SELF-CONCEPT OF ACADEMIC ABILITY OF
WEST GERMAN EIGHTH-GRADE STUDENTS

Thesis for the Degree of Ph. D.
MICHIGAN STATE UNIVERSITY
HOWARD JOSEPH MICHAEL AUER, Jr.
1971

This is to certify that the

thesis entitled

SELF-CONCEPT OF ACADEMIC ABILITY OF
WEST GERMAN EIGHTH-GRADE STUDENTS

presented by

Howard Joseph Michael Auer, Jr.

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Education

Major professor

Date March 1, 1971

O-7639

ABSTRACT

SELF-CONCEPT OF ACADEMIC ABILITY OF
WEST GERMAN EIGHTH-GRADE STUDENTS

By

Howard Joseph Michael Auer, Jr.

This study is designed to examine the differences
in self-concept of academic ability among eighth-grade
students in West German Gymnasien, Mittelschulen, and
Volksschulen. While it cannot demonstrate causal rela-
tionships, it can point out differences among students of
each of these three branches which can be used as bases
for inferences and for future studies.

The study was conducted in Giessen, a city of 60,000
in Hesse, West Germany. At the time of the study, the
Gymnasien enrolled 463 students, the Mittelschulen, 247
students, and the Volksschulen, 321 students; 1031 were
included in the study. Usable data were collected from 412
Gymnasium students, 169 Mittelschule students, and 175
Volksschule students. Attitudinal data gathered from each
student included responses to the Michigan State University
Self-Concept of Academic Ability Scale, Perceived Parent
Evaluation Scale, and Perceived Teacher Evaluation Scale,

each of which was translated into German. Additionally,
each student's school grades in social studies, mathematics,
science, and German for the preceding year were obtained,
as was parental occupation, which was used as the index of
socio-economic status. All data were collected in each
eighth-grade classroom by classroom administration of the
attitude questionnaires and the cover sheet.

Analysis of variance and Scheffé post-hoc compari-
sons revealed an inconsistent pattern of Gymnasium students
having superior self-concepts of academic ability and
perceived evaluations, with Volksschule students having
inferior self-concepts of academic ability and perceived
evaluations; while Gymnasium data were consistently
superior and Volksschule data were consistently inferior,
the differences did not consistently exceed the level of
significance.

Multiple regression analysis indicated that branch
attended by a student was a poor predictor of self-concept
of academic ability and that branch did not appreciably
improve the predictive power of other combinations.
Perceived evaluations were the most potent predictors of
self-concept of academic ability; this, however, may be
due to statistical artifact.

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WEST GERMAN EIGHTH-GRADE STUDENTS

By

Howard Joseph Michael Auer, Jr.

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

DOCTOR OF PHILOSOPHY

Department of Secondary Education
and Curriculum

1971

67/75 7

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CHAPTER I

PROBLEM

Need

The manifest purpose of schooling is to help

students learn. While what is learned is a function of

cultural desirability and may therefore vary from school

to school or from nation to nation, schools are nevertheless

ostensibly organized to maximize the likelihood of students'

acquiring certain modes of behavior. It is therefore impera-

tive that schools be aware of any practices which might

depress or impede student learning.

Some school practices may depress student learning

by depressing students' perceptions of their ability to

learn; students are more likely to attempt tasks that they

believe will result in success than those they believe will

result in failure, and they are more likely to succeed at

tasks at which they believe they can succeed. Students may

be falsely labeled as unable to perform at higher levels

when in fact they are able to do so. The successes of

minority group students in American colleges indicate that

groups of persons previously deemed unable to succeed at

academic tasks, if subjected to expectations of success

and exposed to others who succeed at those tasks, can in

fact perform quite satisfactorily in areas previously deemed inappropriate to the academic abilities of these students. Similarly, the United States Army has successfully provided recruits identified as poor school achievers with reading and computational skills (75); these recruits completed advanced training with as much success as normal recruits, thereby casting some doubt upon the validity of their supposed inability to learn.

Labeling students as unable to succeed academically can initiate a self-fulfilling prophecy (82) which becomes reified when students apply it to themselves; if students are identified as possessing low ability to learn and are treated as low ability learners, they are quite likely to see themselves as able to perform as high-ability learners. If, however, they see themselves as being expected to perform at higher levels, they are more likely to do so than if they see themselves as being expected to perform at low levels (3;28).

Using this perspective, it can be seen that such practices of school segregation as ability grouping and tracking become traps for children denied initial access to the higher curricular strata. These children take on the false labels of low achievers thrust upon them by the schools and so validate what may be an invalid premise-- that ability to learn is fundamentally a static phenomenon which is impervious to change.

Given the goal of educating all students to the limits of their potential, it follows that practices which place artificial limits upon potential are dysfunctional in at least two respects. First, by limiting students' latitude of choice, inhibitory practices diminish human liberties. Second, operating in an economy which requires large numbers of highly trained personnel, school practices which create false notions of inability to learn to perform certain tasks are in conflict with the needs of that economy. It is imperative, therefore, that the relationship between students' perceptions of their abilities as learners and school segregation practices be examined.

Purpose of the Study

The study is designed to examine the differences in self-concept of academic ability among eighth-grade students in three types of schools in West Germany. The West German educational system was selected because its students are formally segregated by academic achievement upon completion of the fourth grade, and this formal segregation provides more nearly discrete groups than do American segregation patterns in which students of different academic strata may share teachers, classes, or extra-curricular activities. Where the West German branching system provides three fairly autonomous branches, each with its own staff, curriculum, grading criteria, and buildings, the American system does not. It is possible for an American student in a college

preparatory track to have extensive in-school contact with students in other tracks, and this contact complicates the study of the correlates of academic segregation.

This study will compare the students of the three branches of the West German school system in an attempt to gain some insight into the nature of possible differences in student perceptions of academic ability.

The study is essentially a cross-cultural replication of previous work done by Brookover and associates in the United States (109;110;111), and so it will use the same variables employed in these earlier studies to see if the earlier relationships found among these variables hold true for those among West German students. Therefore, this study will examine differences in students' perceptions of the evaluations of their academic ability held by parents and teachers, and it will examine the relationships among self-concept of academic ability, perceived evaluations, socio-economic status, academic achievement, and branch attended by students. Finally, the study will employ perceived evaluations, academic achievement, and branch to attempt to predict self-concept of academic ability.

It should be noted that the study is not designed to prove the cause of any difference among students in the three branches of the West German schools. Rather, it is designed to identify the extent of any such attitudinal

differences. It is an exploratory study intended to provide a basis for further quasi-experimental and experimental inquiry.

Hypotheses and Questions

The fundamental purpose of the study is examination of differences in self-concept of academic ability among eighth-grade students in three types of schools in West Germany. Students are selected for these schools on the basis of their academic achievement in grades one through four, with the top twelve per cent entering the Gymnasium, the middle eight per cent entering the Mittelschule, and the remaining eighty per cent entering the Volksschule. Thus, Gymnasium students represent the most successful students in the first four years of the system; further, they are the only students generally admitted into higher education. These two factors, combined with the generally higher status afforded Gymnasium students, might induce Gymnasium students to form and maintain higher self-concepts of academic ability than students in the other two branches. Similarly, Volksschule students are identified as the lowest achievers, and they usually enter jobs requiring little training which confer little status upon the worker. These factors might operate upon the Volksschule student and reinforce a low self-concept of academic ability. Thus,

H$_1$: The relationship between branch and
student self-concept of academic ability
is direct; the higher the branch, the
higher the self-concept of academic
ability.

Students do not operate in social vacuums. They
are aware that their parents and teachers hold evaluations
of their academic performance, and the German students are
especially aware of those evaluations because the students
are assigned to branches after parents and teachers have
discussed assignment. Branch assignment thus provides one
bit of evidence of the evaluations held by parents and
teachers. Further, students might perceive parents and
teachers as expecting them to perform at a level appro-
priate to their branch, and since the most able students
enter the Gymnasium and the least able to into the Volks-
schule, it might be hypothesized that

H$_2$: The relationship between branch and
student perception of parental evaluation
is direct; the higher the branch, the
higher the perceived parental evaluation.

H$_3$: The relationship between branch and
student perception of teacher evaluation
is direct; the higher the branch, the
higher the perceived teacher evaluation.

Not all students are educated for the same future.
Gymnasium graduates, upon passing an examination, may
enter the universities and prepare for top-level jobs,
while Mittelschule graduates generally move into middle-
level occupations, with Volksschule graduates occupying
blue-collar jobs requiring little training. In this

respect, the West German schools serve the same sorting and selecting function provided by American schools. Further, since the most accurate predictor of future socio-economic status of children is parental socio-economic status, and since children of Gymnasium graduates are more likely to have been exposed to evaluations and experiences which encourage high achievement while children of Volksschule graduates are less likely to have had these experiences, and since exposure to a set of experiences and evaluations is likely to induce an appropriate level of academic performance which will result in a student's being placed within a given branch,

H_4: The relationship between branch and family socio-economic status is direct; the higher the branch, the higher the family socio-economic status.

Students are assigned to a branch on the basis of academic achievement, and the curriculum of that branch is ostensibly designed for the abilities and interests of students attending that branch. That is, the Gymnasium curriculum is intended to be as difficult for Gymnasium students as the Mittelschule and Volksschule curricula are for Mittelschule and Volksschule students. If these intentions are realized, one might hypothesize that

H_5: There are no differences in academic achievement between the three branches.

One of the factors employed in evolving and maintaining self-concept of academic ability is perception of

the evaluations of others; persons who perceive that others important to them hold high evaluations of their academic ability are more likely to hold high evaluations of themselves than are persons who perceive that others hold low evaluations of the academic ability. Thus,

H_6: The relationship between self-concept of academic ability and perceived parental evaluations is positive.

H_7: The relationship between self-concept of academic ability and perceived teacher evaluations is positive.

The relationships examined in these seven hypotheses, however, are of little predictive utility, so the contributions of perceived evaluations, socio-economic status, and academic achievement to prediction of self-concept of academic ability will be examined. Student self-concept of academic ability depends to some extent upon each of the former variables; the question is

Q_1: What is the most economical combination of variables for prediction of student self-concept of academic ability?

Theory

The theoretical work of the symbolic interactionist school of social psychology, including W. I. Thomas, John Dewey, and George Herbert Mead, provides the background for this study. From this point of view, human behavior is the juncture of the dynamic relationship between the human organism and its environment; through behavior, the organism modifies its environment, and perceiving the modifications,

further alters its behavior to accommodate the changes. This interaction is facilitated by the individual's symbolic representation of the environment which makes possible his exchanging meanings and evaluations of objects with others in his environment. It is through these exchanges that the self emerges; the individual comes to see his self in terms of his perceptions of the expectations and evaluations others hold of him. His self, then, is socially determined, and his behavior at any point in time is a function of his past experiences and his perceptions of the expectations which others hold of him. As experiences and perceived expectations vary, so will behavior, and changes in behavior generate changes in experience and expectations.

Thus, human behavior is a function of the view one holds of oneself, that self-concept being a function of the expectations imputed by the person to others. It follows that the imputed expectations can limit the range of individual behavior. Examples of these limitations are found in such behaviors as dress and language; American males simply do not wear grass skirts to the office, nor do they generally speak Swahili. Further, one is unlikely to attempt a behavior if it is not evoked by his self-concept. A person who views himself as polite would be unlikely to behave crudely; similarly, a student who views himself as unable to excel academically might find it

difficult to excel (3:469;49). Self-concept, then, limits the range of behaviors of the individual.

Overview

This study is designed to examine the correlates of branch membership in the West German schools. In Chapter II, relevant literature will be reviewed in three main areas, the organization of West German schools, correlates of various schemes of ability grouping, and the influence of the social environment upon self-concept and behavior. In Chapter III, the design of the study will be explained; characteristics of the sample will be presented, the instrument will be described, and the hypotheses elaborated upon. In addition, the modes of analysis to be employed will be explicated and justified. In Chapter IV, the research findings will be presented and examined.

CHAPTER II

REVIEW OF LITERATURE

In this chapter literature concerning the organiza-
tion of the West German schools since 1945, self-concept
theory, self-concept accuracy, self-concept change, behav-
ioral correlates of self-concept, and various schemes of
academic segregation will be reviewed. The first section
of the chapter is an analysis of the organization of the
West German schools since 1945.

The West German Schools Since 1945

The organization of the West German schools has
remained essentially unchanged since the issuance of
Allied Control Council Directive 54, June 25, 1947, which
attempted to standardize the educational programs of the
several Länder (states) by establishing nationwide com-
pulsory education to age 18; full-time attendance was
required from ages 6 to 15, and part-time attendance was
required from ages 16 to 18. Despite this directive, there
is still some variation in school organization among the
Länder. For example, some require primary education to age
14, while others require attendance to age 15 (19:75;
86:20). However, the general scheme, which is that

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employed in Hesse, the <u>Land</u> within which Giessen, the site of this study, is located, is to require full-time primary education to age 15. In general, West German education is organized along the lines of this outline (36:29):

<u>Grundsschule</u>
Grades 1-4
Ages 6-9

<u>Gymnasium</u> ← - - <u>Mittelschule</u> ← - - <u>Volksschule</u>
Grades 5-13   Grades 5-10   Grades 5-10
Ages 10-18   Ages 10-15   Ages 10-15

<u>Universität</u>   <u>Fachschule</u>   <u>Berufsschule</u>
                 Full-time   Part-time
                 to age 18   to age 18
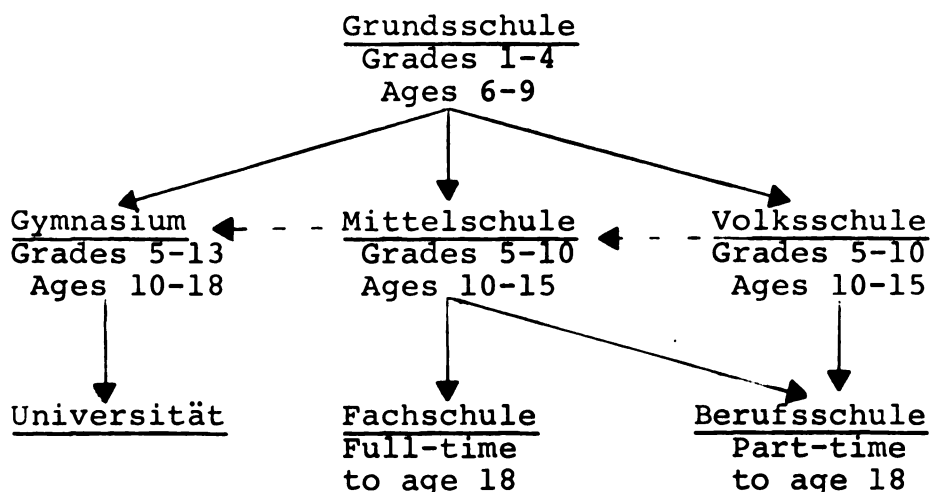
The striking difference between the West German schools and our own is the West German practice of formally segregating students after the fourth grade. While many American schools provide homogeneous ability grouping, few systems have established distinct sub-systems for various ability groups. It is, of course, this aspect of West German school organization which makes it especially relevant to a study of variations in student self-concept of academic ability, for while nearly all West German children attend the common <u>Grundsschule</u> (foundational school), they are sorted after the fourth grade into a branch which is unique from the others in terms of

curriculum, objectives, grading criteria, and teacher qualifications. One of the consequences of the branching scheme, then, is complete separation of children in the three branches after a common four-year primary education, which provides an opportunity for comparison of characteristics of children in each branch; since separation is complete, contamination is minimized.

Selection

Children are selected for one of the three branches during their fourth grade year by their teachers, with their fourth grade teacher holding the greatest influence. Teachers consider the childrens' academic achievement and the likelihood of their fitting into a given branch; the teachers then consult with the childrens' parents, who can overrule the teachers' decisions. This is rarely done.

In addition to academic achievement and perceived likelihood of success, some Länder require candidates to pass entrance examinations (19:78). Hesse does not require these examinations. It should be noted that these are not intelligence tests; the West German schools have resisted adopting them.

Trial classes are held for borderline children who might attend either of two branches. These classes, lasting one or two weeks, provide teachers additional

opportunities to observe children in simulated environments and to make what is hopefully a more appropriate decision.

Volksschule

The Volksschule (common school) is an extension of Grundsschule and the eventual destination of 80 per cent of the Grundsschule students. In Hesse, it enrolls children between the ages of 10 and 15 in grades 5 through 10 in a curriculum which includes German, arithmetic, geometry, history, geography, social studies, nature study, drawing, music, physical education, wood working for boys, and needlework for girls (36:28). Emphasis is placed upon practical and manual activities, and Volksschule leavers generally enter the Berufsschule (occupational school) for part-time occupational education until age 18 (16:32).

