirical data which analyze the relationship of aggregated self-concept of academic ability and achievement across schools. A recent study of elementary schools reveals a negative relationship between aggregated self-concept of academic ability and aggregated school achievement. The correlation between school mean self-concept of academic ability and mean achievement in reading and mathematics in a random sample of sixty-eight Michigan schools is $-.547$ (Brookover, et al., 1977). This illustrates what has been termed the "ecological phenomenon" described by Robinson (1950). Nearly thirty years ago Robinson startled the users of aggregated data with his "proof" that statistical associations for such populations could differ in magnitude and even in sign from those for individual population members. Use of the term ecological refers to the focus of attention on variations among units at a level above the individual actor, (Doggan and Rokkan, 1969), in this case i.e. the school social system. The aim of this investigation is to examine the "ecological phenomenon" as it occurs in Michigan Elementary Schools and possibly in other social groups.

To clearly understand this phenomenon it is necessary that this investigation focus on the following key areas. First, a look at the theory which underlies the definition of the construct. This is necessary to set a framework from which to analyze these data, and further an explanation of these findings must reside within the theoretical perspective. Contained within this section will be a brief description of other theories of self-concept. This is most important for a clear delineation of these theories, and the properties which differentiate the definitions, and more importantly for this examination, the varying construct interpretations.

Next, we will examine research which has used the self-concept of academic ability scale as a measure of student self-concept of ability. These studies have demonstrated the relationship between individual self-concept of academic ability and individual school achievement in various populations and over time. Since the data under investigation do not contain individual achievement scores, within school correlations between individual self-concept of academic ability and achievement are not available for this population of Michigan Elementary Schools.

We will review the concerns surrounding the use of aggregate data. Aggregate data, in general, are used to measure the contextual properties of a system which affect the functioning of individual units within that system. The context is critical to the explanation of the ecological phenomenon. Further, research which has found this relationship

in measuring other constructs at an aggregated level will be reviewed. The conclusions drawn from these findings are noteworthy.

The third section of the paper will provide a brief description of the measure and its unique properties. This will include research which has attempted to examine the construct validity of the self-concept of academic ability scale. That is the relationship of the definition with the instrument, and the empirical findings. This will become an integral part of the phenomenon explanation.

Finally a description of these data and the study within which it was collected is needed to understand the occurrence of this phenomenon in Michigan Elementary Schools.

THEORY

The explanation of the negative relationship between school mean self-concept of academic ability and school mean achievement is based upon the symbolic interactionist frame of reference. The basic theory is that human beings assess themselves in terms of their perceptions of others' evaluation of them. Further, role theory and reference group theory support the symbolic interaction perspective and thus lend themselves readily to the explanation of this phenomenon. Simply stated, role theory encompasses behavior which deals with the interaction of the individual and his environment. The behavior of these individuals is influenced by the expectations, evaluations, and behavior of "others" (reference

group). Yet, in the spirit of W. I. Thomas, G. H. Mead and others, it is the interpretation of these expectations and acts of others, and not the actual behavior of others which most influences the individual's behavior.

Symbolic Interaction

The theory was derived from the symbolic interactionist theorists George Herbert Mead (1934), Charles Cooley (1902) and formalized by J. W. Kinch (1963). They posit that it is the individual's interpretation of the expectations and acts of others which most influence behavior. Lindesmith and Strauss (1968) note that self-attitudes develop through social interaction and as the child interacts with objects and persons he comes to perceive himself as an object separate and distinct from other objects and persons. Cooley's looking glass self is a concept derived from his notion that the individual's self-concept is determined by his/her perception of others evaluation of him/her. Mead, further, suggests that one's self-concept is at least partially determined by his/her perception of the evaluation of others with whom the person interacts. Finally, Kinch defines the self-concept as "the organization of qualities that the individual attributes to him/or herself." He simply states that "the individual's conception of self emerges from social interaction"

It is clear from this brief discussion of symbolic interactionist theory that the concept of self is a construct which is derived through social interaction or self-other

interaction. Thus, the social context within which an individual interacts influences his/her conception of self. This brings the discussion to the concept of role. Role concerns the behavior of persons and its relation to the behavior of others in a social system (Brookover, 1970). The role category a person occupies not only defines his/her own behavior; but, also the behavior of other persons toward him/her, this includes the kind of characteristics they will attribute to him/her. Thus, attributes appropriate to these role categories are incorporated into the actor's self-concept.

In this analysis the behavior of actors occupying the position (role) of student in the academic social system called the school is the focus of attention. Theorists such as Cooley, (1902) and Mead (1934) have illustrated, through the process of interaction with others, the relationship of the individual and his/her social environment. Further within a given social structure each position or role has associated with it a set of norms or expectations. These specify the behaviors of actors in a position, and further characterize the actions an actor may appropriately initiate. "Thus through the process of interaction with 'others', the individual evaluates his/her own competency, in carrying out the behaviors which he/she perceives are appropriate to a specific role, based on the norms and expectations held by others" (Henderson, 1973). In other words, there is the possibility of a different self-concept for each of the roles which a person performs (Brookover, et al., 1967).

Like self-concept role behavior is dynamic and subject to change based upon interaction with others in the social system.

Role theory adds to the theoretical frame work of this analysis in which symbolic interactionism is the primary perspective. "Other" is a significant influence of an individual conception of self dependent on the importance of these persons in the individual's life. In essence the source of an individual's definition of self, is dependent upon the role he/she is performing, with its specific norms, and expectations. Those "others" or groups which make up the individuals evaluative frame of reference is further a function of the actor's role.

In this analysis it is most important to note that differences in perceived evaluations, and expectations of others should result in differences in self-concept.

Reference Group Theory

Reference groups are of importance in the explanation of this phenomenon in that an actor's perception of self is based on the expectations, evaluations and behavior of significant others. These "significant others" would be persons or groups whom the actor perceives as significant to him/her in a particular role, e.g., student.

The reference group defines the role behavior of the actor through the process of self-other interaction (symbolic interaction). Thus the actor takes the role of another in carrying out some behavior on his/her own. This behavior

then is based upon a comparison of what he/she perceives are the expectations and evaluations of the "other" and the expectations and evaluations which the "other" holds for him/her. Thus as Turner (1966) notes, reference groups are the groups by whom the actor sees his role performance observed and evaluated; and, he/she attends to the evaluations and expectations which members of the group hold toward him/her.

SELF CONCEPT OF ACADEMIC ABILITY

The above theoretical perspectives are the basis upon which the construct, Self-Concept of Academic Ability, is defined, i.e., the behavior in which one indicates to him/herself his/her ability to achieve in academic tasks as compared to others involved in the same tasks (Brookover, 1967). This social psychological definition highlights the unique contributions of symbolic interaction, role theory and reference group theory to the definition of the construct. Role theory is pertinent to the definition in that the interest with self-concept is situationally specific to the role of student in a specific social context.