Mittelschule

The Mittelschule (middle school) typically enrolls eight per cent of the 10 to 15 year-olds in grades 5 through 10. The curriculum, consisting of German, social studies, natural sciences, and mathematics, also includes foreign languages (36:30) and is intended to prepare students for middle-range positions in business and industry (16:53-54). Upon successful completion of the course of study, students generally attend the Fachschule (business school) full-time to age 18, after which the more successful may enter the Technische Hochschule for further study.

Gymnasium

The best-performing 12 per cent of the fourth grades enter the Gymnasium for a course of study which continues full-time until grade 13. The Gymnasien are of three types, either classical, modern language, or mathematics-natural science, and each presents a unique curriculum (36:30). Nevertheless, each type Gymnasium prepares its students for matriculation at a university; only by passing the Abitur can students enter universities. Thus, students who attend either the Mittelschule or the Volksschule are effectively barred from university education, since the Abitur is offered only to Gymnasium graduates.

While all teachers must pass the Abitur, Volksschule teachers attend a Padogogische Akademie for three years before teaching; Mittelschule and Gymnasium teachers, by contrast, must study four to six years at a university. Thus, Volksschule teachers may appear to have inferior training.

In general, only the Gymnasium is viewed by the people as giving a "genuine" education, the other two branches being somewhat diluted. Parents and employers tend to require completion of Mittelschule or Gymnasium for their children and employees (21:170), and some critics suggest that the branching scheme maintains social privilege (16:146).

Another problem is wastage. Some sources charge that as many as 10 per cent of the branch selections are inappropriate (68;115), a criticism lent credance by the reversion of Mittelschule students to the Volksschule and Gymnasium students to the Mittelschule after the first year in the branch (19:78). Further, about one-half the students who enter the Gymnasium will either drop back to the Mittelschule or fail the Abitur (20:88). The ultimate result of this wastage is that only six per cent of West German youth enter higher education in comparison with over 35 per cent in the United States. The West German educational system may be under-educating West German youth.

In an attempt to provide greater opportunity for students, the schools provide lateral transfers. For example, high-achieving Volksschule graduates may enter the Mittelschule, enter the third year of a Gymnasium, or attend the Kurzform (short form), a six-year Gymnasium. However, the lock-step curriculum of the Volksschule makes transfers very difficult, and they are rarely effected (19:80). A similar situation exists with Mittelschule students (16:54).

A further problem is the possibility of students' adopting artificially deflated views of their ability to succeed academically as a function of the branch they attend. Thus, Volksschule students might hold

unrealistically low estimates of their ability to succeed
in the more academic <u>Mittelschule</u> or <u>Gymnasium</u> because they
aren't expected to; rather, they are expected to succeed in
a relatively "practical" curriculum. This study investi-
gates the extent to which these estimates of ability vary
among the three branches. In order to gain an understand-
ing of the phenomenon of self-evaluation, theories and
research relating to self-concept will be examined in the
next section of this chapter.

<u>Self-Concept</u>

We all use some kind of self-concept in daily
interaction with each other and within ourselves. Respond-
ing to a simple ritualistic question such as "How are you?"
may require fleeting reference to you by you and is there-
fore impossible in the absence of thoughts about the self.
Self-reflection is necessary for one to be able to say, "I
am not myself today;" clearly, one must have a conception
of what that self usually is in order to ascertain its not
being that.

However, use of a term is not synonymous with
agreement upon meaning of that term. Thus, self-concept
may be viewed as being real, imaginary, inferred, con-
sciously referred to, unconsciously referred to, or some-
thing revealed only through behavior. Probably the only
safe statement to make about usage of the term is that it
is a verbal symbol associated with a construct. This does

not mean that the construct exists or can be defined so as
to have operational validity, but rather that we have
invented a symbol which we associate with that construct
and then proceed as though that construct had operational
or empirical validity (37:18-20).

A rather drastic convention is proposed by
MacCorquodale and Meehl, who define hypothetical constructs
as "terms which are not wholly reducible to empirical
terms; they refer to processes that are not directly
observed (although they need not be in principle unobserv-
able)" (79:104). They suggest that an intervening variable
be defined as "a quantity obtained by a specified manipula-
tion of the values of empirical variables" which "will
involve no hypothesis as to the existence of nonobserved
entities or the occurrence of unobserved processes" (79:
103). This convention, however, seems prohibitively
stringent and would in effect reduce much social-
psychological research to mere conjecture, since so much
of that research involves making inferences about unob-
served phenomena.

A less restrictive convention is that suggested by
Marx, who defines an intervening variable as any inter-
vening construct with a maximum amount of operational
validity and hypothetical construct as any construct with
a relatively low degree of operational validity (81:236).
The net impact of these two proposals upon this researcher,

then, might be to strive for a high degree of operational
validity while remembering that the data describe not the
variables but the observable correlates of those variables
and that any inferences are, of necessity, frail. Given
these limitations, the notion of self-concept will be
developed.

Theory

The work of C. H. Cooley (6) and George Herbert
Mead (23;33) provides the theoretical framework within
which this study is located. Kinch (73) has suggested a
formalized theory of the self-concept which, with one modi-
fication, accurately describes what Cooley and Mead
devised. Kinch defines the self-concept as "that organiza-
tion of qualities that the individual attributes to him-
self," and develops this into the general theory that "the
individual's conception of himself emerges from social
interaction and, in turn, guides or influences the behavior
of that individual" (73:481).

The theory and the definition yield four proposi-
tions. First, self-concept is a reflexive phenomenon; that
is, a person can attribute qualities--either roles or
adjectives--to himself. This is analogous to Mead's notion
that the self can be an object as well as a subject, that
one can reflect upon himself (23:138). Second, self-concept
emerges from social experience. Third, a synthesis of
propositions one and two, one's self-concept is a function

of his perception of how others perceive him. Cooley

suggests a looking-glass self.

> As we see our face, figure, and dress in the
> glass . . . and [are] pleased or otherwise in
> them . . . as in imagination we perceive in
> another's mind some thought of our appearance,
> manners, aims, deeds, character, friends, and
> so on, and are variously affected by it . . .
> (6:184).

Similarly, Mead suggests

> The organization of the self is simply the
> organization, by the individual organism, of
> the set of attitudes toward its social environ-
> ment--and toward itself from the standpoint of
> that environment . . . which it is able to take
> (23:91).

In other words, one's self-concept is at least partially a

function of how he imagines those persons he interacts

with evaluate him; research evidence, to be reviewed later

in this study, indicates that a change in perceived evalua-

tions of others is accompanied by a change in self-concept.

The third proposition is that the self-concept

guides or influences behavior. Mead suggests that the

attitude of the actor is part of the act in that it

determines which behaviors he will present (23:11). The

perceived evaluations of others, when internalized by the

actor, serve as a censor upon his behavior; this is Mead's

"me," a store of experience (23:175,210). As "me" changes,

so does the nature of the censor, and so does the range of

possible behavior of the actor.

Kinch presents his propositions in this model:

Perceived response
of others

Actual response   Self-concept
of others
                Behavior
                of self
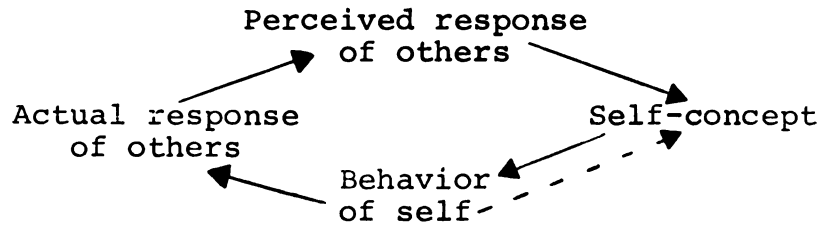
The dotted line was added by this writer to indicate that
the actor takes note of his own behavior and may use it to
maintain or to modify his self-concept.

The salient points of self-concept as employed in
this study are:

1. Self-concept is seen as emerging through
   social interaction.

2. Self-concept is seen as a reflexive
   phenomenon.

3. Self-concept is seen as guiding behavior.

These points will be used in examining various conceptions
of self presented by several authors.

Definition

Self-concept appears in the literature as self-
esteem, as central self-perceptions, as all self-perceptions,
and as self-perceptions compared to others. Coopersmith,
writing on self-esteem, agrees that the self-concept develops
through social experience (7:20), but chose to concentrate
upon self-esteem in his study. Self-esteem, "a personal
judgment of worthiness that is expressed in the attitudes

the individual holds toward himself" (7:4-5), seems too diffuse to have much economy in predicting behavior; while Coopersmith found a correlation of .30 between his self-esteem inventory and academic achievement among 85 fifth, sixth, and seventh grade children (7:129), the instrument used in this study consistently yields correlations with academic achievement in excess of .50. While Lowther (76) can argue that self-esteem is a function of all activities of a child and that it therefore reflects academic activities, he fails to realize that a measure which concentrates upon school activities may be more economical. Trowbridge (96), assessing correlates of socio-economic status with self-concept, used Coopersmith's Self Esteem Inventory, failing to realize that she might be measuring but one aspect of self-concept.

Garvey (65), studying self-concept and success in student teaching, used a global instrument tapping self-satisfaction, perception of physical self, openness to criticism, perception of social self, and perception of religious self. Her instrument seems unnecessarily broad and does not tap individual perception of the evaluations of others. Williams and Cole (102), using the same instrument, use the term "self-concept" in their title, but employ self-esteem and self-concept interchangeably in the body of their article.

Adopting a different perspective, Combs and Snygg (5) define self-concept as the individual's most important self-perceptions (5:127) and emphasize the point of view of the individual (5:11). While they agree that the self is a social product, they concentrate upon the individual's entire perceptual field, thereby becoming vulnerable to a crippling operational problem: how can the entire perceptual field be measured accurately? As Wylie (39:24) notes, the response of an individual to a measure may be a function not only of his perceptual field, but also of his selecting only some items from it for public disclosure, of his including items which are not part of his field, and by his unique use of language.

Another perspective is suggested by Helper (67), who defines self-concept as "whatever symbolic responses are associated with the individual's identity symbols." While he does not relate his study to classroom learning, he does indicate that self-concept may be learned through social interaction. Similarly, Davidson and Lang (54), using an adjective checklist of favorable and unfavorable words on 203 fourth, fifth, and sixth graders, did not concentrate upon self-concept with reference to a specific task but instead employed a rather global measure, using only descriptive adjectives with no reference to social roles. Another example of an idiosyncratic use of self-concept is that of Soares (94), who used a global instrument

which did not ask the individual to compare himself to others. In view of this, Soares' inferences about the reference groups of his subjects are puzzling. Roth (89) also employed a global measure, asking subjects to describe themselves using a Q-sort technique. However, his technique, like those of Soares and Davidson, allowed the subject to demonstrate agreement or disagreement with a descriptive term and did not consider the degree of agreement or disagreement. This characteristic may limit the predictive power of these instruments.

Rosenberg (27:5) defined self-image as an attitude toward an object, and employed attitude to refer to facts, opinions, and values regarding the self. However, he also referred to a favorable or unfavorable attitude toward the self and thereby confounded self-concept with self-esteem.

In contrast to the somewhat idiosyncratic approach of the previous authors, Brandt, Coleman, and Mann produced data which describe students' perceptions of their abilities in comparison to the abilities of others. Brandt (48) asked 139 sixth and eleventh graders to estimate whether they would do better or worse than each of their classmates on various intellectual and physical tasks. Coleman (112: 281) asked students how bright they thought they were in comparison with other students in their grade. However, he included student perception of teaching style in his self-concept battery and may have diluted its predictive

power. Mann (80), asking fifth grade students why they
thought they had been placed in ability groups, purported
to measure self-concept, although her instrument was
phrased in such a way as to tap a multitude of responses.
Nevertheless, students in the top and bottom groups indi-
cated that they were "smarter" or "not as smart" as other
students, while students in the middle two ability groups
gave mixed responses, which could be expected, given the
ambiguous phrasing cf the questions. Despite the flaws in
these three studies, their conception of self-concept seems
most consistent with that of Mead (23:91), whose work pro-
vides the theoretical orientation of this study.

Mead's theory is adapted by Brookover, who defines
self-concept as "symbolic behavior in which the individual
articulates a program of action for himself as an object in
relation to others" (109:8). Self-concept is thus not
something inferred from behavior but is symbolic indication;
this definition eliminates the problems of inference which
many phenomenal theorists find so vexing (39:7-8,19). Mead
theorized that the self is faceted and that the social
situation determines which facets are brought forth (23:142).
Brookover adapted this by positing a self-concept of academic
ability, reasoning that a global self-concept might be too
broad to have significant power to predict any one facet of
behavior. He therefore defines self-concept of academic
ability as "behavior in which one indicates to himself

(publically or privately) his ability to achieve in
academic tasks with others engaged in the same task"
(109:8). It is this self-concept of academic ability which
is employed in this study.

In an earlier work, Brookover presented four
hypotheses of social psychology of learning:

1. People learn to behave in ways that each
   considers appropriate to himself.

2. Appropriateness of behavior is defined by each
   person through the internalization of the
   expectations which others whom he considers
   important to him hold.

3. The functional limits of one's ability to
   learn are determined by his self-conception
   or self-image as acquired in social inter-
   action.

4. The individual learns what he believes others
   who are important to him expect him to learn
   in a given situation (3:34-35).

Brookover, emphasizing the social-psychological aspects of
learning, suggests that what and how much one learns are
functions of what and how much one believes one can and
ought to learn. He does not deny possible organic limita-
tions upon learning ability but does suggest that a student
will learn to the limits of his organically-defined limits
only if his self-concept of academic ability is consistent
with such a level of learning.

> "Functional limit" is the term used to emphasize
> that we are speaking not of genetic organic
> limits on learning but rather of those perceptions
> of what is appropriate, desirable, and possible
> for the individual to learn. We postulate the

latter as the limits that actually operate,
within broader organic limits, in determining
the nature or extent of the particular behavior
learned (3:469).

Thus, a person with a high IQ but a low self-concept of academic ability usually has low academic achievement, while a person with a low IQ and a high self-concept of academic ability usually has low academic achievement, too (110); a high self-concept of academic ability is a necessary but not sufficient condition for high academic achievement. This finding suggests that a person is unlikely to actualize his potential unless he believes that he is able to succeed. The problem of changing that belief is dealt with below; a prior concern is the accuracy of that belief.

Accuracy of Self-Concept

One method of assessing the accuracy of self-concept is to ask subjects to estimate their level of performance on a given task, have them perform the task, and compare the estimate with the performance. However, since self-concept is a function of past performance as well as an estimate of present ability, the accuracy of recall must be assessed. Froelich and Moser (63) gave the Differential Aptitude Tests to 150 ninth-grade students and, after scoring the tests, explained the test profiles to each student and let him keep a profile. After 15 months, students were asked to draw their test profiles from memory.

Every sub-test score was reported higher by the group than the group real score. However, not every student increased his scores; a high percentage of high-scoring students remembered their scores as being lower than they actually were. The authors suggested that students compared test scores and were influenced by their perceptions of the group mean; both high and low groups remembered their scores as closer to the group mean than they actually were.

Rather than study the accuracy of memory, Brandt (48) tested the accuracy of self-estimate, asking 139 students in five classrooms to estimate how well they expected to do in comparison with each classmate on tests of arithmetic, spelling, vocabulary, and assorted physical tasks. He found a fairly consistent tendency to overrate one's performance in comparison with the relationship between one's expected performance and classmates' expected performances. However, he made no attempt to correlate self-estimate with actual performance. Torrance (95) asked college freshmen how well they thought they would perform on tests of scholastic ability and aptitude; students were asked to estimate the quarter within which their scores would fall. Like Brandt, Torrance found a tendency for students to overestimate their performance; 65 per cent of the group placed themselves in the upper quarter, and 95 per cent of the group placed themselves in the upper half. Of those students actually in the lowest quarter, 62 per

cent had placed themselves in the top quarter and 92 per cent, in the upper half. These estimates, however, might have been inflated as a reaction to the anxiety connected with being a college freshman.

Neither Froelich, Brandt, or Torrance tested the tendencies of self-estimates and behavior to vary together. Thus, if estimates were systematically inflated, their correlations with behavior might remain unchanged. Similarly, if inflation were systematic, comparison of means would not be affected significantly.

Correlates of Self-Concept

Since the chief value of self-concept of academic ability is the extent to which it correlates with academic achievement, studies examining this relationship were reviewed. Lowther (76), although dealing with self-esteem, found that children with high academic achievement were twice as likely to have high scores on a Coopersmith Self-Esteem Inventory as were children with low academic achievement, regardless of IQ; conversely, children with low academic achievement were twice as likely to have low scores on the Coopersmith instrument as were children with high academic achievement. However, since he did not find what percentage of children with high self-esteem had high or low academic achievement, it is difficult to draw any causal inferences from his study.

Trowbridge (96) used Coopersmith's inventory to compare self-esteem of disadvantaged elementary school children with self-esteem of nondisadvantaged elementary school children. She found that disadvantaged children indicated higher self-esteem than nondisadvantaged children, but since she did not attempt to correlate self-esteem with academic achievement, her study is of limited utility. It does indicate, however, that disadvantaged groups may be beginning to utilize group members rather than all age-mates as a reference group. Her findings are consistent with those of Soares (94) who found that disadvantaged students scored higher on his instrument than did advantaged students. Soares did not report any relationship between scores on his instrument and academic achievement, nor did he or Trowbridge attempt to describe the reference groups used by their students.

Coopersmith (7:188), examining self-esteem, found a relationship between self-esteem and parental expressions of attention, concern, and value. Rosenberg (88) found a similar relationship, as did Helper (67). Each of these researchers, though using slightly different instruments, found a relationship between parental evaluations and self-evaluations of their children. Brookover (109:104) found strong relationships between childrens' self-concepts of academic ability and their perceptions of their parents evaluations of that ability. Brookover notes that

self-esteem does not correlate as highly with academic
achievement as does self-concept of academic ability (109:
102); Rosenberg's (27) self-esteem measure produces a cor-
relation of .31 with academic achievement among 534
twelfth-grade students, while Brookover's self-concept of
academic ability scale produces a correlation of .49 with
academic achievement. Furthermore, partialing the variance
of self-esteem from the self-concept correlation depresses
that correlation from .49 to .46, while partialing self-
concept from the self-esteem correlation drop that cor-
relation from .31 to .06. Self-esteem apparently asso-
ciates with academic achievement indirectly, through
self-concept of academic ability.

Williams and Cole (102) found a correlation of .31
between the Tennessee Self-Concept Scale and reading
achievement measured by the California Test of Mental
Maturity. It is noteworthy that the Tennessee instrument
has a greater range of scores than Brookover's scale, and
the California Test has a greater range of scores than
grade-point average. Despite the greater ranges of the
variables involved in Williams' correlation, that correla-
tion is lower than any of those of Brookover. Perhaps the
Tennessee Self-Concept Scale is of less utility in pre-
dicting achievement than the Brookover scale.

Davidson and Lang (54) used an adjective checklist
of favorable and unfavorable words on 203 fourth, fifth,

and sixth grade students. They found significant high correlations between self-concept and academic achievement and between self-concept and student perceptions of teacher feelings toward them. Their instrument was quite crude, tapping only the content of children's beliefs about themselves; it did not measure the strength of those beliefs, nor did it directly probe children's beliefs about their academic ability. However, Davidson and Lang did relate academic achievement, a crude self-concept, and the imputed perceptions of teachers.

In a series of studies involving seventh through twelfth-grade students, Brookover (110:51;111:97) found correlations between self-concept of academic ability and grade-point average which ranged between .49 and .58, indicating a fairly strong relationship between the two variables. He also found that the correlations between self-concept of academic ability and perceived evaluations of parents varied between .58 and .76 (109:104); the correlations between self-concept of academic ability and perceived evaluations of teachers varied between .59 and .63 (109:105).

Change in Self-Concept

If learning behavior, self-concept of academic ability, and perceived evaluations are functionally related, a change in one can be expected to produce a change in one or more of the others. This section of the review of

literature contains an examination of research in support
of this proposition.

Festinger (61) posits a drive to evaluate one's
abilities. In the absence of objective physical standards,
such as strength or speed, one may accept the evaluation of
other persons, and his satisfaction of that evaluation
varies with the extent of agreement among those persons.
In other words, social reality becomes the measuring stick,
and social reality can be as much in error as individual
reality. Thus, a group assessment can be, if not erroneous,
at least open to change.

Merton (8%:195) defines the self-fulfilling prophecy
as "a false definition of the situation evoking new behavior
which makes the originally false conception come true," and
cites the example of examination neurosis, wherein a student,
fearful of failing the examination, worries so much about
failure that his studying is ineffective, and so he fails
the examination. Festinger and Merton suggest that a false
social reality can become real in its consequences;
Rosenthal and Jacobsen (28), in a comprehensive review of
the self-fulfilling prophecy, apply it to learning, arguing
that children may place artificially low ceilings on their
learning ability because their teachers erroneously believe
them to be unable to learn. Students who believe that
others perceive them to be unable to learn may accept that
definition, regardless of whether or not they may be able

to learn. Atkinson (42) found that one's estimate of
success or failure in a risk-taking situation reflected
the subject's perceived ability of his ability to deal with
that situation, and it seems plausible that his findings
might generalize to students who could be expected to avoid
learning situations in which they saw little chance for
success.

Roth (89), studying college students enrolled in a
voluntary reading improvement course, administered a real
self-concept Q-sort and an ideal self-concept Q-sort before
and after the course. He found that the correlation of
pre-course real self-concept with post-course real self-
concept and the correlation of pre-course ideal self-
concept with post-course ideal self-concept were higher
for non-improvers than for improvers. On this basis, he
concluded that the real and ideal self-concepts of the
improvers changed more than those of the non-improvers.
However, he did not establish pre-treatment equivalency,
and so his findings are open to question. Further, the
role of self-concept was never made clear; if it changed,
he failed to clarify whether that change followed, preceded,
or accompanied any change in reading achievement.

Videbeck (97) asked students to rate themselves on
a task before and after attempting it and being evaluated
on it; the evaluators were stooges instructed to give
randomly laudatory or critical evaluations. He found that

self-ratings improved after approval and declined after disapproval, and since he controlled for initial self-rating, the change seems to have been a consequence of the evaluations.

In a study of the perceptual consequences of failure, Postman and Brown (85) found that students who experienced artificially-induced failure were more prone to perceive deprivation words flashed briefly upon a screen than were students who experienced artificially-induced success; conversely, students who experienced artificially-induced success perceived more success words flashed before them than did students who had experienced artificially-induced failure. The authors concluded that success or failure experiences induce a set in the individual which sensitizes him to success or failure, respectively. However, the groups were not equivalent, and the study is vulnerable to invalidity by selection.

Nevertheless, the objective of this study is plausible. Postman and Weingartner (26:95) write that, "what we 'see' is a product of what we believe to be 'out there.' We see things not as 'they' are but as we are." The metaphors of the mind limit the environment, and it is possible that a child accustomed to failure might not perceive success; indeed, as Mead suggests, success might not be part of his environment (23:128). Coleman (112:320) found that minority children's sense of control of the

environment had the strongest relationship to achievement
of minority achievement of any of the cluster of variables
he studied; perhaps these children have been socialized in
a milieu of failure and powerlessness.

Examining the effects of discouragement upon test
performance, Gordon and Durea (66) randomly assigned 40
seventh, eighth, and ninth-grade students to either a con-
trol group or an experimental group. Each group was
given Form L of the 1937 Revision of the Stanford-Binet
scale as a pre-test; two weeks later, both groups took
Form M of the same scale, but each person in the experi-
mental group was told that he had done poorly on Form L
just prior to his taking Form M. Using analysis of co-
variance to control for any differences among scores on
Form L, the authors found that the experimental group
scored significantly lower on the post-test. They con-
cluded that perception of failure is a learned phenomenon.

Sacks (90) found that showing interest in and
playing with a group of nursery-school students was followed
by significant gains in their IQ post-test, while no change
resulted in a group she was uninterested in or in another
group she never came into contact with. After finding no
regression effect, she concluded that a child will perform
better for a person he likes than for a person he doesn't
know or doesn't like. Her conclusion seems unusually
simplistic, especially in view of Rosenberg's findings on

the childhood self-esteem correlates of parental interest
(27,88) and Coopersmith's findings on parental disciplinary
practices and development of self-esteem in children (7).
Nevertheless, the quality of the interaction does seem to
have impact upon the way the child views himself as well
as impact upon his test performance.

Lecky (22) reported that a group of poor spellers
misspelled approximately the same percentage of words,
regardless of the length or the degree of difficulty of
the list. They did not follow this pattern with lists of
foreign words. After exposure to a lengthy counseling
program designed to develop more positive self-images, the
students misspelled fewer words. He posited a drive for
self-consistency and suggested that successful spelling
behavior might threaten the self-consistency of children
who identified themselves as poor learners (22:144). In
another experiment involving counseling, Dolan (56) found
that individual counseling for a semester was accompanied
by significantly greater paragraph and word comprehension
among counselees than among those receiving no counseling.
He concluded that "the learning process can be limited by
attitudes toward it which can be altered in a positive and
favorable direction through a program of effective counsel-
ing" (56:919). These results are contrary to those pro-
duced by Brookover's counselor experiment (109:136).
Perhaps his counselor was ineffective.

In a related study, Flook and Saggar (62) randomly divided a group of first-year college engineering students into two groups at the beginning of the academic year and administered tests of intelligence, engineering aptitude, and personality to them. The authors then disclosed the test scores to each member of one group, which they designated K, and told each member how his scores compared with those of the other students in both groups. The second group, designated NK, received no information. Group K did better on its year-end examinations than NK, prompting the authors to conclude that knowledge of test scores gave each member of Group K a clearer and more realistic picture of his abilities in relation to the other students, hereby motivating him to seek additional help in the form of tutoring in study habits and counseling on personal problems. The counseling, however, was conducted by the junior author, so the possibility of experimenter effect cannot be discounted; she may have expressed expecta- tions of higher achievement to her counselees, unwittingly converting a study of the impact of knowledge of test scores into a study of the effects of counseling upon test performance.

Studying the effects of group pressure upon per- formance, Waterman (99) gave physical fitness tests to 102 fourth-grade students from two schools, then asked them to predict their performance on the next physical fitness test.

He reported the scores to the children of one school in group totals, summing the totals of all students to yield a group score; at the other school, he reported individual scores to individuals. He found that the group children's performance improved by a greater increment than that of the individual children's and concluded that the group disclosure encouraged group members to assume responsibility for each other's performance. However, he did not establish pre-treatment equivalence.

Brookover found that changes in self-concept of ability were associated with changes in grade-point average over two-year periods in a longitudinal study of a group of junior high school and senior high school students (109: 89-90) and that changes in self-concept of academic ability were also accompanied by changes in perceived evaluations of parents and teachers (109:109-110). In a related series of experiments involving students whose initial grade-point averages were below their school averages, Brookover found that involving parents in discussions designed to increase their evaluations and expectations of their children's academic ability yielded increased academic achievement and improved self-concept of academic ability during the period of the program (109:132-136). Similar programs involving students and either a counselor or an "expert" yielded no significant results. One year after the end of the treatment, the improved children had regressed to their earlier

levels, possibly in response to the lack of support for their newly acquired self-concepts of academic ability.

This research indicates that self-concept of academic ability is a learned phenomenon, that it is associated with academic achievement, that it can be improved, and that an improvement in self-concept of academic ability may be accompanied by an improvement in academic achievement.

Since the branching system of the West German schools is a form of ability grouping, research on the effects of ability grouping will be examined in the next section of this chapter.

Ability Grouping

Children in public schools are segregated on the basis of a variety of criteria, among them age, place of residence, language, socio-economic status, and special needs. Many schools also segregate students on the basis of ability and attainment, reasoning that by decreasing the range of abilities within a classroom, a program can be designed to take advantage of that narrower range, thereby resulting in greater learning. Two other premises of ability grouping are that the presence of slower children impedes the progress of more advanced children and that the successes of the more advanced children heightens the discouragement of the slower children. However, the extant research on grouping is less than decisive on the effects

of ability grouping upon pupil achievement because of the
confounding of selection and treatment (4); Yates (41:51)
has suggested that what is needed to resolve the issue is
random assignment of children and teachers to classrooms
of varying types. Since this is an unlikely event, the
research must be reviewed with qualification.

In a review of 33 studies of ability grouping,
Eckstrom (59) found that 13 studies claimed that ability
grouping increases achievement, 15 studies yielded no sig-
nificant effects, and five were mixed. She attributed this
confusion to the wide variety of experimental conditions,
methods, and samples, and noted that many studies lasted
only one semester, a period of time she deemed too short to
allow significant differences to emerge. She did note,
however, that if the experiment provided for differentiation
of methods and materials and if an effort was made to push
the bright homogeneous classes, the results favored homo-
geneous grouping. Unfortunately, she reviewed no studies
in which teachers pushed lower-ability homogeneous classes;
indeed, such studies are conspicuous by their absence from
research on ability grouping.

Eash (58), reviewing 26 studies, concluded that
ability grouping was ineffective in increasing learning
unless accompanied by curriculum adaptation and altered
teaching methods. In addition, he found that ability group-
ing impeded the progress of slow and average learners and

that ability grouping reflected a strong social class bias,
with the upper classes overrepresented in high ability
groups. Della-Dora's (55) findings were generally consistent
with those of Eckstrom and Eash.

Writing on ability grouping, or streaming, in
England, Douglas noted that "Once allocated, the children
tend to take on the characteristics expected of them and the
forecasts of ability made at the point of streaming are to
this extent self-fulfilling" (8:115). This assertion appears
warranted in view of other evidence. Berenda (1), using an
Asch technique (43), found that only seven per cent of seven
to ten-year old children and 20 per cent of 10 to 13 year
olds remained independent; since the Asch technique calls
for judgments involving concrete phenomena, one might expect
these children to be even less independent when dealing with
academic ability, an abstract phenomenon. Festinger (61)
suggests that this may be true. Daniels (53) found that 72
per cent of the 173 primary school teachers he studied
believed that the anecdotal information and test scores
which accompanied children were adequate evidence for
streaming the children; only 28 per cent of the teachers
deemed the data insufficient. The studies by Berenda and
Daniels suggest that children may be trapped in an ability
level which is inappropriate to their abilities and which
may, indeed, stifle them. Rist's (87) study of the manner
in which teachers confirm their self-fulfilling prophecies

about children's learning potentials is chilling evidence
that not all children receive equal treatment in classrooms
and that teachers' styles and expectations need to be
studied more closely.

Jackson (17) found that once a child enters a
stream, he'll stay there. He noted that given normal shifts
in IQ scores, 40 per cent of the children might move, but
that only one to five per cent do. This inequity seems at
variance with the importance attached to IQ scores in
English schools.

Millman and Johnson (83), in a study of 327 class
sections enrolling 4000 seventh and eighth-grade students in
28 schools, found no consistent gains between grades seven
and eight on the Iowa Tests of Basic Skills as a function
of within-class variability. They used scores on the Iowa
Tests as their criterion variable and concluded that
decreasing within-class variability will not, of itself,
effect greater learning. Their findings are consistent with
those of Goldberg, Passow, and Justman (11:34-71) and
Svensson (32:124) who concluded that achievement showed no
consistent variation as a function of the ability range
within classrooms or as a function of the subject matter.
Goldberg, Passow, and Justman noted, however, that narrow-
range high-ability groups showed the least increase in
learning and suggest that test ceilings and regression might
cause this. However, since narrow-range low-ability groups

also showed little learning increase, regression can be discounted. They also found that the presence of bright students tended to yield higher self-attitudes for bright students and lower self-attitudes for slow students (11:79) and that slow students in broad range classrooms reported somewhat lower self-attitudes than did comparable students in narrow range classrooms. Unfortunately, the authors were unable to control for teacher effects and noted that:

> It is difficult to come to any firm conclusions
> as to the desirability of one kind of pattern
> over another . . . . What the children experi-
> ence within the classroom makes more difference
> in how they view themselves than does the
> organizational climate of the class (11:105).

Husen and Svensson (71) gave tests of intelligence, arithmetic and reading comprehension to 2,755 Swedish fourth-grade students in one city before they were segregated into one of three milieux; children from the southern half of the city remained undifferentiated during grades five and six, while children in the northern half were divided into high or low groups on the basis of their grades in the first four years of school. While they found that the high select groups showed greater gains and the low select groups showed least gains in standardized tests, they were unable to control for teacher expectations. However, they did find that between-group differences disappeared when parent social class was controlled.

Eash, Rist, Husen and Svensson, and Goldberg, Passow, and Justman found a relationship between grouping

practices and student social class. This relationship will be examined in the next section.