Reference group theory is tied to the construct in that the self-concept of academic ability is seen as originating through comparison of self to others involved in the same tasks. The reference group would be comprised of those others which the student uses as a comparative base in the social setting of the school.

In indicating to him/her self one's ability to achieve compared to others, the process of social interaction is initiated. This highlights the major contribution of symbolic interactionist theory in the definition of the construct. The communication of evaluations and expectations to actors (in specific roles) by significant others with whom they interact (reference group) would not occur in the absence of social interaction. In other words the students interpretation/perception of teachers, students, principal and parents' expectations, evaluations, and behavior would serve to influence the actors conception of self in the role of student.

There are other theories of self which frequently involve the conception of self as a permanent, fixed, and perhaps, even inherited aspect of human personality (Maslow, 1962). In the interactionist context it is perceived that each person has many selves and assesses his/her self in many roles or statuses. Self-concept or self-assessment at any time or situation varies from any other time or situation depending on the social role in which the actor is responding. Thus the reference group to which he/she is referring in self-assessment varies from one social context to another.

Self-concept of Academic Ability then is a construct which is dynamic, and formed within a social context through self-other interaction. Thus for one to have a clear understanding of the formation of the self-concept of academic ability, it will be necessary to collect information relevant

to the social context within which it is formed, e.g., the school social system.

The following section will review the self-concept of academic ability scale, and its relationship to the above definition and theoretical frame work.

SELF-CONCEPT OF ACADEMIC ABILITY SCALE

The self-concept of academic ability scale has been used in research to examine relationships between self-concept of academic ability and measures of such variables as intelligence, school achievement, and perceptions of the evaluations of significant others (Brookover, et al., 1962, 1965, 1967, see Henderson, 1973 for further references). The aim of this section is to acquaint the reader with the scale and its relationship to the interpretations drawn from its data. Validating construct interpretations of a test score involves an interplay of construct definition, instrument development, and data collection. The construct definition sets the boundaries for potential measurement techniques (Shavelson, 1976). In order to set up a framework within which the ecological phenomenon can be explained it is essential that the instrument and its relationship to the definition and theory be explicated. The symbolic interactionist frame sets the tone for the construct definition. "Self-concept of academic ability refers to behavior in which one indicates to him/herself publicly or privately his/her ability to achieve in academic tasks as compared with others engaged in the

same task (Brookover, 1967). Self-concept of ability is dependent upon a particular role (student), specific social context (the school), and it is primarily evaluative in nature. If valid construct interpretations are to be drawn from these data it is imperative that the measure attempt to tap these facets of the construct definition.

The self-concept of academic ability scale consists of eight items. Half of the items ask students to rate on a five point scale their present school ability as compared with other classmates,

1. Think of your friends. Do you think you can do school work better, the same or poorer than your friends?
2. Think of the students in your class. Do you think you can do school work better, the same or poorer than the students in your class?
3. If you finish high school, do you think you will be one of the best students, about the same as most or below most of the students?
4. If you went to college, do you think you would be one of the best students, same as most or below most of the students?

The remaining four items ask students to rate their present and future academic ability in various school situations. Brookover (1967) reports reliability estimates for the self-concept of academic scale, using Hoyt's analysis of variance ranging from .81 to .88 over five points of time for male and female students (Brookover, et al., 1967).

Logical analysis reveals consistency between item content and construct definition. In other words, the scale attempts to have students compare themselves to a group, e.g., classmates,

schoolmates, those others who are relevant to the actor in the social system called the school. Since the comparison is relevant within a class or school logically it follows that the measure is situationally or contextually specific.

RELATED RESEARCH

Self-concept research has been based on many different measures and somewhat varied definitions of the construct. Therefore it is not possible to generalize across many studies involving self-concept, self-esteem, or other diverse measures of self. Shavelson (1976) notes the difficulty in interpreting measures of self-concept which arises because data are not readily available on the equivalence of various self-concept measurement instruments. Further, the lack of empirically demonstrated equivalence among self-concept measurements makes it impossible to generalize across studies using different instruments. The phenomenon under investigation is specific to the self-concept of academic ability. At this time there is no evidence or relevant research with regard to the "ecological phenomenon" in other measures of self-concept.

Several reviews of research on self-concept and its relationships to school achievement have verified the existence of the positive correlation between individual self-concept and achievement (Purkey, 1970, Yamamoto, 1972, Henderson, 1973).

The relationship between individual self-concept of Academic Ability and individual achievement has been consistently demonstrated in numerous studies using the Michigan State Self-Concept of Academic Ability Scale as the measure of self-concept. These studies have demonstrated correlations in various populations in the range of .45 - .70 (Brookover, et al., 1967, Auer, 1971, Vortuba, 1970, Haarer, 1964). Bloom (1976) reports other studies which confirm the significant positive relationship between individual self-concept of academic ability and various measures of individual school achievement.

There is some evidence that mean self-concept differs among various populations. Coleman, et al., (1966) reported that the self-concepts of ability among black students in segregated black schools were higher than the self-concept of black students in integrated schools. Katz (1968) reported that the self-concept of students in schools declined as the proportion of white students increased. Henderson (1973) reported that the self-concepts of students in black schools were higher than the self-concepts of students in white elementary schools in Michigan. Hara (1972) found that black students in Detroit area schools had higher self-concepts of academic ability and higher self-esteem than white students in Detroit area schools. Both white and black student's self-concepts were higher than that of Tokyo students. There is some evidence that students from different socio-economic levels have somewhat different mean self-concepts (Trowbridge,

1972). There has been some analysis of the differences in self-concept of randomly selected or matched groups within schools and other social systems (Borg, 1966). Further, Erickson, et al., (1967) found support for the theoretical assumption that self-concept varies from one social context to another. This was illustrated by the finding that the self-concept of academic ability of blind children varied with the comparison or reference group to which they were asked to respond, i.e. seeing children or blind children. However, there is no known research which specifically examines the relationship between aggregate self-concept of academic ability in specific schools and aggregate achievement of those schools.

Ecological Data

There is much confusion as to the usage of the term "ecology." Haeckel (1867) introduced the concept for the study of the influence of the physical and biological environment on the behavior and development of organisms. In its broadest sense the term "ecology" refers to all varieties of research on the adjustment of organisms to their environments. In a narrower sense this term has been applied to a wide variety of approaches to the study of the spatial-territorial environments of human behavior. All ecological studies focus attention on variations among units at some level above the individual actor (Doggan and Rokkan, 1969).