Grouping and Student Social Class

Warner, in a study of a medium-sized New England city, noted that most of the students in the highest academic track were of upper-middle class families and that most upper-middle class students were in the highest academic track (35:194-196). In another study, he found that the high grades usually went to children of the upper classes (34:95). Hollingshead, writing about teachers in a town of 20,000, said that they

> believe that the college preparatory students
> have more ability . . . [and] look upon students
> in the general course as persons who . . . are
> mediocre in ability . . . . Students in the
> commercial course are believed to be lower in
> ability than those in the general course (15:171).

He noted that entrance into a track was determined largely by student social class, as was grading distribution, with students of the upper classes being over-represented in the upper tracks and receiving a disproportionate share of high grades (15:169-172). The studies of Warner and Hollingshead touch upon the extent to which the schools reflect ascribed rather than achieved social class and raise questions about the extent to which schools thus inhibit social mobility. Later research by Wilson (102, 103) produced similar findings and similar concerns. Douglas, studying streaming in England, found that

middle-class students were over-represented in the upper
stream and under-represented in the lower stream when
standardized test scores were controlled; the converse
was true for working-class students. He hypothesized that
teacher judgments favored middle-class students. The
problem of teacher judgment and teacher expectation has
been a recurrent one in this review. The next section
will deal with it.

Teacher Effect

In a well-known but little understood study, Lewin,
Lippitt, and White (74) found that variations in leader-
ship style were accompanied by variations in group behavior.
Rosenthal and Jacobson (28), in a more relevant work,
inferred that teacher expectations could improve student
performance for some children. After gathering IQ scores
for all students, the authors administered a test which
ostensibly identified children who were due to experience
an IQ growth spurt, and they identified those children to
their teachers at the beginning of the school year. In
reality, the children represented a random 20 per cent of
each class room. Testing IQ at the end of the year, the
authors found no significant differences between the tagged
children and others for the school as a whole, but they
did find that tagged children in grades one and two showed
greater IQ gains over the year than did other first and
second-grade children (28:77). There were no significant

differences in tracks by grade level, although the middle
of the three tracks showed the greatest increase.

The authors suggested that since the students were
not informed of being tagged, any impetus for the changes
in their test scores was a consequence of changes in
teacher behavior. Unfortunately, they were unable to
document the dynamics of this hypothesis. They did note,
however, that the teachers in the classrooms where sig-
nificant increases occurred were judged more effective than
other teachers by their building principals. They also
suggested that the younger children might have had more
freedom to change because they were more malleable, being
younger, and because their reputations as learners had not
been established.

The malleability theory, however, is undercut by
Little's report of a United States Army experiment involv-
ing men of low academic achievement (75). Under Project
100,000, men who previously would have been rejected for
service because of poor school records were accepted into
basic training; entrance criteria were drastically lowered
but not abolished. Little reported that more than 96 per
cent of these men completed basic training; the "normal"
rate is 98 per cent. Further, of those men who went on to
advanced training in communications, intelligence, medical
and dental schools, electrical and mechanical equipment
repair, and electronics, 87.7 per cent successfully completed
the course of study; the "normal" rate is 92 per cent.

While these men received compensatory basic education apart from other recruits, they underwent all other Army basic training with other recruits. Little suggested that this created an opportunity for group support. Commenting upon the program, Little wrote that

> If the task were assigned to a civilian educational system, it would have most likely segregated these men, devised a special curriculum, and engendered in them the feeling that they were clearly inferior manpower resources (75:871).

It is ironic that a program devised to educate exceptional persons treated them as unexceptional. It is also encouraging that the program demonstrated that the ceiling on ability to learn can be lifted.

Summary

In the first section of this chapter, the organization of the West German schools was presented. In the second section, self-concept was examined. In the first part of this section, an analysis of the theory of George Herbert Mead, it was suggested that persons come to see themselves as they believe others come to see them. In the next part of the section, various definitions of self-concept were examined, and that of Brookover was adopted. Accuracy of self-concept was examined next, and while self-concepts may be inflated, it was suggested that since this inflation tends to be systematic, it may be of no operational consequence. In the next part, correlates of self-concept were discussed, and it was found that self-concept

may serve as a guide or limit upon behavior. Change in self-concept was then discussed, and it was noted that changes in self-concept are accompanied by changes in behavior. Ability grouping was the topic of the next section, with the finding that children of low ability do not profit from ability grouping when achievement is considered and that they do experience a depression of self-concept when placed in classrooms with brighter children. Grouping was found to rest on a strong social class bias. Finally, in the section on teacher effect, it was found that a change in teacher expectations could produce a change in learner behavior.

In the next chapter the research design will be explained.

CHAPTER III

DESIGN OF THE STUDY

In this chapter, the research site and sampling population will be described, the measures employed will be defined, and the research design presented. In addition, the hypotheses will be stated in testable form, and data analysis procedures will be explained and justified. Finally, limitations to the design and instrumentation will be stated.

<u>Site</u>

Data were collected during the Fall of 1968 in Giessen, a light manufacturing city of 70,000 persons, located in Hesse, West Germany. Giessen was selected because its population and economy are similar to those of the site of previous research conducted by Brookover and associates (109). Data were collected by Harro Kähler, who also translated the instrument into German.

<u>Sample</u>

The sample was drawn from all children attending eighth grade of any <u>Gymnasium</u>, <u>Mittelschule</u>, or <u>Volksschule</u> in Giessen. At the time of the study, there were 463

students enrolled in the <u>Gymnasium</u>, 247 students enrolled in the <u>Mittelschule</u>, and 321 students enroleld in the <u>Volksschule</u>. Enrollments in the <u>Gymnasium</u> and in the <u>Mittelschule</u> are higher than the national average because the communities near Giessen send students into Giessen's <u>Gymnasien</u> and <u>Mittelschulen</u>; however, since these communities maintain their own <u>Volksschulen</u>, the Giessen <u>Volksschule</u> enrollment is not similarly inflated. Questionnaires were administered to every student in the eighth grade of these schools. Seventeen schools were involved in the study; four <u>Gymnasien</u>, six <u>Mittelschulen</u>, and seven <u>Volksschulen</u>.

Not all questionnaires were suitable for coding; of the 941 received, 756 were usable. A questionnaire was discarded if the student omitted family socio-economic status information, if two or more of the four school grades from his seventh grade year were missing, or if he failed to respond to more than half of the items on any of the three attitude inventories.

Missing Data

If three of the four school grades were available, the mean grade-point average was computed from these three. Similarly, if a student responded to more than half of the items on an attitude inventory, his mean response to the completed items was computed and assigned to the uncompleted items. These techniques made possible inclusion of 43 students, yielding a total sample of 756 students, 412 of

whom attended the Gymnasium, 169 of whom attended the Mittelschule, and 175 of whom attended the Volksschule.

Major Variables and Instrumentation

Self-Concept

The basic instrument was the Michigan State General Self-Concept of Ability Scale, translated into German (Appendix A). This instrument is designed to measure general self-concept of academic ability, defined as "evaluating definitions which an individual holds of himself in respect to his ability to achieve in academic tasks in general as compared with others in his school class" (109:59). The operational definition of general self-concept of ability is the sum of scored responses to the Michigan State General Self-Concept of Ability Scale (SCA). The scale consists of eight multiple-choice items, each item scored from one to five; high self-concept choice is indicated by a high score.

Reliability of SCA

A reliability coefficient of .86 was derived using Hoyt's analysis of variance (69); this compares with a coefficient of .865 for an American sample of similar characteristics (109:60).

Perceived Evaluations

Student perceptions of the evaluations of his parents and of his favorite teacher were measured by two

five item multiple-choice scales, with each item scored
in the same manner as an SCA item. Perceived evaluation
is defined as evaluating definitions which an individual
perceives another person holds of him in respect to his
ability to achieve in academic tasks in general as compared
with others in his school class. Perceived parental
evaluation is operationally defined as the sum of scored
responses to the Perceived Parental Evaluation Scale
(Appendix C) and will hereafter be referred to as PPEv.
Perceived teacher evaluation is operationally defined as
the sum of scored responses to the Perceived Teacher Evalua-
tion Scale (Appendix E), hereafter referred to as PTEv.

Reliability of PPEv and PTEv

Hoyt's analysis of variance produced a reliability
coefficient of .82 on the PPEv scale and .85 on the PTEv
scale. Respective figures on the American sample were .838
and .918.

Grade-Point Average

Grade-point average, used as the measure of academic
achievement, was derived from the grades earned by students
in their seventh-grade science, social studies, German, and
mathematics classes. Grades are represented on a six
point scale, one being the highest and six being the lowest
grade. Grade-point average is operationally defined as the
mean score of the student's grades received during his

seventh-grade science, social studies, German and mathematics classes.

Socio-Economic Status

Socio-economic status was measured by coding responses to two items: "What does your father (or whoever earns the most money in your family) do for a living?" and "Describe what your father (or whoever earns the most money in your family) does on the job." Harro Kahler used criteria set forth in Moore and Kleining's Soziale Selbst-Einstufung Instrument (84) to code responses.

Their scheme identifies seven discrete strate and uses occupation as the identifying criterion. The upper class consists of big business men, financiers, and politicians, and it represents one per cent of the West German population. The upper-middle class, about five per cent of the population, contains upper management, professors, physicians, and attorneys. The middle-middle class is composed of middle management, engineers, teachers, and owners of middle-sized companies; it contains about 15 per cent of the population. The lower-middle class, 30 per cent of the populace, consists of lower management, highly skilled workers, and owners of small businesses. Approximately 28 per cent of the population falls in the upper-lower class, which contains such occupations as clerks, waiters, and skilled workers. The lower-lower class consists of unskilled manual workers and encompasses roughly

17 per cent of the population. The bottom four per cent,
the underdogs, engage in seasonal labor or especially
dirty, difficult jobs; however, only the top six strata
are included in this study. A subject's socio-economic
status is operationally defined as the rating of the occu-
pation of his father or head of household on the Soziale
Selbst-Einstufung Instrument and will hereafter be referred
to as SES.

Design

The study design was a three-groups static-group
comparison using one-way fixed-effects analysis of variance
(4:12); this design afforded cross-sectional comparison of
data from the three groups.

Testable Hypotheses

Hypotheses will be stated in testable form in this
section. Since the study is exploratory rather than
definitive, only null hypotheses will be examined.

SCA

The first hypothesis, stated in Chapter I (supra,
p. 6), is "The relationship between student self-concept is
direct; the higher the branch, the higher the self-concept
of students attending that branch." Stated in testable
form, this becomes, "No difference will be found between
mean SCA of the Gymnasium sample, mean SCA of the Mittel-
schule sample, and mean SCA of the Volksschule sample."

PPEv

The second hypothesis (supra, page 6) was, "The relationship between perceived parental evaluation and branch is direct; the higher the branch, the higher the perceived parental evaluation of students attending that branch." Stated in testable form, this becomes, "No difference will be found between mean PPEv of the Gymnasium sample, mean PPEv of the Mittelschule sample, and mean PPEv of the Volksschule sample."

PTEv

The third hypothesis (supra, page 6), "The relationship between branch and perceived teacher evaluation is direct; the higher the branch, the higher the perceived teacher evaluation of students attending that branch," is tested as "No difference will be found between the mean PTEv of the Gymnasium sample, the mean PTEv of the Mittelschule sample, and the mean PTEv of the Volksschule sample."

SES

The fourth hypothesis was stated in Chapter I (supra, page 7) as, "The relationship between branch and family socio-economic status is direct; the higher the branch, the higher the family socio-economic status of students attending that branch." This is stated as the null hypothesis, "No difference will be found between the mean SES of the Gymnasium sample, the mean SES of the Mittelschule sample, and the mean SES of the Volksschule sample."

GPA

The fifth hypothesis (supra, page 7), "There are no differences in grade-point averages between the three branches," is restated as "No difference will be found between the mean GPA of the Gymnasium sample, the mean GPA of the Mittelschule sample, and the mean GPA of the Volksschule sample."

SCA-PPEv

"The relationship between SCA and PPEv is positive for the entire sample and within the Gymnasium sample, the Mittelschule sample, and the Volksschule sample."

SCA-PTEv

"The relationship between SCA and PTEv is positive for the entire sample and within the Gymnasium sample, the Mittelschule sample, and the Volksschule sample."

Analysis

This study utilized six analytic procedures: one-way fixed-effects analysis of variance (ANOVA), Scheffé post-hoc contrasts, Pearson product-moment correlation, partial correlation, Kendall's Tau, and multiple regression. The rationale for selection of these procedures, the functions of these procedures, and the assumptions underlying their use will be explained in this section.

An ANOVA with α = .05 was used to detect any systematic differences among the three branches. Self-Concept of Ability (SCA), Perceived Parental Evaluation (PPEv), Perceived Teacher Evaluation (PTEv), Grade-Point Average (GPA), and Socio-Economic Status (SES) were each used as a dependent variable in an ANOVA, branch serving as the independent variable in each instance.

Three assumptions regarding the data must be met for ANOVA to be valid (29). The variance of all groups must be homogeneous; all group distributions must be normal; and all error factors must be independent. Homogeneity of variance was tested by the Hartley technique (24), which refers the ratio of the largest sample variance to the smallest sample variance to a table; ratios computed for the variances of these data were within the limits defined by Hartley, and the variances were therefore treated as homogeneous.

Normality has almost no importance as an assumption underlying ANOVA; the procedure is especially robust (47).

Independence was inferred from the academic segregation of the students. _Gymnasium_ students attend class in separate buildings. _Mittelschule_ students and _Volksschule_ students, while attending classes in the same building complex, at no time attend the same classrooms, nor do they share teachers or curricula. Moreover, no score on any measure was in any way dependent upon a score

on any other measure. Independence was therefore assumed
to be preserved.

However, this ANOVA procedure does nto indicate
which group means vary from which other group means;
rather, it merely indicates the presence of a difference
among group means. Thus, in those instances where the
omnibus F was significant, it was necessary to employ post-
hoc comparisons in order to identify which groups were
different from which other groups. Possible procedures
were those of Dunn (57), Dunnett (38:90-91), Scheffé
(10:388-395; 29:68-73), and Tukey (10:383-388; 12:54-57;
29:73-75). The Dunn method was rejected because it
allowed only three comparisons, and this investigator pre-
ferred to retain the option of making more than three
comparisons if the data seemed to warrant them. The
Dunnett method was rejected because it required a control
group which this design does not provide. Since the Tukey
method generally required equal-sized groups, it was deemed
inappropriate to the discrepant sample sizes of this study.
The Scheffé contrast, while somewhat more conservative than
the others and therefore more likely to lead to a Type II
error, nevertheless afforded greater opportunities for data
investigation and so was employed.

The primary function of the Scheffé post-hoc
contrast is to construct a confidence interval around each
contrast and to observe if zero lies within this interval.
If zero falls within that interval, the contrast is not

significant, while zero falling outside the interval implies the contrast's significance; that is, a difference between the two groups.

With α = .05, Scheffé post-hoc contrasts were used to contrast each branch with the other two branches on all variables: SCA, PPEv, PTEv, SES, and GPA. Since the Scheffé contrasts operate under the same assumptions as ANOVA, it was assumed that the conditions of variance and independence were met.

Additional analyses were required to examine relationships among variables, since both ANOVA and the Scheffé contrasts investigated relationships among groups. To this end, Pearson product-moment correlations were used to compute all possible simple combinations of SCA, PPEv, PTEv, SES, and GPA. Four correlations were computed: one for the entire sample of 756 and one for each of the three branches so that comparisons of relationships between branches could be made.

Since these correlations were used only to describe the extent of relationships of variables for these groups, it was not necessary to make any assumptions about the nature of the distributions. These assumptions need to be examined only if correlations are to be used as bases for inferences about the nature of a population (22:510). However, visual inspection of scatterplots of each set of data indicated apparent linearity and homoscedasticity.

Since some of the correlations might be affected by a third variable, partial correlations were computed for all the simple correlations, partialing out the effect of every other variable. For example, the SES-SCA simple correlations yielded three partial correlations: SES-SCA with PPEv partialed out; SES-SCA with PTEv partialed out; and SES-SCA with GPA partialed out.

Partial correlation is an attempt to derive a degree of association between two variables exclusive of any confounding effects due to the influence of a third variable which has a relationship with each of the two variables (9:150). This measure calculates the arrays of errors of estimate for predicting variable X from variable Z and predicting variably Y from variable Z and correlates these errors (10:184). That is, the score on variable X for a given case has a degree of association with variable Z which provides a basis for prediction of X from Z, but since the association is imperfect, the prediction contains an inevitable error. It is this error between the actual score and the predicted score which is used in computing partial correlation.