For the purpose of this investigation the term ecological refers to that mentioned above, i.e., research which analyses the adjustment of human beings to their environments. More specifically the relationship between school mean self-concept of academic ability and mean school achievement. Variation between school units can be considered an ecological measure of the spatial-territorial environments of human behavior. The point of major importance to this examination is that aggregate data may be used effectively to measure the context or environment within which the self-concept of academic ability is formed, i.e., the school social system. Further, from examination of the theoretical basis and construct definition it is viable to assume that the self-concept of academic ability from a symbolic interactionist frame is context dependent. This is exemplified by recent research which purports to show that differences in mean student self-concept of ability between schools can largely be explained by differences in the social climate of the school (Brookover, et al., 1977). School social climate is expressed as follows:

"In the social-psychological frame of reference in which we examine learning the school social climate encompasses a composite of variables as defined and perceived by the members of this group. These factors may be broadly conceived as the norms of the social system and expectations held for various members as perceived by the members of the group and communicated to members of the group" (Brookover and Erickson, 1975).

The norms of the group are considered to be the contextual boundaries which influence behavior of the school social system actors (principals, teachers, students). Thus climate, measured

as the perceptions of the actors social norms, in the form of expectations and evaluations, is a measure of the context within which the self-concept of academic ability is formed (see Appendix A for climate items).

In the data collected by Brookover and associates (Table I) climate explains the major percentage of the variance in self-concept of academic ability in Michigan elementary schools.

Table I

Summary of Multiple Regression Analysis Showing the Contributions of Climate to the Variance in Mean Student Self-Concept of Ability in a State Wide Sample of Michigan Public Elementary Schools and Four Subsamples of Such Schools.

Independent Variables in Regression	Random State Sample	Total White	High SES	Low SES	Majority Black Schools
	R^2	R^2	R^2	R^2	R^2
Climate	.860	.769	.864	.779	.861

Climate is a composite of variables of which the students perception of others present evaluations and expectations, and future evaluations and expectations explain most of the variance in mean self-concept of academic ability. The present evaluation and expectations variable is correlated at about .8 in the various samples with mean self-concept of academic ability. This indicates that mean self-concept of academic ability is a function of the normative social

context of the school social system. Thus, self-concept of academic ability reported here is a contextually dependent phenomenon (as it should be if the theoretical position is valid).

Further, Blau's (1963) finding that competition makes an individual more productive than other members of his work group, but a higher average level of competition in the group decreases the groups overall productivity, is a good example of research which has identified the ecological phenomenon. More important is Hammond's (1973) explanation of these data where he notes inaccurate estimates of individual relationships occur when the differences between aggregate units is not taken into account. Further, he states this is a case of an inverse contextual effect, which arises when a variable has a positive effect at the individual level but a negative effect at the aggregate level.

The research reviewed verifies the consistent positive relationship between individual self-concept of academic ability and individual achievement. No research was found which analyzes aggregate self-concept and its relationship to aggregate achievement.

The importance of contextual limits has been discussed and understanding the relationship of ecological data to these limits is imperative if one wishes to make valid generalizations. Further, the self-concept of academic ability seems to be a construct which is influenced by context and thus may lend itself more readily to ecological

or aggregate analysis even though one must limit generalizations to specific contexts.

DESCRIPTION OF DATA BASE

A brief description of the data used in this analysis of aggregate self-concept of academic ability is essential to an understanding of the ecological phenomenon. The data were collected in a study of elementary school social climate in Michigan and its relationship to basic reading and mathematics achievement (Brookover, et al., 1977). The self-concept and achievement data were obtained for fourth and fifth grade students in randomly selected samples of Michigan Elementary Schools. The representative state sample was composed of sixty-eight such elementary schools, seven of which were predominately black. For the purposes of this and other analysis it was necessary to augment the number of black schools. An additional twenty-three black schools were randomly selected from that universe in order to have a sub-sample of thirty predominately black schools. From this total of ninety-one elementary schools, sub-samples of white schools, black schools and higher SES and lower SES white schools were identifiable. It was not possible to split the black school sample into high/low SES groups due to the lack of variance along this dimension.

The Self-Concept of Academic Ability data were obtained by means of a student questionnaire which included the Self-Concept of Academic Ability Scale (Appendix B). This

questionnaire was read to the students by a trained field researcher and the students marked responses on the questionnaires. The school achievement data were obtained from the Michigan Department of Education Assessment Tests which were administered to all fourth grade students in the state. The mean school-level achievement score is the mean percentage of students mastering the forty-nine reading and math objectives measured by the Michigan Objective-Referenced Test. The racial composition of the student body of each school, reported as the percent white, was obtained from the State Department of Education. These figures are based on the school principal's report. The mean socioeconomic status of the schools is based upon the main bread winner's occupation as reported by the students in the fourth and fifth grades or as obtained from a sample of the school records in which the parental occupation data were available. The parents occupational data were coded according to the Duncan Occupational Scale and the mean SES for each school was calculated from those data. As mentioned earlier, individual achievement test scores were not available for this population. Therefore, it is impossible to report within-school correlations between individual self-concept of academic ability and individual achievement (see related research section).

RESULTS AND CONCLUSIONS

We turn now to a possible explanation of the negative correlation between mean self-concept of academic ability and

mean achievement. The Pearson correlational method was employed to measure the strength of relationship between the variables under investigation. Further, the multiple regression technique was used to estimate the variance explained by school composition variables and achievement with self-concept of academic ability being the dependent variable. As will be noted in Table II the correlation between the mean self-concept of academic ability and mean school achievement in a randomly selected representative sample of Michigan Elementary Schools is $-.549$. This negative correlation between the school means is about as high as the typical positive correlation between individual student self-concept and individual achievement. It is this particular finding that led us to further examine the "ecological phenomenon" it represents.

Table II

Correlation Between Mean School Achievement and
Mean Self-Concept of Academic Ability in Samples
of Michigan Public Elementary Schools

Samples	N	Pearson Correlation
Representative State	68	$-.549$
Total White	61	$.039$
High/SES White	31	$.012$
Low/SES White	30	$-.233$
Majority Black	30	$.004$

The most obvious explanation of the phenomenon is that students in high achieving schools are comparing themselves to predominately high-achieving peers and thus evaluating themselves less favorably than would students in a low-achieving school. Although this explanation has some merit, further examination of Table II reveals that it does not hold in the sub-samples. It should be noted that within the sample of white schools, where there is considerable variation in the mean school achievement (see Table III) there is essentially no correlation between mean self-concept of academic ability and mean school achievement. When the white schools are divided into two categories on the basis of the mean socio-economic status there is no correlation indicated between mean self-concept of academic ability and mean school achievement in the higher SES white schools. Neither is there any correlation between self-concept of academic ability and mean achievement in the sample of black schools. However, there is a low negative correlation between mean self-concept and mean school achievement in the sample of lower SES white schools.

The negative correlation might be explained by the simple differences in the level of achievement of the various schools' student bodies to which the students are comparing themselves if the negative correlation was evident in each of the sub-samples. Since it is found in only one of the four sub-samples, at a marginal level of significance, this

explanation does not seem viable. The lack of correlation in these sub-samples might result from lack of variance, but the variance in both mean self-concept and mean achievement is sufficient in each sub-sample to provide some correlation between these variables (see Table III). The magnitude of the variance does not seem to be related to the strength of the correlation between achievement and self-concept in the sub-sample of Michigan elementary schools. For example, the black sub-sample of schools has the largest variance in both self-concept and achievement but exhibits the lowest correlation between these two variables when compared to the other three sub-samples. If the "achievement" referent was the explanation for this phenomenon, than one would expect to find a negative correlation in the black sub-sample, which has the greatest variance.

Other observations (see Scattergrams Appendix C) reveal that when the seven black schools are omitted from the random sample the high end of the self-concept distribution and the low end of the achievement distribution are removed. This then restricts the range on both of these variables. Thus, one can hypothesize that the patterns of interactions which characterize the black and white school social systems, in terms of achievement and self-concept, are the product of different social systems. The random sample then is a population which includes these various social systems and thus reveals the high negative correlation.

Table III

Mean and Standard Deviations of Achievement and
Self-Concepts of Academic Ability in Samples of
Michigan Public Elementary Schools
(Means of Schools Means Unweighted)

	Majority White Schools									
	State Representative Sample		Total White		High SES		Low SES		Majority Black Schools	
	M	SD	M	SD	M	SD	M	SD	M	SD
Achievement	74.88	9.53	77.36	6.11	80.13	5.08	75.50	5.83	56.83	7.77
Self-Concept	28.77	1.08	28.51	.77	28.75	.39	28.27	.79	30.81	.84

Table III also shows the difference in the mean self-concepts of the students in the majority-black-school sample, 30.8, and those in the white-school sample, 28.5. Thus, the mean level of self-concept in the majority-white schools is decidedly lower than that in the majority-black schools. There is little difference in the mean self-concept of academic ability in the high SES white schools and the low SES white schools, 28.7 compared to 28.3. This suggests that students in predominantly black schools assess their academic ability in a different social context than students in predominantly white schools. In a similar fashion we should note that the mean level of achievement in the black school sample is strikingly lower than the level of achievement in the total white school sample or in either of the white sub-samples (Table III).

Since all but three of the black schools are 98% or more black, it appears that black schools and the associated school community in which black students acquire their self-concepts of academic ability are decidedly different social systems than are characteristic of the white schools, which are nearly all 98% or more white. Both the self-concepts and achievement in the two sets of black and white schools are the products of different social systems.

Although the majority of the schools among the ninety-one studied are essentially all white or all black, there is some variance in the percentage of white students in both sub-samples. When the mean socioeconomic status and the mean achievement are controlled by entering them first in a multiple regression analysis, the percent of white students in the school contributes significantly to the explanation of variance in mean self-concept in the representative state sample (Table IV). The percent white adds little to the explained variance in mean self-concept when mean socioeconomic status and mean achievement are controlled in the black and white sub-samples where racial composition has already been controlled.

It should also be noted that the simple correlation between percent white and mean self-concept of ability, $-.70$, is decidedly higher in the state sample than in the white sub-sample, $-.08$ or in the black sub-sample, $-.25$.

Table IV

Multiple Regression Analysis Showing Contribution of Percent White To Variance in Mean Self-Concept of Academic Ability, When Achievement and SES Are Entered Prior To Percent White In A Representative State Sample And Two Sub-Samples of Michigan Elementary Schools.

Independent Variables	STATE SAMPLE			WHITE SAMPLE			BLACK SAMPLE		
	R ²	R ₂ added	zero order r	R ²	R ₂ added	zero order r	R ²	R ₂ added	zero order r
1. SES and Achievement	.370			.094			.174		
2. Percent White	.563	.192	-.697	.128	.034	-.080	.262	.088	-.245

Self-concept of academic ability is determined by the evaluations which are communicated in the group and the norms which characterize the group. The evaluations communicated within the black schools would appear to be decidedly different than are communicated in white schools. Data from this study, also, reveal that the mean student self-concept of academic ability has a high positive correlation with student's mean perceived evaluations and expectations held for them (see Table V). This relationship is found in both white and black sub-samples. The correlation is similar in magnitude and direction to that found between individual self-concept of academic ability and individual student perceived evaluation (Brookover, et al., 1962, 1965, 1967). This positive correlation reflects the fact that

students in predominantly black schools perceive higher mean evaluation and expectations than do students in white schools (Table V). The mean perceived evaluations are thus positively associated with mean self-concepts which are also higher in black schools (Table III). This further supports the conclusions that norms of evaluation and achievement are different in the black school social systems than in white school systems.

Table V

Means and Standard Deviations of Students Perceived Evaluations and Expectations in Samples of Michigan Elementary Schools and the Zero Order Correlation Between Mean Perceived Evaluation/Expectations and Mean Self-Concept of Academic Ability in the Samples of Michigan Elementary Schools.

Samples	N	Perceived Evaluation and Expectation		Simple Correlation Mean Perceived Evaluation and Expectation X Mean Self-Concept of Ability
		M	SD	
State	68	23.11	.81	.879
White	61	22.95	.67	.794
Black	30	24.50	.66	.861

These norms expectations and evaluations are held for all the students within a school social setting by all members of the school social system, i.e. parents, teachers, principals. Thus, one can not attribute these findings to any inherent characteristic of the school racial composition,

but rather the social climate which characterizes the patterns of interaction within a school. Observations of some schools in our study and other research (Fernandez, Espinosa, Dornbusch, 1975) indicate that teachers praise black and other minority students for academic achievement more than they praise white high achieving students. This also suggests that the norms that characterize black schools and the patterns of interactions which communicate the norms and evaluations may not be comparable to those of white schools. Self-concept of academic ability as expressed in one social system is therefore not comparable to the self-concept which is expressed in another social system.

The general conclusion from these simple analyses is that self-concept of academic ability is based on interaction in particular social groups. If the findings of this study are confirmed by other research, it is clearly not appropriate to compare self-concept of academic ability across schools when the social contexts are different. Although self-concept is significantly and positively related to achievement on the individual level within a given school context, these variables may not be related at the aggregate school level. Although we do not have evidence, we could hypothesize that there are sub-groups within schools that represent essentially different social systems. If groups within a school, such as tracks, are segregated in a way that minimizes interaction between members of different sub-groups, while significantly different norms, expectations, and evaluations are communicated within

each of the sub-groups, we hypothesize that negative correlations between self-concept of academic ability and mean achievement will occur. If this were verified, it may explain some of the differences in findings in regard to self-concepts of black students in "integrated" schools (St. John, 1975).