In order to examine the relationships between branch and SCA, PPEv, PTEv, and GPA, Kendall's Tau was used. Product moment correlation could not be used because it requires interval data, and branch does not meet this requirement. The procedure is a measure of the extent of

disagreement between rankings of two sets of data (10:176).
One set of data is arranged in ascending order, and the dif-
ference in rank for each subject between the ordered set of
data and the second set of data is computed. Tau is the
ratio between the extent of similarity of the two ranks and
the maximum possible similarity between the two ranks
(30:215). While Tau is generally smaller than a Pearson
correlation derived from the same data, it is of equivalent
power (31:195).

Only one assumption, ordinal data, underlies Tau.
While branch is strictly nominal data, the status of the
branches are not equivalent; Gymnasium is highest and Volks-
schule is lowest. Further, students selected for the
Gymnasium had the highest Grundsschule academic records and
those students selected for the Volksschule, the lowest.
Because of these characteristics associated with it, branch
was treated as an ordinal measure.

Again, since the tendency of two variables to change
together could be influenced by a third variable, Kendall
partial rank correlation was used to examine the extent to
which branch contributes to the correlations among SCA,
PPEv, PTEv, and GPA. This procedure compares the agreement
of rankings of each case on the retained variables with
rankings on the partialed out variable, then compares the
disagreement of these rankings, and finally produces an
aggregate measure of agreement between the retained

variables which is independent of the partialed out variable (30:224-226).

In addition to the correlational measures used, a multiple regression computor program developed by the Agricultural Experiment Station of Michigan State University was employed (114). This program utilizes a least squares technique to determine whether or not selected independent variables are necessary to significantly improve prediction of a single dependent variable. That is, it asks which independent variables are the best predictors of that dependent variable. In this study, multiple regression was used on the entire sample of 756 subjects to attempt to predict SCA; independent variables employed were branch, SES, PPEv, PTEv, and GPA. Multiple regression equations were also computed within each branch to attempt to predict SCA; independent variables employed were SES, PPEv, PTEv, and GPA.

Limitations

Despite attempts to control for effects of extraneous factors, the possibility of their influencing the findings remains. While their possible effects may not invalidate the study, they at least point out the need for qualification of any conclusions which might emerge.

One group of factors affect the internal validity of the study, questioning the extent to which the data are

"real;" that is, the extent to which a discovered difference between groups is a result of factors other than those investigated in the study. The first of these factors is the validity of the instrument; the fundamental assumption is that the student reveals information which he includes in describing himself to himself, that the public disclosure equates with the private disclosure which, in turn, represents an accurate statement of the student's thoughts about himself. Pencil and paper tests may or may not depict what goes on within the little black box.

A second limitation is the questionable validity of the subjects' responses to the occupational questions. Subjects were asked, "What does your father (or whoever earns the most money in your family) do for a living?" According to Mr. Kähler, who translated and administered the questionnaire, many subjects were confused by the question and responded with the occupation of a relative who earned more money than the subjects' father, although the father was living at home. Mr. Kähler therefore cautioned against placing much trust in any analyses involving socio-economic status.

A third limitation is selection (4:5). Students were not randomly assigned to the groups, thus one cannot conclude that differences among groups are due only to differential group experiences. Those differences may result largely from differences between students when they entered the groups.

A fourth limitation is mortality (4:5). Since the design does not control for differential drop-out rates between branches, it is possible that one branch might have a higher drop-out rate than others and that this mortality might be concentrated within a limited stratum. Thus, Gymnasium SCA might be inflated artificially by the loss of a group of low SCA students between the fifth and eighth grades.

The final factor limiting the internal validity is the exceeding the degrees of freedom allowed by the design. While the design allowed but two degrees of freedom, the investigator decided to examine as many relationships as possible in order to provide questions for further research; the study, then, is hypothesis-generating rather than hypothesis-testing.

A second group of limitations affect the generalizability, or external validity, of the study. First, since the design employs a fixed-effects data model, findings are applicable only to those effects included in the model. It is inappropriate, then, to generalize to any situation in which students are segregated by criteria other than their academic achievement during grades one through four.

A second factor is a possible interaction between selection and treatment (4:5). Students were not randomly assigned to groups, and it is possible that the qualities which led to selection to a branch might also facilitate

differential growth rates. That is, there might be something in Volksschule students which makes them especially vulnerable to depressive influences of the Volksschule upon SCA.

Finally, the study is fundamentally correlational and examines the existence of relationships between groups and variables. Any statements about cause are based upon logical inference, not fact.

Despite these apparently staggering limitations, the study nevertheless has utility. It is intended to explore the nature and extent of differences in SCA among students in a formally segregated school system. While statements regarding the possible existence of those differences must be qualified, they can provide impetus for future studies. Furthermore, the possible interference of an extraneous factor with internal or external validity does not denote invalidity but only its possible presence.

CHAPTER IV

FINDINGS

In this chapter, the findings will be presented
and discussed. Each hypothesis will be restated and
followed by the relevant findings and a brief discussion.
In the first section of the chapter, the three branches
will be compared with respect to the other variables:
students' self-concepts of academic ability (SCA), students'
perceptions of parental evaluation of their academic
ability (PPEv), students' perceptions of teacher evalua-
tion of their academic ability (PTEv), socio-economic
status of the students' families (SES), and students'
grade-point average (GPA). The next section of the
chapter contains an examination of the correlations between
each of the variables, both for the entire sample and for
each branch. Finally, the power of various combinations
of branch, GPA, SES, PPEv, and TPEv to predict SCA will
be examined.

SCA

The first hypothesis, "No difference will be found
between mean SCA of the Gymnasium sample, mean SCA of the

Mittelschule sample, and mean SCA of the Volksschule

sample," was tested by an ANOVA with the following result:

TABLE 1.--ANOVA: SCA by branch.

	Gymnasium	Mittelschule	Volksschule
Mean SCA	26.626	24.789	23.923
Standard Deviation	3.916	3.123	4.652

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between	1024.337	2	512.169	33.145	<.0005
Within	11635.614	753	15.452		
TOTAL	12659.951	755			

These data indicate that the mean SCA of the branches are

dissimilar, but do not precisely define the nature of

these dissimilarities. Scheffé comparisons were utilized

in order to examine the relationships between mean

Gymnasium SCA and mean Mittelschule SCA and between mean

Mittelschule SCA and mean Volksschule SCA (Table 1,

Appendix G). With the level of rejection set at .05, the

mean SCA of Gymnasium students was found to be greater than

that of Mittelschule students, but the mean SCA of Mittel-

schule students was not found to be significantly greater

than the mean SCA of Volksschule students. Since mean

Mittelschule SCA is greater than mean Volksschule SCA,
and since mean Gymnasium SCA is significantly greater than
mean Mittelschule SCA, it follows that mean Gymnasium SCA
is significantly greater than mean Volksschule SCA.

The superior mean SCA of Gymnasium students could
be a result of a number of factors. First, children are
selected for Gymnasium by virtue of having been highest
achievers in their Grundsschule classes and thus may have
formed high self-concepts of ability since they have had
early academic success. Second, the Gymnasium has the
reputation of providing the most difficult curriculum of
the three branches, and inclusion in a group expected to
succeed in the most difficult curriculum might support a
self-conception of high academic ability. Third, the
Gymnasium is the only branch preparing its leavers for
university entrance, and anticipation of a future predi-
cated upon academic success could produce high self-
perceptions of ability among its students. These three
factors might operate singly or in concert.

Conversely, Mittelschule and Volksschule students
were identified by their Grundsschule teachers as unlikely
to succeed in Gymnasium on the basis of less than excellent
academic records. Furthermore, neither Mittelschule nor
Volksschule students normally attend universities and so
need not anticipate future activities predicated upon a
high level of academic ability. These factors might

induce students in the two lower branches to hold self-concepts of academic ability somewhat lower than those of Gymnasium students.

The relative similarity of mean SCAs of Mittelschule and Volksschule is puzzling when one considers that these branches embrace approximately 87 per cent of the eighth-year student population. Perhaps the fact that all but one of the six Mittelschulen and all but one of the five Volksschulen share a building with the other branch creates an environment of similarity; physical commonality might diminish self-conceptions distinguishing one branch from the other.

PPEv

The second hypothesis is, "No difference will be found between mean PPEv of the Gymnasium sample, mean PPEv of the Mittelschule sample, and mean PPEv of the Volksschule sample." An ANOVA was used to examine the variance of the sample means, employing the data found in Table 2. The same pattern held for PPEv as did for SCA, the omnibus ANOVA rejecting the null hypotheses at the .0005 level. The Scheffé comparisons produced findings similar to those from SCA data (Table 2, Appendix G). While mean PPEv of the Gymnasium sample was greater than that of either the Mittelschule sample or of the Volksschule sample, there was no significant difference between the mean PPEv of

TABLE 2.--ANOVA: PPEv by branch.

	Gymnasium	Mittelschule	Volksschule
Mean SCA	18.255	16.069	15.337
Standard Deviation	3.059	2.650	3.440

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between	1260.758	2	630.379	67.052	<.0005
Within	7079.193	753	9.401		
TOTAL	8339.951	755			

the Mittelschule sample and the mean PPEv of the Volks-
schule sample.

Parents are involved in selecting the appropriate
branch for their children; teachers and parents make the
selection together after children complete the fourth year
of the Grundsschule, and the parents have the option of
overruling the teachers' decisions. Thus, a teacher's
decision to direct a child into the Volksschule could be
negated by parents who wanted the child to attend either
the Mittelschule or the Gymnasium; similarly, a parent
could insist upon Volksschule or Mittelschule attendance
for a child whom the teacher had designated as a potential
Gymnasium student. In other words, a child would not be
attending a branch his parents deemed inappropriate for

his abilities, and the child might infer a parental evaluation of his academic abilities from their having final approval of his branch assignment.

While this might explain the superiority of the mean Gymnasium PPEv to both the Mittelschule and Volks-schule mean PPEv's, it does not explain the insignificant difference between mean Mittelschule PPEv and mean Volks-schule PPEv. It is possible that students perceive no distinction in parental expectation between students of the two lower branches; perhaps the students believe that parents see two sets of students, those who attend Gymnasium and those who do not, ignoring distinctions within the latter group.

PTEv

The third hypothesis is, "No difference will be found between mean PTEv of the Gymnasium sample, mean PTEv of the Mittelschule sample, and mean PTEv of the Volks-schule sample." It should be noted that PTEv is the students' perception of evaluation of him held by his favorite teacher and is not an aggregate measure of per-ceived evaluations of all his teachers. ANOVA was used to examine variance among these sample means, and the null hypothesis was rejected.

However, the Scheffé comparisons produced a pattern different from those of SCA and PPEv (Table 3, Appendix G). The mean PTEv of the Gymnasium sample was greater than

TABLE 3.--ANOVA: PTEv by branch.

	Gymnasium	Mittelschule	Volksschule
Mean PTEv	18.138	16.211	15.302
Standard Deviation	3.031	2.572	3.512

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between	1127.539	2	563.769	60.646	<.0005
Within	6999.901	753	9.296		
TOTAL	8127.439	755			

those of both Mittelschule and Volksschule samples, and
the mean PTEv of the Mittelschule sample was greater than
the mean PTEv of the Volksschule; SCA and PPEv data indi-
cated that while the mean of the Gymnasium sample was
greater than those of both the Mittelschule and Volksschule
samples, there was no difference between the means of
Mittelschule and the Volksschule sample. The difference
between PTEv data and both PPEv and SCA data might be
rooted in the different referents the students are asked
to assume; since teachers are perceived solely as func-
tionaries of a specific branch, where students and parents
are not, it is possible that asking students to assume the
perspective of teachers heightens the salience of branch
stratification and makes students more sensitive to

gradations of expectations. That is, a teacher is not merely a teacher, but is more accurately a teacher-at-a-Gymnasium and might be seen as such by a student who sees himself as a student without reference to branch attendance.

SES

The fourth hypothesis is, "No difference will be found between mean SES of the Gymnasium sample, mean SES of the Mittelschule sample, or mean SES of the Volksschule sample." The ANOVA data indicate that a difference does exist, and so a series of Scheffé comparisons was computed to locate the difference (Table 4, Appendix G).

TABLE 4.--ANOVA: SES by branch.

	Gymnasium	Mittelschule	Volksschule
Mean SES	3.67	4.50	4.81
Standard Deviation	.99	.76	.64

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between	182.727	2	94.863	125.584	<.0005
Within	568.796	753	.755		
TOTAL	758.522	755			

The Scheffé comparisons indicate that mean SES of the Gymnasium sample is greater than mean SES of the Mittelschule sample, and that mean SES of the Mittelschule sample is greater than mean SES of the Volksschule sample; it follows, then, that mean SES of the Gymnasium sample is greater than mean SES of the Volksschule sample.

It appears that the branching scheme may inhibit both SCA and social mobility when it concentrates upper-class children in the Gymnasium and lower-class children in the Volksschule. While each branch draws students from all socio-economic statuses, no one branch draws exclusively from any one or two statuses, and so these schools are not creating or perpetuating a caste system. They are, however, employing ascribed status in that a child born into an upper class household is likely to be socialized in ways conducive to his being selected for the Gymnasium rather than for the Mittelschule or the Volksschule. Experiences in school further reinforce his high SCA, facilitating that academic success which enables him to move into high-level jobs, thereby maintaining his privileged position.

GPA

The fifth hypothesis is, "No difference will be found between the mean GPA of the Gymnasium sample, the mean GPA of the Mittelschule sample, or the mean GPA of the Volksschule sample." It should be noted that under the West German grading system, one is the highest grade

and six is the lowest. Thus, the "lowest" GPA of the
Gymnasium is actually the highest GPA of the three branches.
The omnibus ANOVA indicated that there are in fact dif-
ferences between sample means.

TABLE 5.--ANOVA: GPA by branch.

	Gymnasium	Mittelschule	Volksschule
Mean GPA	3.078	3.417	3.280
Standard Deviation	.634	.554	.709

Source	Sum of Squares	Degrees of Freedom	Mean Square	F	P
Between	15.424	2	7.712	19.161	<.0005
Within	303.064	753	.402		
TOTAL	318.488	755			

Using Scheffé comparisons to clarify the nature of this
difference, it is apparent that the mean GPA of the
Gymnasium sample is greater than those of the Mittelschule
and Volksschule samples, but that the mean GPA of the
Volksschule sample is not greater than the mean GPA of
Mittelschule sample (Table 5, Appendix G).

Further, it should be noted that since the three
curricula are dissimilar, grades earned within one curricu-
lum are not strictly comparable with grades earned within

the other two. Nevertheless, the separate curricula are ostensibly designed to provide experiences appropriate to the interests and abilities of the students enrolled within each branch; GPA should not vary between branches if this aim is met. With these students, however, the Gymnasium sample has the highest GPA, 3.078; the Mittelschule sample the lowest GPA, 3.417; the Volksschule sample has the middle GPA, 3.280, although Volksschule GPA is not significantly higher than Mittelschule GPA.

It is possible that Gymnasium teachers expect their students to meet superior academic standards and so validate this expectation by granting them the highest grades. Conversely, Mittelschule teachers might employ stringent evaluative criteria in an attempt to justify their students' not being placed in the Gymnasium. Such a policy of "high standards" might also serve to justify claims of a higher academic status for the Mittelschule curriculum than for the Volksschule curriculum.

Family SES, SCA, PPEv, PTEv, GPA Correlations

The relationships among family SES, SCA, PPEv, PTEv, and GPA were tested by Pearson product-moment correlations. Data will be presented first for the entire sample, then for each branch within the sample. Zero-order and first-order partial correlations will be utilized.

TABLE 6.--Zero-order correlations between family SES, SCA, PPEv, PTEv, and GPA for all students.

	SES	SCA	PPEv	PTEv	GPA
SES	1.000	.2795	.3330	.3138	.1705
SCA		1.000	.8130	.7879	.5622
PPEv			1.000	.7929	.5208
PTEv				1.000	.5003
GPA					1.000

All r's significant beyond .01 level.

The correlation between SES and GPA, .1705, is negligible, and those between SES and SCA, .2795, SES and PPEv, .3330, and SES and SCA, .3138, are slight. More substantial are the correlations of GPA and SCA, .5622, GPA and PPEv, .5208, and GPA and PTEv, .5003. The strongest correlations are those involving SCA and PPEv, .8130, SCA and PTEv, .7879, and PPEv and PTEv, .7929.

SES

The low SES-GPA correlation might be depressed by a statistical artifact; SES is measured on a six-point scale, as is GPA, while PPEv and PTEv employ 20-point scales, and SCA employs a 32-point scale. The relatively depressed ranges of the SES and GPA scales could produce a correlation which is speciously low. Similarly, all correlations involving SES might be artificially lessened.

However, the correlations involving GPA are not similarly depressed despite the use of a six-point scale to present grades. Scaling artifact, then, does not seem to explain satisfactorily the low correlations involving SES.

A possible explanation might involve the criterion used to define family SES, the occupation of head of household. It is possible that occupation is too global a measure to have any sizeable relationship with other variables. One might be stretching a point to argue that an out-of-home activity engaged in by one family member could be expected to exhibit a strong correlation with another family member. In fact, the SES-GPA correlation, .1705, indicates that variation in family SES accounts for less than three per cent (2.89%) of the variance in student GPA.

The SES-GPA correlation of .17 is lower than that of .25 found in a related study by Brookover, who used an American sample of the same age (109). This difference could be a result of scaling, for where Brookover used a 100-point SES scale, this study uses a six-point scale in the correlational analysis. The decrease in the range of the SES scores might depress the magnitude of the correlation. Another factor which might depress the correlations in this study is the tendency of the branching system to spread children of various socio-economic levels more equitably throughout each branch than does the American system, which tends to concentrate children of high

socio-economic status in college preparatory curricula and children of lower socio-economic status in general or vocational curricula. Finally, it is possible that many persons in the American schools believe that children of low socio-economic status are not capable of earning high grades (104), or that high grades are inappropriate in the lower tracks of a tracked curriculum; the German branching system avoids the latter problem by granting each branch virtual autonomy in establishing criteria of evaluation and measurement.

While family SES has a negligible association with GPA, it does have a slight association with SCA (.2795), PPEv (.3330), and PTEv (.3138). Children might infer some expectation of academic ability appropriate to their parents' occupational level. However, these correlations are so low that they have little significance outside a table of data. Variance in family SES accounts for less than eight per cent (7.78%) of SCA variance, and less than ten per cent (9.86%) of PTEv variance.

Further doubt regarding the importance of family SES in describing SCA, PPEv, PTEv, or GPA is supported by the minimal effect of partialing out SES from other corre-lations (see Table 7). Since none of the zero-order correlations is depressed appreciably by partialing out SES, one can conclude that SES exerts little independent influence upon the magnitude of these relationships.

TABLE 7.--Correlation coefficients between SCA, GPA, PPEv, and PTEv with SES partialed out for all students.

Correlation	Zero-Order	SES Partialed Out
SCA-GPA	.5622	.5439
PPEv-GPA	.5208	.4994
PTEv-GPA	.5003	.4775
SCA-PPEv	.8130	.7951
SCA-PTEv	.7879	.7680
PPEv-PTEv	.7929	.7689

All r's significant beyond .01 level.

SCA

Correlations between SCA and the other variables, with the exception of SES, are positive and strong. The correlations between SCA and PPEv and between SCA and PTEv are very high, probably because all are expressions of expectations or of perceived expectations of student academic ability; the perceived evaluations, ostensibly originating in students' significant others, might be used as data for formation and maintenance of an SCA.

The relationship between SCA and GPA is strong (.5622), although not as strong as those between SCA and perceived evaluations. However, GPA is a behavioral variable and is probably influenced by more intervening variables than the perceived evaluations, which are

attitudinal variables. Variance in SCA accounts for more than 31 per cent (31.61%) of the variance in GPA, and vice-versa.

TABLE 8.--Correlation coefficients between SES, GPA, PPEv, and PTEv with SCA partialed out for all students.

Correlation	Zero-Order	SCA Partialed Out
SES-GPA	** .1705	- .0168
PPEv-GPA	** .5208	** .1322
PTEv-GPA	** .5003	** .1125
PTEv-PPEv	** .7929	** .4249

*Significant beyond .01.

SCA also influences other relationships. The SES-GPA correlation becomes virtually nonexistent when the influence of SCA is controlled, and the associations of PPEv and PTEv are appreciably diminished when SCA is partialed out. The PPEv-PTEv correlation, although depressed greatly by partialing out SCA, remains fairly strong.

PPEv

Correlations between PPEv and other variables, with the exception of SES, are positive and strong. The associations of PPEv with PTEv and SCA are marked.

TABLE 9.--Correlation coefficients between SCA, GPA, PTEv, and SES with PPEv partialed out for all students.

Correlation	Zero-Order	PPEv Partialed Out
SCA-GPA	** .5622	** .2794
SES-GPA	** .1705	- .0036
PTEv-GPA	** .5003	** .1679
SCA-PTEv	** .7879	** .4038

*Significant beyond .01.

The effects of PPEv upon other correlations are demonstrated by partialing out PPEv. SES and GPA lose all association, and the PTEv-GPA correlation decreases to a level which, while statistically significant, holds little operational significance. SCA and PTEv retain a strong association.

PTEv

The pattern of relationships of PTEv and the other variables is similar to that of PPEv. Correlations with SCA and PPEv are marked, the GPA-PTEv correlation is strong, and the SES-PTEv correlation is slight (see Table 10). Partialing out PTEv from the SES-GPA correlation weakens that correlation almost to zero. Both the SCA-GPA and the PPEv-GPA correlations, though depressed appreciably, retain a slight relationship, while the SCA-PPEv correlation is quite high after the partialing out of PTEv.

TABLE 10.--Correlation coefficients between SCA, GPA, PPEv, and SES with PTEv partialed out for all students.

Correlation	Zero-Order	PTEv Partialed Out
SCA-GPA	** .5622	** .3152
SES-GPA	** .1705	.0164
PPEv-GPA	** .5208	** .2352
SCA-PPEv	** .8130	** .5017

*Significant beyond .01.

SCA As An Intervening Variable

The data indicate that PPEv and PTEv influence GPA by operating through SCA, which thus operates as an intervening variable. Students possibly utilize data from the perceived evaluations to establish and maintain SCA. SCA is interpreted as an intervening variable by virtue of its exerting a greater depressive effect upon the PPEv-GPA and PTEv-GPA correlations than do PPEv or PTEv upon the SCA-GPA correlation.

Variables: 1 SCA
2 PPEv
3 PTEv
4 GPA

$$r_{14} = .5622 \quad r_{24} = .5208 \quad r_{34} = .5003$$

$$r_{14.2} = .2794 \quad r_{24.1} = .1322 \quad r_{34.1} = .1125$$

$$r_{14.3} = .3152 \quad r_{24.3} = .2352 \quad r_{34.2} = .1679$$

All correlations significant beyond .01.

Correlations by Branch

Separate correlations were computed within each branch to see if any branch varied from the others. For example, might Volksschule SCA correlate higher with Volksschule GPA than Gymnasium SCA with Gymnasium GPA? The patterns of correlations involving the variables of the entire sample are also found among the correlations among variables within the three branches.

SES

Correlations involving SES are weak, with none of them exceeding .22 and only six of the twelve being significantly different from zero. While all of the Gymnasium correlations are significant, only two of the four Volksschule correlations and none of the Mittelschule correlations are significant. The only consistent pattern for correlations involving SES seems to be smallness; SES does not demonstrate a strong tendency to change with any of the other variables.

SCA

SCA has strong associations with PPEv, PTEv, and GPA and a weak association with SES; the correlations with PPEv range between .69 and .82; those with PTEv, between .66 and .81; those with GPA, between .51 and .57. All of these correlations are significant at the .01 level.

PPEv

Correlations between PPEv and SCA, PPEv and PTEv, and GPA and PPEv are strong, with the PPEv-GPA correlations for each branch being lower than those between PPEv and PTEv and between PPEv and SCA. Correlations between PPEv and PTEv, GPA, and SCA are significant at the .01 level.

PTEv

Correlations involving PTEv follow the pattern of those involving PPEv, with the PTEv-SES correlations being weak, ranging from -.02 to .19; the Gymnasium correlation, .19, is significant at the .01 level, and the Volksschule correlation, .18, is significant at the .05 level. However, these correlations are not sufficiently large to have operational utility. PTEv demonstrates a strong relationship with GPA in all branches; the correlations, which range from .45 to .49, are significant at the .01 level.

Comparisons Between Branches

No consistent pattern emerges from comparing correlations of each branch; that is, no branch demonstrates consistently high or low correlations. While the SCA-PPEv, SCA-PTEv, PPEv-PTEv, and PPEv-GPA correlations of the Mittelschule are lower than those of the Gymnasium and the Volksschule, the PTEv-GPA and SCA-GPA Mittelschule correlations are not appreciably different from those of

TABLE 11.--Correlation coefficients between SES, SCA, PPEv, PTEv, and GPA for Gymnasium, Mittelschule, and Volksschule samples.

	SCA			PPEv			PTEv			GPA		
	G	M	V	G	M	V	G	M	V	G	M	V
SES	**.18	.04	*.17	**.22	-.05	.13	**.19	-.02	*.18	**.14	-.07	.08
SCA				**.82	**.69	**.81	**.77	**.66	**.81	**.57	**.51	**.52
PPEv							**.78	**.58	**.83	**.52	**.40	**.50
PTEv										**.49	**.46	**.45

*Significant at .05
**Significant at .01

G = Gymnasium; M = Mittelschule; V = Volksschule.

the other branches. This inconsistency is puzzling in light of the consistently smaller variances of the Mittelschule SCA, PPEv, PTEv, and GPA data in comparison to those of the other branches.

Partial Correlations Within Branches

Partial correlations within each branch indicate that SES exerts little independent influence upon any correlation in any branch; no correlation drops more than one point as a result of partialing out SES. As with the entire sample, SCA appears to operate within each sub-sample as an intervening variable between Perceived Evaluations and GPA; partialing out SCA from the PPEv-GPA and PTEv-GPA correlations for each branch depresses those correlations more than partialing out PPEv from PTEv-GPA or SCA-GPA and partialing out PTEv from PPEv-GPA from PPEv-GPA or SCA-GPA.

PPev exerts less influence upon correlations within the Mittelschule than within the other branches; for example, the Mittelschule SCA-GPA correlation of .51 drops to .36 when PPEv is partialed out, while the Gymnasium SCA-GPA correlation of .57 declines to .29 with the partialing out of PPEv, and the Volksschule correlation is reduced from 152 to .22 after PPEv is partialed out. While the Mittelschule SCA-GPA correlation is slightly lower than those of the other two branches, the Mittelschule SCA-GPA correlation with PPEv partialed out

TABLE 12.--Correlation coefficients between SES, SCA, PPEv, PTEv, and GPA for Gymnasium, Mittelschule, and Volksschule samples and partial correlation coefficients between SES, SCA, PPEv, PTEv, and GPA with each variable partialed out for Gymnasium, Mittelschule, and Volksschule samples.

	SCA			PPEv			PTEv			GPA		
	G	M	V	G	M	V	G	M	V	G	M	V
SES	**.18	.04	*.17	**.22	-.05	.13	**.19	-.02	*.18	**.14	-.07	.08
(SCA)	--	--	--	*.12	-.11	.08	.08	-.06	.08	.04	.11	.01
(PPEv)	.00	.10	.11	--	--	--	.03	.01	.14	.03	-.06	.01
(PTEv)	.05	.07	.03	*.11	-.05	.04	--	--	--	.05	-.07	.01
(GPA)	*.12	.09	.15	**.17	-.02	.10	*.14	.02	*.17	--	--	--
SCA				**.82	**.69	**.81	**.77	**.66	**.81	**.57	**.51	**.52
(SES)				**.81	**.69	**.81	**.77	**.66	**.80	**.56	**.52	**.52
(PPEv)				--	--	--	**.38	**.44	**.42	**.29	**.36	**.22
(PTEv)				**.55	**.50	**.43	--	--	--	**.34	**.31	**.30
(GPA)				**.75	**.61	**.75	**.69	**.55	**.75	--	--	--
PPEv							**.78	**.58	**.83	**.52	**.40	**.50
(SES)							**.77	**.58	**.82	**.51	**.40	**.50
(SCA)							**.40	**.23	**.49	*.12	.07	*.16
(PTEv)							--	--	--	**.26	*.18	**.26
(GPA)							**.70	**.48	**.78	--	--	--
PTEv										**.49	**.46	**.45
(SES)										**.48	**.46	**.45
(SCA)										*.10	*.19	.06
(PPEv)										**.16	**.31	.07
(GPA)										--	--	--

*Significant at .05
**Significant at .01

G = Gymnasium; M = Mittelschule; V = Volksschule. Partialed out variable indicated parenthetically.

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is larger. This minimal tendency of PPEv to affect
Mittelschule correlations is also reflected in correlations
between SES and all other variables, between PTEv and SCA,
and between PTEv and GPA.

This tendency may indicate a deprecation of parental
expectations by Mittelschule students; perhaps these students
perceive their parents as being unsure about an appropriate
level of academic performance. This possibility is not
supported by data, however, and is intended merely as con-
jecture.

It can be seen that while partialing either PPEv or
PTEv decreases the SCA-GPA correlation, that decrease is
not as great as either of those which occur in the PPEv-GPA
or PTEv-GPA relationships when SCA is partialed out. Again,
SCA appears to operate as an intervening variable between
Perceived Evaluations and GPA.

Branch Attended

In order to examine the relationships of branch
attendance with SCA, PPEv, PTEv, and GPA, two analyses
were employed. First, Kendall's Tau was used to correlate
the five variables with each other; the effects of branch
variance were then partialed out of the other correlations.

The correlation between Branch and GPA is low,
possibly due in part to the low range of the three point
scale used to define branch. This possible artifact,
however, does not negate a conceivable relationship between

TABLE 13.--Kendall's Tau between SCA, PPEv, PTEv, GPA, and branch and partial correlations between SCA, PPEv, PTEv, and GPA with branch partialed out.

	SCA	PPEv	PTEv	GPA
Branch	.21*	.32*	.30*	.14*
SCA		.66*	.63*	.42*
Branch partialed out		.64	.61	.40
PPEv			.64*	.39*
Branch partialed out			.61	.36
PTEv				.37*
Branch partialed out				.35

*Correlation significant at the .01 level.

No test extant for significance of partial correlation.

Branch and GPA. In fact, the Scheffé comparisons indicated that GPA did vary as a function of Branch. The apparent discrepancy between the results of Kendall's Tau and the Scheffé comparisons can be reconciled by considering the difference in the natures of the statistical procedures. The correlations examine the tendency of two variables to change together; the Scheffé comparisons test the differences among sample means. The failure of the two variables to exhibit a correlational effect does not imply the absence of other differences in the data.

The correlation between Branch and SCA is lower than the Branch-PPEv and the Branch-PTEv correlations. This difference indicates that Branch and SCA do not

increase or decrease with a high degree of similarity, but again, Scheffé contrasts indicate differences between the SCA of the branches irrespective of the rates of change of SCA within each branch. It is noteworthy, however, that the Branch-SCA correlation is lower than either the Branch-PPEv or the Branch PTEv correlation. This does not seem to be due to statistical artifact; the standard deviation of SCA is greater than that of either PPEv or PTEv, and the range of SCA is also greater than the range of PPEv or PTEv. However, the reason for this pattern is unknown.

Partialing the variance of Branch from the other correlations produces little change, in no case greater than three points. It is apparent, then, that the effects of branch membership exert little, if any, independent influence upon the relationships among the other variables. This does not mean that branch membership is not related to change in other variables; those relationships were demonstrated by the Scheffé contrasts.

Predicting SCA from GPA, SES, Branch, PPEv, and PTEv

Multiple regression was used to see how effective GPA, SES, Branch, PPEv, and PTEv were in predicting SCA. The data indicate that Branch, relative to the other independent variables, adds little to prediction of SCA. The total set of five variables accounts for 74 per cent of the variance of SCA; deleting Branch from this set

TABLE 14.--Multiple regression coefficients: using GPA, SES, Branch, PPEv, PTEv to predict SCA within total sample.

Delete	Use	R^2
None	All	.74
2	1345	.74
4	1235	.66
5	1234	.69
1	2345	.72
3	1245	.73
24	135	.66
25	134	.69
12	345	.72
23	145	.73
45	123	.37
14	235	.62
34	125	.66
15	234	.66
35	124	.69
13	245	.72
245	13	.35
124	35	.62
234	15	.66
125	34	.66
235	14	.69
123	45	.72
145	23	.11
345	12	.35
134	25	.62
135	24	.66
1245	3	.08
2345	1	.31
1235	4	.66
1345	2	.08
1234	5	.62

Legend: 1 = GPA; 2 = SES; 3 = Branch; 4 = PPEv; 5 = PTEv.