Although enhanced self-concept of academic ability on the individual level is necessary for higher achievement by individuals within a given school social system, high aggregate self-concept of ability in a given school social system is not a sufficient condition to guarantee high achievement. In our judgment there is no universal or common referent across school social systems to which students may compare themselves. Therefore self-concept of academic ability is meaningful as a predictor of achievement only within the context of a specific school social system.

SUMMARY

Self-concept research has consistently demonstrated a positive relationship between measures of individual self-concept and individual achievement. Thus concern with self-concept, particularly academic self-concept, is based upon the assumption, that enhancement of the self-concept of students in a given class or school will generally improve the achievement of students in that class or school. Yet, until recently there has been little empirical evidence which analyzes the relationship of aggregated self-concept of academic ability and achievement across schools.

A recent study of elementary schools reveals a negative relationship between aggregated self-concept of academic ability and aggregated school achievement. The correlation between school mean self-concept of academic ability and school mean achievement in reading and mathematics in a random sample of sixty-eight Michigan Elementary Schools is $-.549$. This reversal in sign which occurs at an aggregate or ecological level of analysis is representative of what has been termed the "ecological phenomenon." The aim of this analysis is the explanation of this phenomenon, as it occurs in Michigan Public Elementary Schools and possibly other social groups.

The theoretical frameworks underlying this explanation were explicated under the rubrics of symbolic-interaction, reference group theory, and role theory; of which symbolic interaction was the major theoretical perspective posited.

Self-concept research is based on many different measures and somewhat varied definitions of the construct. For reasons cited in this section it is not possible to generalize across these diverse measures and definitions. Thus, the review of literature included general findings from these studies and the consistent positive relationship found between individual measures of self-concept and individual performance.

The phenomenon under investigation here refers specifically to the self-concept of academic ability. Thus, this review includes findings of studies which have specifically used this as a measure of self-concept at an individual level.

Studies measuring the relationship between individual self-concept of academic ability and individual achievement, in various populations and over time, report correlations in the range of .45 to .70.

The sample consists of ninety-one elementary schools, sixty-eight randomly selected from that universe of Michigan Elementary Schools containing fourth and fifth grade students. For the purpose of this and other analysis it was necessary to augment the number of black schools. An additional twenty-three black schools were randomly selected from that universe in order to have a sub-sample of thirty predominately black schools. Thus, sub-samples of white schools, black schools and higher S.E.S. and lower S.E.S. white schools were identifiable.

The instrument employed in this study was designed to examine relationships between self-concept of academic ability and measures of antecedent and consequent variables such as intelligence, school achievement, and perceptions of the evaluations of significant others. The use of simple correlational analysis was used to measure the strength of these relationships, at an aggregate level in various school populations. These school populations varied along race and socioeconomic status, indicators. Further, the multiple regression technique was employed to estimate the contribution of school composition (race and S.E.S.) to the variance explained on self-concept of academic ability.

The findings indicate that the self-concept of academic ability is a meaningful predictor of achievement only within the context of a specific school social system. Thus, generalization made across specific social groups or school social systems are inappropriate. Further, the data indicates that the norms which characterize black schools and the patterns of interactions which communicate the norms and evaluations may not be comparable to those of white schools.

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APPENDICES

APPENDIX A

Items Composing Climate Variables.

APPENDIX A

Items Composing Climate Variables

Items included in each set of climate variables used in analysis.

School Academic Climate

A. Student climate variables

1. Student Sense of Academic Futility. Mean student response to the following questions:
 - a. How many students in this school don't care if they get bad grades?
 - b. How many students in this school make fun of or tease students who get real good grades?
 - c. How many students don't do as well as they could do in school because they are afraid other students won't like them as much?
 - d. How many students don't do as well as they could do in school because they are afraid their friends won't like them as much?
 - e. People like me will not have much of a chance to do what we want to in life.
 - f. People like me will never do well in school even though we try hard.
 - g. I can do well in school if I work hard.
 - h. In this school, students like me don't have any luck.
 - i. You have to be lucky to get good grades in this school.
 - j. How many teachers in this school tell students to try and get better grades than their classmates?
 - k. Of the teachers that you know in this school, how many don't care if the students get bad grades?
 - l. Of the teachers that you know in this school, how many don't care how hard the student works, as long as he passes?
2. Student Future Evaluations and Expectations. Mean student responses to following questions:
 - a. If you could go as far as you wanted in school, how far would you like to go?
 - b. Sometimes what you want to happen is not what you think will happen. How far do you think you will go in school?

- c. If most of the students here could go as far as they wanted in school, how far would they go?
 - d. How far do you think your best friend believes you will go in school?
 - e. How far do you think the teacher you like best believes you will go in school?
 - f. Does your teacher think you could finish college?
 - g. Remember you need more than four years of college to be a teacher or doctor. Does your teacher think you could do that?
 - h. How far do you think your parents believe you will go in school?
 - i. Do your parents think you could finish college?
 - j. Remember you need more than four years of college to be a teacher or doctor. Do your parents think you could do that?
3. Student Perceived Present Evaluations and Expectations.
Mean student response to the following questions:
- a. How good a student does the teacher you like the best expect you to be in school?
 - b. Think of your teacher. Would your teacher say you can do school work better, the same or poorer than other people your age?
 - c. Would your teacher say that your grades would be with the best, same as most or below most of the students when you graduate from high school?
 - d. How good of a student do your parents expect you to be in school?
 - e. Think of your parents. Do your parents say you can do school work better, the same or poorer than your friends?
 - f. Would your parents say that your grades would be with the best, same as most or below most of the students when you finish high school?
4. Student Perception of Teacher Push and Teacher Norms.
Mean student responses to the following questions:
- a. Of the teachers that you know in this school, how many tell students to try hard to do better on tests?
 - b. How often do teachers in this school try to help students who do badly on their school work?
 - c. How important is it to teachers in this school that their students learn their school work?
 - d. Think about the teachers you know in this school. Do you think the teachers in this school care more, or less, than teachers in other schools about whether or not their students learn their school work?

5. Student Academic Norms. Mean student response to the following questions:

- a. How many students in this school try hard to get a good grade on their weekly tests?
- b. How many students in this school will work hard to get a better grade on the weekly tests than their friends do?
- c. How important do most of the students in this class feel it is to do well in school work?
- d. How important do you think most of the students in this school feel it is to do well in school work?
- e. Compared to students in other schools, how much do students in this school learn?
- f. Compared to students from other schools, how well will most of the students from this school do in high school?

B. Teacher climate variables

1. Ability, Evaluations, Expectations and Quality of Education for College. Mean teacher response to the following questions:

- a. What percent of the students in this school do you expect to attend college?
- b. What percent of students in your class do you expect to attend college?
- c. What percent of the students in your class do you expect to complete college?
- d. What percent of the students in your class do you expect to complete college?
- e. How many of the students in this school are capable of getting mostly A's and B's?
- f. How many of the students in your class are capable of getting mostly A's and B's?
- g. How would you rate the academic ability of the students in this school compared to other schools?
- h. What percent of the students in this school would you say want to go to college?
- i. What percent of the students in your class would you say want to go to college?
- j. Completion of college is a realistic goal which you set for what percentage of your students?
- k. The parents of students in this school are deeply concerned that their children receive a top quality education.
- l. How many of the parents of students in this school expect their children to complete college?

2. Present Evaluations and Expectations for High School Completion. Mean teacher response to the following questions:
 - a. On the average, what level of achievement can be expected of the students in this school?
 - b. On the average, what level of achievement can be expected of the students in your class?
 - c. What percent of the students in this school do you expect to complete high school?
 - d. What percent of the students in your class do you expect to complete high school?
 - e. What percent of the students in this school would you say want to complete high school?
 - f. What percent of the students in your class would you say want to complete high school?
 - g. Completion of high school is a realistic goal which you set for what percentage of your students?
 - h. How often do you stress to your students the necessity of a post high school education for a good job and/or a comfortable life?
 - i. How many of the parents of students in this school expect their children to complete high school?

3. Teacher-Student Commitment to Improve. Mean teacher response to the following questions:
 - a. Do you encourage your students who do not have sufficient economic resources to aspire to go to college?
 - b. Do you encourage your students who do not have sufficient academic ability to aspire to go to college?
 - c. How many teachers in this school feel that all their students should be taught to read well and master other academic subjects, even though some students may not appear to be interested?
 - d. How many teachers encourage students to seek extra work so that the students can get better grades?
 - e. How many students in this school try hard to improve on previous work?
 - f. How many students in your class try hard to improve on previous work?
 - g. How many students in this school will try hard to do better school work than their friends?
 - h. How many students in your class will try hard to do better school work than their classmates do?
 - i. How many students in this school will seek extra work so that they can get better grades?
 - j. How many students in your class will seek extra work so that they can get better grades?

4. Teacher Perception of Principal's Expectations.
Mean teacher response to the following questions:

- a. What percent of the students in this school do you think the principal expects to complete high school?
- b. What percent of the students in this school do you think the principal expects to attend college?
- c. What percent of the students in this school do you think the principal expects to complete college?
- d. How many students in this school do you think the principal believes are capable of getting mostly A's and B's?
- e. How do you think your principal rates the academic ability of the students in this school, compared to other schools?

5. Teacher Academic Futility. Mean teacher response to the following questions:

- a. It would be unfair for teachers in this school to insist on a higher level of achievement from students than they now seem capable of achieving.
- b. If I think a student is not able to do some school work, I don't try to push him very hard.
- c. I am generally very careful not to push students to a level of frustration.
- d. How many students in this school are content to do less than they should?
- e. How many students in your class are content to do less than they should?
- f. The parents of students in this school regard this school primarily as a "baby-sitting" agency.
- g. How many of the parents of students in this school don't care if their children obtain low grades?
- h. In this school, there is really very little a teacher can do to insure that all of his/her students achieve at a high level.

C. Principal climate variables

1. Parent Concern and Expectations for Quality Education.
Principals' response to the following questions:

- a. The parents of students in this school regard this school as primarily a "baby-sitting" agency.
- b. The parents of students in this school are deeply concerned that their children receive a top quality education.
- c. How many of the parents of students in this school expect their children to complete high school?

- d. How many of the parents in this school don't care if their children obtain low grades?
 - e. How many of the parents of students in this school want feedback from the principal and teachers on how their children are doing in school?
2. Principal's Efforts to Improve. Principals' response to the following questions:
- a. How often do you suggest ways of improving student achievement to your teachers?
 - b. How often do you meet with the teachers as a group to discuss ways of improving student achievement?
3. Principal and Parent Evaluation of Present School Quality. Principals' response to the following questions:
- a. In your judgment, what is the general reputation of this school among educators?
 - b. With regard to student achievement, how would you rate this school?
 - c. In general, how do your students' parents feel about the achievement of their children?
 - d. In general, how do you feel about the achievement of the students in this school?
4. Principal's Present Expectations and Evaluations of Students. Principals' response to the following questions:
- a. With regard to student achievement, how good a school do you think this school can be?
 - b. On the average, what achievement level can be expected of the students in this school?
 - c. What percent of the students in this school do you expect to complete high school?
 - d. What percent of the students in this school do you expect to attend college?
 - e. What percent of the students in this school do you expect to complete college?
 - f. How many of the students in this school are capable of getting good grades?
 - g. How would you rate the academic ability of the students in this school compared to other schools?
 - h. How many of the parents of students in this school expect their children to complete college?
 - i. What percentage of the students in this school do you feel are capable of learning to read by the end of second grade?

APPENDIX B

Items Composing Self-Concept of Academic Ability Scale

APPENDIX B

Items Composing Self-Concept of Academic Ability Scale

1. Think of your friends. Do you think you can do school work better, the same or poorer than your friends?

Better than all of them 1.
 Better than most of them 2.
 About the same 3.
 Poorer than most of them 4.
 Poorer than all of them 5.

2. Think of the students in your class. Do you think you can do school work better, the same or poorer than the students in your class?

Better than all of them 1.
 Better than most of them 2.
 About the same 3.
 Poorer than most of them 4.
 Poorer than all of them 5.

3. When you finish high school, do you think you will be one of the best students, about the same as most or below most of the students?

One of the best 1.
 Better than most of the students 2.
 Same as most of the students 3.
 Below most of the students 4.
 One of the worst 5.

4. Do you think you could finish college?

Yes, for sure 1.
 Yes, probably 2.
 Maybe 3.
 No, probably not 4.
 No, for sure 5.

5. If you went to college, do you think you would be one of the best students, same as most or below most of the students?

One of the best 1.
 Better than most of the students 2.
 Same as most of the students 3.
 Below most of the students 4.
 One of the worst 5.

6. If you want to be a doctor or a teacher, you need more than four years of college. Do you think you could do that?

Yes, for sure 1.
 Yes, probably 2.
 Maybe 3.
 No, probably not 4.
 No, for sure 5.

7. Forget how your teachers mark your work. How good do you think your own work is?

Excellent 1.
 Good 2.
 Same as most of the students 3.
 Below most of the students 4.
 Poor 5.

8. How good of a student do you think you can be in this school?

One of the best 1.
 Better than most of the students 2.
 Same as most of the students 3.
 Below most of the students 4.
 One of the worst 5.