R^2 is the square of the correlation coefficient of the dependent variable and the independent variable or variables and represents the percentage of variance of the dependent variable predicted by variance of the independent variable or variables.

depresses predicted variance to .73. Further, it adds or detracts little or nothing from other predictors. GPA accounts for 31 per cent of SCA variance; GPA and Branch together predict 35 per cent. SES accounts for eight per cent of SCA variance; SES and branch predict 11 per cent. PPEv accounts for 66 per cent of SCA variance, while the inclusion of branch does nothing to R^2. Similarly, PTEv accounts for 62 per cent of SCA variance, but using Branch as an additional predictor does not change R^2. Finally, Branch alone accounts for but eight per cent of the variance in SCA. These results cast doubt upon the influence of branch attendance upon SCA of these students; it is possible that after four years in a branch, these students have adopted their classmates as their reference group and no longer compare themselves to agemates in other branches.

Similarly, SES adds or detracts little from the predictive power of the other independent variables. GPA predicts 31 per cent of SCA variance, but GPA and SES together predict but 35 per cent of SCA variance. Branch predicts eight per cent of SCA variance, while Branch and SES operating in concert predict only 11 per cent. While GPA and Branch together predict 35 per cent of SCA variance, GPA, Branch, and SES predict 37 per cent. SES adds nothing to the predictive powers of PPEv, PTEv, PPEv and PTEv, GPA and PPEv, or GPA and PTEv. Finally, SES predicts only eight per cent of SCA variance. In sum,

then, SES is of little utility in predicting SCA in this
study.

GPA, used alone, accounts for 31 per cent of the
SCA variance, a finding accounted for by the theoretical
postulation of a dynamic between self-concept and the
environment; GPA is part of the environment used to evolve
and maintain SCA, and it is a tangible consequence of one's
self-conception. However, while it increases the resultant
R^2 of both SES and Branch from .08 to .35, these increases
seem to be largely a function of GPA variance and not of
any interaction between GPA and SES or between GPA and
Branch. Further inclusion of GPA with PPEv, PTEv, or PPEv
and PTEv produces little appreciable increase in any R^2.

The most effective predictive combination seems to
be PPEv and PTEv, which accounts for 72 per cent of a
possible 74 per cent of the SCA variance. Addition of other
variables adds little to this combination's predictive
power; GPA increases R^2 to .73, and neither SES nor Branch
changes R^2. The combined power of PPEv and PTEv, however,
is only slightly greater than the power of either operating
alone; each accounts for 66 per cent of the variance of SCA.

These relationships indicate that while the most
effective predictor of SCA is the combination of PPEv and
PTEv, either PPEv or PTEv is adequate operating alone. The
high regression coefficients derived from PPEv, PTEv, and
PPEv and PTEv are no doubt spuriously high because of the
inextricable confounding of PPEv, PTEv, and SCA.

TABLE 15.--Multiple regression coefficients: using GPA, SES, PPEv, PTEv, to predict SCA within each branch.

Delete	Use	Gymnasium R^2	Mittelschule R^2	Volksschule R^2
None	All	.74	.61	.73
2	145	.73	.60	.73
4	125	.65	.49	.69
5	124	.70	.55	.68
1	245	.70	.58	.72
24	15	.65	.49	.69
25	14	.69	.54	.68
12	45	.72	.57	.72
45	12	.35	.27	.28
14	25	.60	.43	.66
15	24	.67	.47	.66
245	1	.32	.26	.27
124	5	.60	.43	.66
125	4	.67	.47	.66
145	2	.05	.00	.02

Legend: 1 = GPA; 2 = SES; 4 = PPEv; 5 = PTEv.

Predicting SCA from GPA, SES, PPEv, PTEv, within Each Branch

The most obvious discrepancy among branches is the systematically lower R^2 for Mittelschule; this seems to be a consequence of the lower Mittelschule variances.

Using GPA, SES, PPEv, and PTEv to predict SCA within each branch yields the same patterns evident in the entire sample. SES is relatively ineffective, accounting for five per cent of SCA variance in the Gymnasium, two per cent of SCA variance in the Volksschule, and none in the Mittelschule. Deleting SES from the four-predictor

set does not affect the accounted-for variance in the Volksschule and depresses the Gymnasium R^2 and the Mittelschule R^2 but one point. Addition of SES to other predictors produces a maximum increase in prediction of one point, and deletion of SES from other combinations produces similar negligible results. SES, then, is ineffective as a predictor of SCA within each branch, whether operating alone or in combination with other variables.

GPA has some utility, predicting 32 per cent of the Gymnasium variance, 26 per cent of the Mittelschule variance, and 27 per cent of the Volksschule variance. It does not, however, appreciably increase the percentage of SCA variance accounted for by PPEv and PTEv operating together. PPEv and PTEv account for 72 per cent of the possible 74 per cent of Gymnasium variance, 57 per cent of the possible 61 per cent of the Mittelschule variance, and 72 per cent of the possible 73 per cent of the Volksschule variance. Including GPA with PPEv produces little increase in R^2 in any branch; from .72 to .73 in the Gymnasium, from .57 to .60 in the Mittelschule, and from .72 to .73 in the Volksschule. However, little gain in R^2 could be expected because of the high correlations between PPEv, PTEv, and SCA. It is possible, however, that GPA operates through the perceived evaluations to affect SCA.

This possibility gains credibility when the relationships between perceived evaluations and SCA are

examined. PPEv accounts for 67 per cent of <u>Gymnasium</u>

SCA variance, 47 per cent of <u>Mittelschule</u> SCA variance,

and 66 per cent of <u>Volksschule</u> variance. PTEv accounts

for 60 per cent of <u>Gymnasium</u> variance, 43 per cent of

<u>Mittelschule</u> SCA variance, and 66 per cent of <u>Volksschule</u>

SCA variance. Since these variances are larger than those

accounted for by GPA, it is possible that the students

place more importance upon perceived evaluations than GPA

in forming and maintaining self-concept of academic

ability. More accurately, the student's self-concept is a

social-psychological construct, and empirical data must be

converted into a social-psychological frame of reference to

have an effect upon self-concept. It is possible that GPA

operates upon SCA through perceived evaluations and that

PPEv and PTEv operate as intervening variables.

Differences exist in relative importance of PPEv

and PTEv among branches. PPEv accounts for 67 per cent of

the <u>Gymnasium</u> SCA variance, and PTEv accounts for 60 per

cent. In the <u>Mittelschule</u>, PPEv accounts for 47 per cent

of the SCA variance and PTEv, 43 per cent. PPEv and PTEv

each account for 66 per cent of SCA variance in the

<u>Mittelschule</u>. Deleting PPEv drops R^2 more than deleting

PTEv in both <u>Gymnasium</u>, <u>Mittelschule</u>, but deleting PTEv

results in a slightly larger decrease than dropping PPEv

in the <u>Gymnasium</u>. These results indicate that both

<u>Gymnasium</u> students and <u>Mittelschule</u> students place slightly

more importance upon the perceived evaluations of their parents than they do those of their teachers, while Volksschule students place equal importance upon them.

In the next chapter, these findings will be examined in the light of prior findings and theory, and recommendations for further study will be made.

CHAPTER V

SUMMARY AND CONCLUSION

Introduction

This study was conceived as an examination of the correlates of the self-concepts of academic ability held by West German eighth-grade students and the branch of the school system they attended. Its primary objectives were to test the relationships between student self-concept of academic ability, perceived evaluations of others, and academic achievement, and to identify any differences in these relationships among the three branches.

The basic theory of the study, drawn from George Herbert Mead and explained in greater detail in Chapter II, suggests that most human behavior is a function of one's conception of himself and that his self-concept is largely learned through interaction with others. This theory, when applied to learning behavior, suggests that an individual may place a ceiling upon his learning ability if he perceives that others believe him to be unable to exceed that ceiling; research evidence cited in Chapter III supports this view but does not confirm it.

Summary

Using this theoretical perspective, a number of hypotheses and questions were devised. These will now be examined. In this examination, SCA signifies self-concept of academic ability; PPEv, perceived parental evaluation; PTEv, perceived teacher evaluation; SES, family socio-economic status; GPA, grade-point average. These variables were operationally defined in Chapter III.

SCA

The first hypothesis, "No difference will be found between mean SCA of the Gymnasium sample, mean SCA of the Mittelschule sample, and mean SCA of the Volksschule sample," was rejected. Gymnasium SCA was found to be significantly greater than Mittelschule SCA and Volksschule SCA, but Mittelschule SCA, while greater than Volksschule SCA, was not significantly greater.

PPEv

The second hypothesis, "No difference will be found between mean PPEv of the Gymnasium sample, mean PPEv of the Mittelschule sample, and mean PPEv of the Volksschule sample," was rejected. Gymnasium PPEv was significantly greater than Mittelschule PPEv and Volksschule PPEv, but Mittelschule PPEv, while greater than Volksschule PPEv, was not significantly greater.

PTEv

The third hypothesis, "No difference will be found between mean PTEv of the Gymnasium sample, mean PTEv of the Mittelschule sample, and mean PTEv of the Volksschule sample," was rejected. Gymnasium PTEv was greater than Mittelschule PTEv and Volksschule PTEv, and Mittelschule PTEv was greater than Volksschule PTEv.

SES

The fourth hypothesis, "No difference will be found between mean SES of the Gymnasium sample, mean SES of the Mittelschule sample, and mean SES of the Volksschule sample," was rejected. Gymnasium SES was greater than Mittelschule SES and Volksschule SES, and Mittelschule SES was greater than Volksschule SES.

GPA

The fifth hypothesis, "No difference will be found between mean GPA of the Gymnasium sample, mean GPA of the Mittelschule sample, and mean GPA of the Volksschule sample," was rejected. Gymnasium GPA was significantly greater than Mittelschule GPA and Volksschule GPA, but Volksschule GPA, while greater than Mittelschule GPA, was not significantly greater.

Discussion of Major Hypotheses

Although the findings were apparently inconsistent, a pattern of Gymnasium Mittelschule Volksschule was

evident for SCA, PPEv, and PTEv. While these relationships were not consistently significant, they hint at something more than chance relationships. Gymnasium students view themselves as being more able students than do either Mittelschule or Volksschule students, and they see this evaluation reflected by their teachers and parents. It is unclear, however, whether students in any branch compared themselves to students in other branches while indicating their self-concepts of academic ability.

The differences in GPA among the three branches raised some questions about the extent to which each branch met student abilities; one of the assumptions of branching is that learning activities appropriate to a narrow range of abilities can be engineered more easily than if a wide range of abilities must be considered. Were this the case, greater equivalence of GPA among the branches might be expected.

SES and branch varied directly, with Gymnasium SES the highest and Volksschule SES, the lowest, indicating an apparent SES bias. However, this bias may be a consequence of other factors being confounded with SES.

Correlational Analyses

The correlations between major variables were comparable to those found by Brookover on an American sample of similar age (111). The comparisons are:

Correlation	West German	American
SCA x GPA	.56	.55
SCA x PPEv	.81	.71
SCA x PTEv	.79	.67
PPEv x GPA	.52	.47
PTEv x GPA	.50	.41

While the SCA x GPA correlation of this study is comparable to that of Brookover's, the other correlations are higher. Perhaps West German eighth-grade students are more attuned to the perceptions of their elders than are their American contemporaries.

Data from the present study indicated that SCA correlated higher with GPA than perceived evaluations, and further analysis indicated that SCA operated as an intervening variable between GPA and perceived evaluations.

SES demonstrated a low correlation with SCA and GPA, and partialing it out from other correlations yielded minimal decreases. However, since students may have misunderstood the SES items on the questionnaire, these findings are tentative.

Differences in Correlations
Between Branches

Within all branches, SCA demonstrated the highest correlation with GPA; PPEv and PTEv, while exhibiting strong correlations, were not as strong. Correlations within the Mittelschule were, with the exception of SCA x GPA, systematically lower. While this may have been a

consequence of low variances on all variables within the Mittelschule, no definitive explanation can be presented.

Regression Analysis

Multiple regression indicated that PPEv and PTEv were the most powerful predictors of SCA. However, since the three variables are confounded operationally and social-psychologically, this might be expected. The SCA, PPEv, and PTEv scales use similar wording, and subjects might develop a response set because of the similarity. Of course, the theory used to develop the scales posited a confounding of these factors.

Branch was found to be an ineffective predictor of SCA; while Gymnasium SCA was found to be greater than either Mittelschule SCA or Volksschule SCA, branch did not account for any appreciable variance in SCA. A Kendall partial correlation yielded a similar result. This may indicate that students adopt their classmates as a reference group and do not compare their abilities to those of all agemates.

Differences in Regression Coefficients Between Branches

Regression analyses within each branch also indicated that PPEv and PTEv were the most effective predictors of SCA. Two discrepancies were apparent. Mittelschule coefficients were systematically lower than

Gymnasium and Volksschule coefficients, possibly because of lower Mittelschule variances. Second, Volksschule PTEv accounted for a larger percentage of Volksschule SCA variance than Gymnasium PTEv or Mittelschule PTEv for Gymnasium SCA or Mittelschule SCA, although the correlation coefficients between PTEv and SCA are almost identical for the three branches. While Volksschule PTEv variance is higher than the others, this does not seem an adequate explanation; Volksschule PPEv variance is also higher than the others, and the correlations of PPEv and SCA for Gymnasium and Volksschule are also similar, yet there is no discrepancy between percentage of SCA variance accounted for by Volksschule PPEv or by Gymnasium PPEv.

Conclusions

The data presented support the principal points of the theory. The high correlations between SCA and GPA indicate a strong relationship between an individual's evaluation of his ability to achieve academically and his academic achievement. Further, the high correlations between SCA and perceived evaluations lend credence to the notion that one's self-concept is in large part a reflection of perceived conceptions held of him by others. However, the correlations are not perfect, indicating that self-concept is something more than a social mirror turned inward. Since partialing SCA from correlations involving perceived evaluations and GPA depresses those

correlations more than does partialing perceived evalua-
tions from SCA x GPA correlations, SCA seems to operate
as an intervening variable between perceived evaluations
and individual behavior.

While Gymnasium students held higher SCA, PPEv,
and PTEv than Mittelschule and Volksschule students,
Mittelschule and Volksschule students held similar SCA
and PPEv. This may indicate that the four-year period
which these students spent in their respective branches
cut them off from their age-mates; they seem to have
identified their branch as their reference group. Perhaps
they have been "cooled out" of the academic ladder at a
relatively lower level than Clark described (51).

Suggestions for Further Study

The most obvious next step is a carefully con-
trolled longitudinal study involving a group of West
German children from first grade through the end of
school. Such a study would control for possible effects
of selection and treatment and thereby generate more
accurate knowledge regarding the relationship between
academic segregation and self-concept of academic ability.

Research is also needed in the area of student
reference groups to investigate the extent to which
students might adopt new reference groups in the course
of their schooling. Do children at a given academic level

use classmates or agemates as reference persons? Does
this vary as a function of self-concept of academic
ability?

Finally, there is an urgent need for research
directed at identifying the mechanisms through which
students acquire their self-concepts of academic ability
in the classroom, at home, with friends, and in other
settings. Until these mechanisms are accurately described,
little can be done to change student self-concept of
ability in a permanent fashion.

Implications for Education

The chief thrust of this study has been that
persons come to view themselves in a large measure as a
response to the way that they perceive others evaluate
them. An implication of this human characteristic is that
we are all, however tenuously, bound to one another in the
sense that we can have impact upon one another. The great
tragedy is that we seem relatively unaware of our impact
and of our fellowship and of our love.

While the study has hinted at a rather cold
blooded social behaviorism as a technique for improving
student self-concept of academic ability, this orientation
presupposes that the primary, if not the only, function of
schooling is to produce children able to perform well at
academic tasks. The author does not deny that academic
learning is a crucial function of schooling, but he hopes

that the goal of that learning can somehow be expanded to include more human phenomena or that more human phenomena can be expended and included in the pursuit of conventional learnings. Most of the research involving change of self-concept or change of behavior cited in this study was couched in non-humane terms.

Perhaps there is a better way. Recent research by Aspy (107) and by Aspy and Hadlock (108) indicated that students of teachers who were highly empathic and non-possessively warm achieved greater gains on four of the five subtests of the Stanford Achievement Test over a year than did students of less empathic, warm teachers. Since the students of each type of teacher were matched for sex and pre-treatment IQ, it seems plausible that teacher empathy and warmth had something to do with the student gains. Indeed, this may be the mechanism which accounted for the gains reported by Rosenthal and Jacobson (28).