APPENDIX C

Scattergrams of Achievement

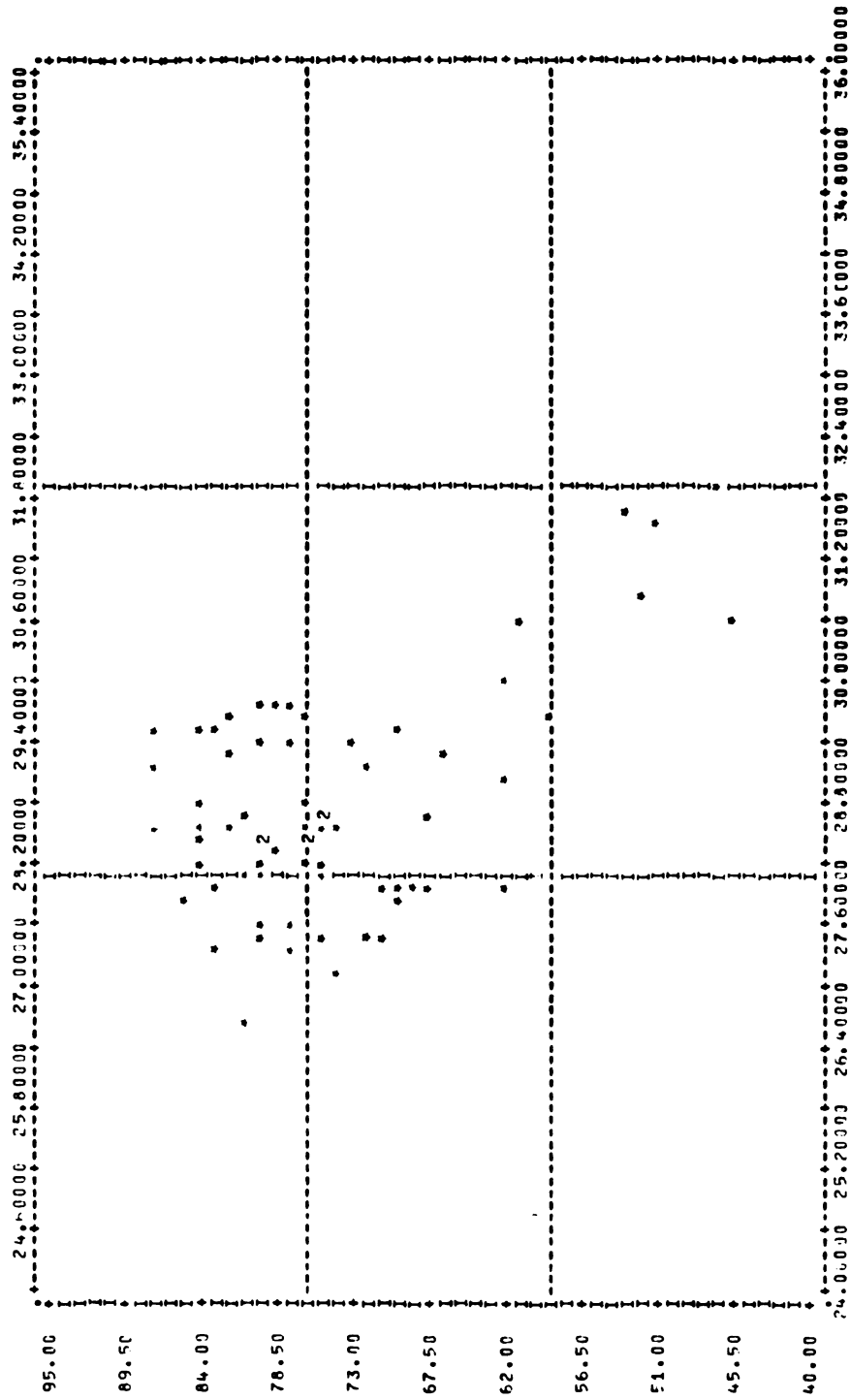


Figure 1. Scattergram, Achievement (down) X Self-Concept of Academic Ability (across) for State Representative Sample of 68 Michigan Elementary Schools.