Wolfensberger (105), in a discussion of psychiatric institutions, proposed that the most effective strategy for evoking normal behavior from neurotics was to treat them as normal persons whenever possible, citing clinical research evidence in support of the proposition that clients tend to respond to new expectations with new behaviors. Might we begin to expect empathy and warmth from each other?

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APPENDICES

APPENDIX A

SELF-CONCEPT OF ACADEMIC ABILITY

SCALE IN GERMAN

SELF-CONCEPT OF ACADEMIC ABILITY SCALE

IN GERMAN

Für jede der folgenden Fragen kreise bitte den Buchstaben
vor der Antwort ein, die am besten Deine Meinung widergibt.
Gib immer nur jeweils eine Antwort.

1. Wie schätzt Du Dich ein, wenn Du Deine Fahigkeit, in der
   Schule zu lernen, mit der Deiner besten Freunde
   vergleichst?

   a. als der Beste
   b. als über dem Durchschnitt stehend
   c. als durchschnittlich
   d. als unter dem Durchschnitt stehend
   e. als der Schlechteste

2. Wie schatzt Du Dich ein, wenn Du Deine Fahigkeit, in der
   Schule zu lernen, mit der Deiner Klassenkameraden
   vergleichst?

   a. als der Beste
   b. als über dem Durchschnitt stehend
   c. als durchschnittlich
   d. als unter dem Durchschnitt stehend
   e. als der Schlechteste

3. Wenn Du an die Abgangsklasse denkst--wie wirst Du Deiner
   Meinung nach abschneiden?

   a. als der Beste
   b. als über dem Durchschnitt stehend
   c. als durchschnittlich
   d. als unter dem Durchschnitt stehend
   e. als der Schlechteste

4. Glaubst Du, dass Du mit Erfolg bis zum Abschluss zum
   Gymnasium gehen, also das Abitur bestehen kannst?

   a. ja, bestimmt
   b. wahrscheinlich ja
   c. bin mir nicht sicher
   d. wahrscheinlich nicht
   e. nein

5. Wie würdest Du dabei abschneiden, verglichen mit den Leistungen Deiner Klassenkameraden?

      a. als der Beste
      b. als über dem Durchschnitt stehend
      c. als durchschnittlich
      d. als unter dem Durchschnitt stehend
      e. als der Schlechteste

6. Um Doktor, Rechtsanwalt oder Professor zu werden, muss man mindestens vier Jahre an einer Universität studieren. Glaubst Du, dass Du das schaffen kannst?

      a. höchstwahrscheinlich ja
      b. ich denke schon
      c. bin mir nicht sicher
      d. ich glaube nicht
      e. bestimmt nicht

7. Denke bitte für einen Augenblick nicht daran, wie andere Menschen Deine Leistungen einschätzen. Wie schätzt Du selber Deine Leistungen ein?

      a. als sehr gut
      b. als gut
      c. als durchschnittlich
      d. als unter dem Durchschnitt stehend
      e. als erheblich unter dem Durchschnitt stehend

8. Welche Zensuren glaubst Du bekommen zu können, wenn Du nur wolltest?

      a. vor allem Einsen
      b. vor allem Zweien
      c. vor allem Dreien
      d. vor allem Vieren
      e. vor allem Fünfen

APPENDIX B

SELF-CONCEPT OF ABILITY--GENERAL

(FORM A)

SELF-CONCEPT OF ABILITY--GENERAL*
(FORM A)

Circle the letter in front of the statement which best
answers each question.

1. How do you rate yourself in school ability compared
   with your close friends?

   a. I am the best
   b. I am above average
   c. I am average
   d. I am below average
   e. I am the poorest

2. How do you rate yourself in school ability compared
   with those in your class at school?

   a. I am among the best
   b. I am above average
   c. I am average
   d. I am below average
   e. I am among the poorest

3. Where do you think you would rank in your class in
   high school?

   a. among the best
   b. above average
   c. average
   d. below average
   e. among the poorest

4. Do you think you have the ability to complete college?

   a. yes, definitely
   b. yes, probably
   c. not sure either way
   d. probably not
   e. no

_____

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5. Where do you think you would rank in your class in college?

       a. among the best
       b. above average
       c. average
       d. below average
       e. among the poorest

6. In order to become a doctor, lawyer, or university professor, work beyond four years of college is necessary. How likely do you think it is that you could complete such advanced work?

       a. very likely
       b. somewhat likely
       c. not sure either way
       d. unlikely
       e. most unlikely

7. Forget for a moment how others grade your work. In your own opinion how good do you think your work is?

       a. my work is excellent
       b. my work is good
       c. my work is average
       d. my work is below average
       e. my work is much below average

8. What kind of grades do you think you are capable of getting?

       a. mostly A's
       b. mostly B's
       c. mostly C's
       d. mostly D's
       e. mostly E's

APPENDIX C

PERCEIVED PARENTAL EVALUATION SCALE

IN GERMAN

PERCEIVED PARENTAL EVALUATION SCALE

IN GERMAN

Bitte beantworte die folgenden Fragen so, wie Deine Eltern
sie Deiner Meinung nach beantworten würden. Falls Du nicht
bei Deinen Elternwohnst, antworte bitte für die Familie,
bei der Du wohnst, Kreise bitte wieder für jede Frage den
Buchstaben vor der Antwort ein, die am besten die Ansicht
Deiner Eltern wiedergibt.

1. Wenn Deine Eltern Dich mit den anderen Schülern Deines
    Alters vergleichen würden, was glaubst Du, wie sie
    Deine Fähigkeit zu lernen einschätzen?

            a. als einen der Besten
            b. als über dem Durchschnitt stehend
            c. als durchschnittlich
            d. als unter dem Durchschnitt stehend
            e. als einen der Schlechtesten

2. Wie glaubst Du schätzen Deine Eltern Dein wahrschein-
    liches Abschneiden in der Abgangsklasse ein?

            a. unter den Besten
            b. als über dem Durchschnitt stehend
            c. als durchschnittlich
            d. als unter dem Durchschnitt stehend
            e. als einen der Schlechtesten

3. Glaubst Du, dass Deine Eltern der Meinung sind, Du
    könntest erfolgreich bis zum Abschluss zum Gymnasium
    gehen, also das Abitur bestehen?

            a. sie glauben, ich könnte es bestimmt schaffen
            b. sie glauben, ich könnte es wahrscheinlich
                schaffen
            c. bin mir nicht sicher
            d. sie glauben, ich könnte es wahrscheinlich
                nicht schaffen
            e. sie glauben, ich könnte es bestimmt nicht
                schaffen

4. Um Doktor, Rechtsanwalt oder Professor zu werden, muss man mindestens vier Jahre an einer Universität studieren. Würden Deiner Meinung nach Deine <u>Eltern</u> es für wahrscheinlich halten, dass Du das schaffen könntest?

    a. sie glauben, ich könnte es bestimmt schaffen
    b. sie glauben, ich könnte es wahrscheinlich schaffen
    c. bin mir nicht sicher
    d. sie glauben, ich könnte es wahrscheinlich nicht schaffen
    e. sie glauben, ich könnte es bestimmt nicht schaffen

5. Was glaubst Du denken Deine <u>Eltern</u>, welche Zensuren Du im allgemeinen bekommen könntest, wenn Du nur wolltest?

    a. vor allem Einsen
    b. vor allem Zweien
    c. vor allem Dreien
    d. vor allem Vieren
    e. vor allem Fünfen

APPENDIX D

PERCEIVED PARENTAL EVALUATION SCALE

IN ENGLISH

PERCEIVED PARENTAL EVALUATION SCALE

Please answer the following questions as you think your parents would answer them. If you are not living with your parents answer for the family with whom you are living.

Circle the letter in front of the statement that best answers each question.

1. How do you think your PARENTS would rate your school ability compared with other students your age?

   a. Among the best
   b. Above average
   c. Average
   d. Below average
   e. Among the poorest

2. Where do you think your PARENTS would say you would rank in your high school graduating class?

   a. Among the best
   b. Above average
   c. Average
   d. Below average
   e. Among the poorest

3. Do you think that your PARENTS would say you have the ability to complete college?

   a. Yes, definitely
   b. Yes, probably
   c. Not sure either way
   d. Probably not
   e. Definitely not

4. In order to become a doctor, lawyer, or university professor, work beyond four years of college is necessary. How likely do you think your PARENTS would say it is that you could complete such advanced work?

   a. Very likely
   b. Somewhat likely
   c. Not sure either way
   d. Somewhat unlikely
   e. Very unlikely

5. What kind of grades do you think your PARENTS would say you are capable of getting in general?

    a. Mostly A's
    b. Mostly B's
    c. Mostly C's
    d. Mostly D's
    e. Mostly E's

APPENDIX E

PERCEIVED TEACHER EVALUATION SCALE

IN GERMAN

PERCEIVED TEACHER EVALUATION SCALE

IN GERMAN

Denke bitte an den Lehrer, den Du am meisten magst.
Beantworte bitte die folgenden Fragen so, wie dieser Lehrer
sie Deiner Meinung nach beantworten würde. Kreise bitte
wieder für jede Frage den Buchstaben vor der Antwort ein,
die am besten die Ansicht dieses Lehrers wiedergibt.

1. Wie wird wohl dieser Lehrer Dein Fähigkeit, in der
    Schule zu lernen, einschatzen, wenn er Dich mit den
    anderen Schulern Deines Alters vergleicht?

        a. als einen der Besten
        b. als über dem Durchschnitt stehend
        c. als durchschnittlich
        d. als unter dem Durchschnitt stehend
        e. als einen der Schlechtesten.

2. Wie glaubst Du schätzt dieser Lehrer Dein wahrschein-
    liches Abschneiden in der Abgangsklasse ein?

        a. unter den Besten
        b. als über dem Durchschnitt stehend
        c. als durchschnittlich
        d. als unter dem Durchschnitt stehend
        e. unter den Schlechtesten

3. Glaubst Du, dass dieser Lehrer der Meinung ist, Du
    könntest erfolgreich bis zum Abschluss ans Gymnasium
    gehen, also das Abitur bestehen?

        a. er glaubt, ich könnte es bestimmt schaffen
        b. er glaubt, ich könnte es wahrscheinlich
            schaffen
        c. bin mir nicht sicher
        d. er glaubt, ich könnte es wahrscheinlich
            nicht schaffen
        e. er glaubt, ich könnte es bestimmt nicht
            schaffen

4. Um Doktor, Rechtsanwalt oder Professor zu werden, muss man mindestens vier Jahre an einer Universität studieren. Wurde Deiner Meinung nach dieser <u>Lehrer</u> es für wahrscheinlich halten, dass Du das schaffen könntest?

        a. er glaubt, ich könnte es bestimmt schaffen
        b. er glaubt, ich könnte es wahrscheinlich schaffen
        c. bin mir nicht sicher
        d. er glaubt, ich könnte es wahrscheinlich nicht schaffen
        e. er glaubt, ich könnte es bestimmt nicht schaffen

5. Was glaubst Du denkt dieser <u>Lehrer</u>, welche Zensuren Du im allgemeinen bekommen könntest, wenn Du nur wolltest?

        a. vor allem Einsen
        b. vor allem Zweien
        c. vor allem Dreien
        d. vor allem Vieren
        e. vor allem Fünfen

APPENDIX F

PERCEIVED TEACHER EVALUATION SCALE

IN ENGLISH

PERCEIVED TEACHER EVALUATION SCALE

Think about your favorite teacher--the one you like best;
the one you feel is most concerned about your schoolwork.
Now answer the following questions as you think this TEACHER
would answer them.

Circle the letter in front of the statement which best
answers each question.

1. How do you think this TEACHER would rate your school
   ability compared with other students your age?

   a. Among the best
   b. Above average
   c. Average
   d. Below average
   e. Among the poorest

2. Where do you think this TEACHER would say you would
   rank in your high school graduating class?

   a. Among the best
   b. Above average
   c. Average
   d. Below average
   e. Among the poorest

3. Do you think that this TEACHER would say you have the
   ability to complete college?

   a. Yes, definitely
   b. Yes, probably
   c. Not sure either way
   d. Probably not
   e. Definitely not

4. In order to become a doctor, lawyer, or university
   professor, work beyond four years of college is neces-
   sary. How likely do you think this TEACHER would say
   it is that you could complete such advanced work?

   a. Very likely
   b. Somewhat likely
   c. Not sure either way
   d. Somewhat unlikely
   e. Very unlikely

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5. What kind of grades do you think this TEACHER would
    say you are capable of getting in general?

        a. Mostly A's
        b. Mostly B's
        c. Mostly C's
        d. Mostly D's
        e. Mostly E's

APPENDIX G

SCHEFFÉ POST-HOC CONTRASTS

SCHEFFÉ POST-HOC CONTRASTS

TABLE 1.--Mean Gymnasium SCA vs. mean Mittelschule SCA;
mean Mittelschule SCA vs. mean Volksschule SCA.

Contrast	$\hat{\psi}_i = \bar{Y}_k - \bar{Y}_j$	S	Standard Error of $\hat{\psi}_i$	Significant
Gymnasium vs. Mittelschule	1.837	2.449	.354	Yes
Mittelschule vs. Volksschule	.666	2.449	.423	No

Legend: $\hat{\psi}_i$ is the symbol for the contrast of interest. Y_k and Y_j represent the sample mean of the kth and jth group. S is the Scheffé constant which is equal to

$$\sqrt{(J-1)} \ F_{J-1,N-J}^{(.05)}$$

where J is the number of groups and N is the number of subjects. The significance level is .05.

TABLE 2.--Mean Gymnasium PPEv vs. mean Mittleschule PPEv
mean Mittelschule PPEv vs. mean Volksschule PPEv.

Contrast	$\hat{\psi}_i = \bar{Y}_k - \bar{Y}_j$	S	Standard Error of $\hat{\psi}_i$	Significant
Gymnasium vs. Mittelschule	2.186	2.449	.276	Yes
Mittelschule vs. Volksschule	.732	2.449	.330	No

Legend: See Table 1.

TABLE 3.--Mean Gymnasium PTEv vs. mean Mittelschule PTEv; mean Mittelschule PTEv vs. mean Volksschule PTEv.

Contrast	$\hat{\psi}_i = \overline{Y}_k - \overline{Y}_j$	S	Standard Error of $\hat{\psi}_i$	Significant
Gymnasium vs. Mittelschule	1.927	2.449	.672	Yes
Mittelschule vs. Volksschule	.900	2.449	.804	Yes

Legend: See Table 1.

TABLE 4.--Mean Gymnasium SES vs. mean Mittelschule SES; mean Mittelschule SES vs. mean Volksschule SES.

Contrast	$\hat{\psi}_i = \overline{Y}_k - \overline{Y}_j$	S	Standard Error of $\hat{\psi}_i$	Significant
Gymnasium vs. Mittelschule	-.833	2.449	.078	Yes
Mittelschule vs. Volksschule	-.308	2.449	.094	Yes

Legend: See Table 1.

TABLE 5.--Mean Mittelschule GPA vs. mean Volksschule GPA; mean Gymnasium GPA vs. mean Volksschule GPA.

Contrast	$\hat{\psi}_i = \overline{Y}_k - \overline{Y}_j$	S	Standard Error of $\hat{\psi}_i$	Significant
Mittelschule vs. Volksschule	.138	2.449	.167	No
Gymnasium vs. Volksschule	-.201	2.449	.142	Yes

Legend: See Table 1.

APPENDIX H

STANDARD DEVIATIONS OF ALL VARIABLES

FOR TOTAL SAMPLE AND FOR EACH BRANCH

STANDARD DEVIATIONS OF ALL VARIABLES

FOR TOTAL SAMPLE AND FOR EACH BRANCH

	SES	SCA	PPEv	PTEv	GPA
TOTAL Sample	1.00	4.09	3.32	3.28	.65
Gymnasium	.99	3.92	3.06	3.03	.63
Mittelschule	.76	3.12	2.66	2.57	.55
Volksschule	.64	4.65	3.45	3.51	.71

APPENDIX I

MEANS OF ALL VARIABLES FOR TOTAL SAMPLE

AND FOR EACH BRANCH

MEANS OF ALL VARIABLES FOR TOTAL SAMPLE

AND FOR EACH BRANCH

	SES	SCA	PPEv	PTEv	GPA
TOTAL Sample	4.12	25.60	17.10	17.06	3.20
Gymnasium	3.67	26.63	18.25	18.14	3.08
Mittleschule	4.50	24.79	16.07	16.21	3.42
Volksschule	4.81	23.92	15.34	15.30	3.28