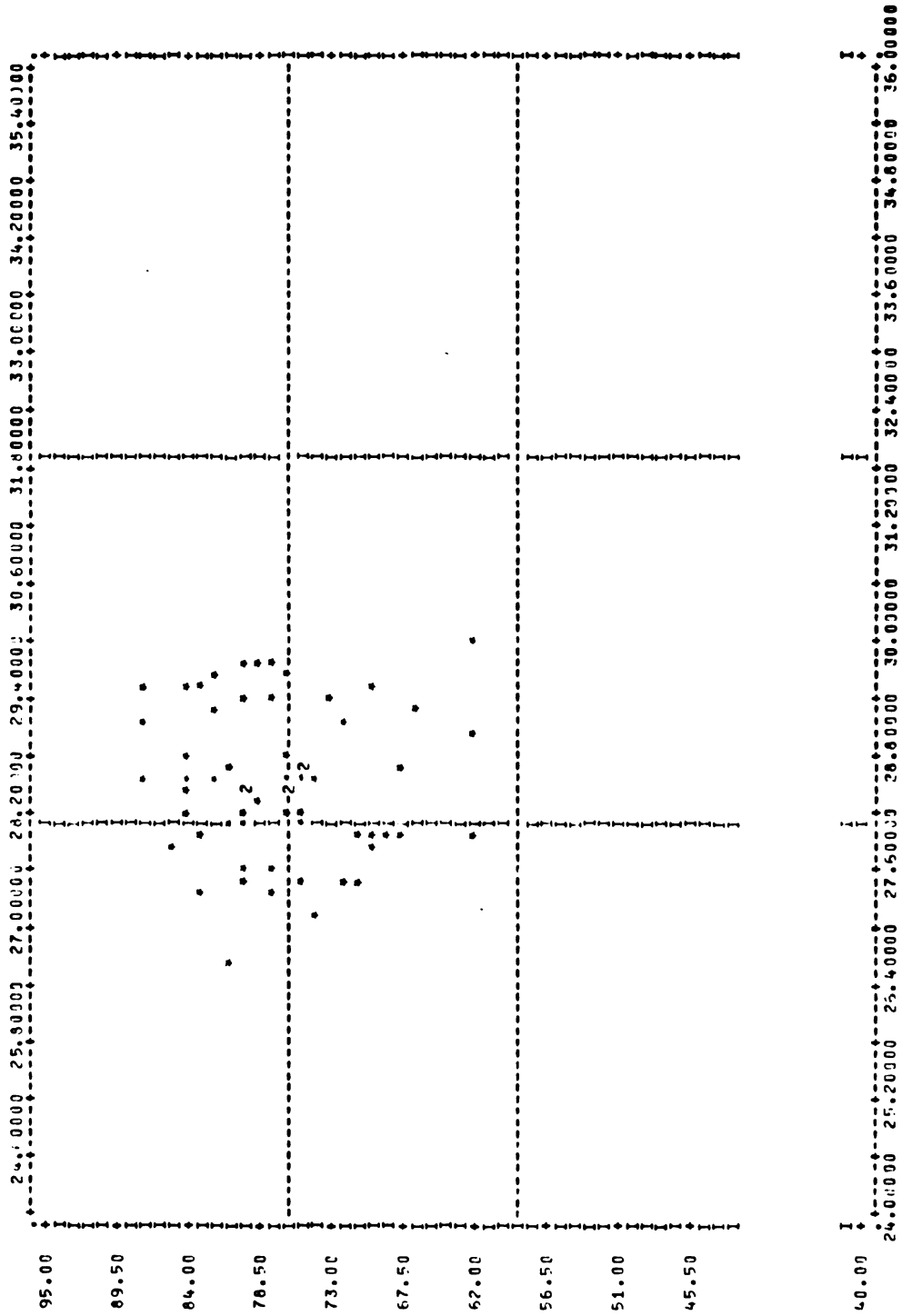


Figure 2. Scattergram, Achievement (down) X Self-Concept of Academic Ability (across) for Total White Sample of 61 Michigan Elementary Schools with Seven Black Schools Removed.

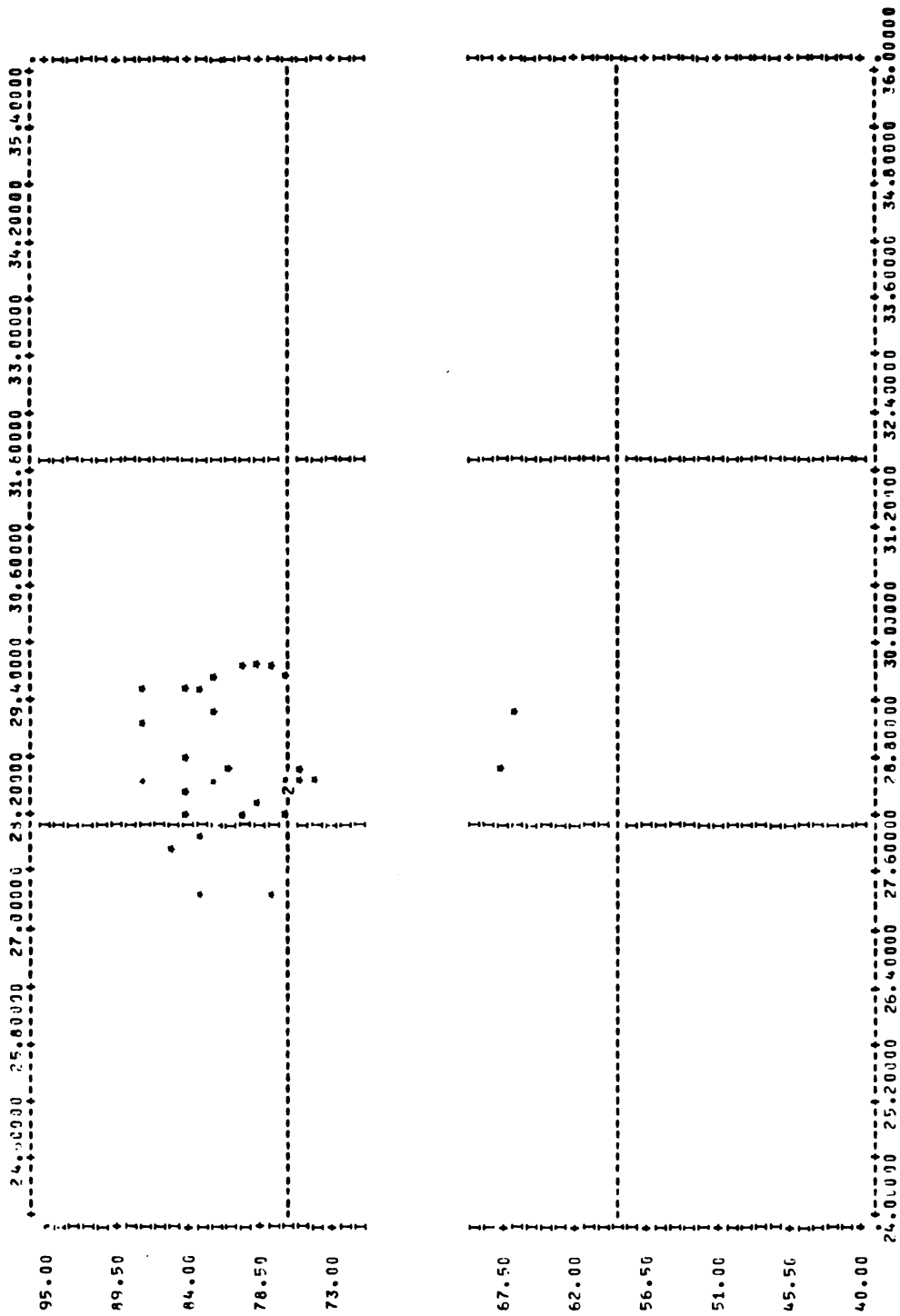


Figure 3. Scattergram, Achievement (down) X Self-Concept of Academic Ability (across) for High/SES White Sample of 31 Michigan Elementary Schools.

Figure 4. Scattergram, Achievement (down) X Self-Concept of Academic Ability (across) for Low/SES White Sample of 30 Michigan Elementary Schools.

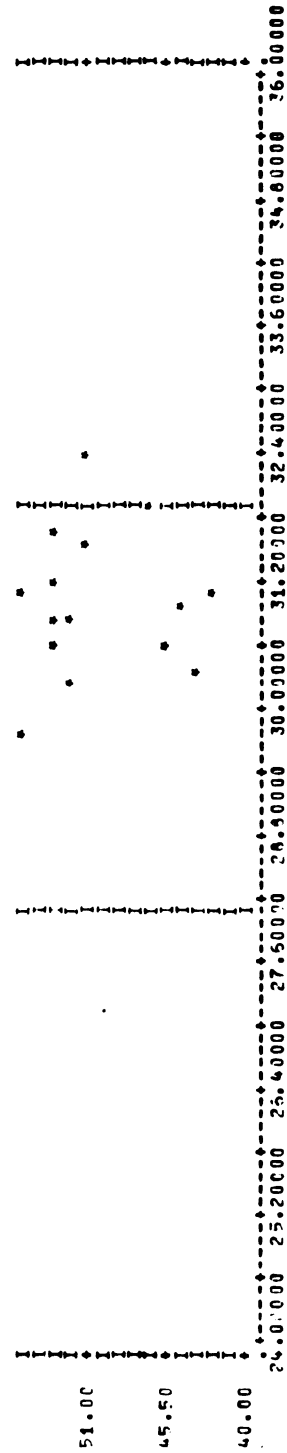


Figure 5. Scattergram, Achievement (down) X Self-Concept of Academic Ability (across) for Total Black Sample of 30 Michigan Elementary Schools.

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