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AUTHOR Starr, B. James; And Others
INSTITUTION Johns Hopkins Univ., Baltimore, Md. Center for the Study of Social Organization of Schools.
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ABSTRACT

The present investigation reviews the racial comparison literature in order to make specific predictions about racial differences on the psychosocial maturity scale developed by Greenberger, Campbell, Sorensen, and O'Connor (1971). On the basis of this review, it was predicted that blacks would score lower than whites on the scale, and that this difference would primarily affect the self-acceptance and independence subscales. It was also anticipated that similar but lesser differences might be found on the identity and acceptance-of-change subscales. Results of the analyses indicate a clear small-to-moderate race effect with blacks scoring lower than whites. The sex effect is more ambiguous. Girls score higher than boys but the effect is negligible. A large effect due to Grade Level emerged, as expected. The multivariate analyses indicate significant but small main effects for sex and race. The findings are primarily due to differences in the Independence subscale, such that girls score higher than boys and whites higher than blacks. The failure to obtain other hypothesized race differences may have been due either to the inadequacy of the subscales at their present stage of development, or to the incorrectness of the hypotheses themselves. (Authors/JM)

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Black-White Differences in Psychosocial Maturity

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B. James Starr
Ellen Greenberger
Alexander J. Seidler
Margaret Mooney Marini
Aage B. Sørensen
Paul Campbell
Jeanne O'Connor

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INTRODUCTORY STATEMENT

The Center for Social Organization of Schools has two primary objectives: to develop a scientific knowledge of how schools affect their students, and to use this knowledge to develop better school practices and organization.

The Center works through five programs to achieve its objectives. The Academic Games program has developed simulation games for use in the classroom. It is evaluating the effects of games on student learning and studying how games can imporve interpersonal relations in the schools. The Social Accounts program is examining how a student's education affects his actual occupational attainment, and how education results in different vocational outcomes for blacks and whites. The Talents and Competencies program is studying the effects of educational experience on a wide range of human talents, competencies, and personal dispositions in order to formulate -- and research -- important educational goals other than traditional academic achievement. The School Organization program is currently concerned with the effects of student participation in social and educational decision-making, the structure of competition and cooperation, formal reward systems,effects of school quality, and the development of information systems for secondary schools. The Careers and Curricula program bases its work upon a theory of career development. It has developed a self-administered vocational guidance device to promote vocational development and to foster satisfying curricular decisions for high school, college, and adult populations.

This report, prepared by the Talents and Competencies program, investigates black-white differences in psychosocial maturity as measured by the psychosocial maturity scale developed by Greenberger, Campbell, Sørensen and O'Connor(1971). The findings of the investigation will be used to suggest how the preliminary scale may be revised and strengthened.

Abstract

The present investigation reviews the racial comparison literature in order to make specific predictions about racial differences on the psychosocial maturity scale developed by Greenberger, Campbell, Sørensen, and O'Connor (1971). On the basis of this review, it was predicted that blacks would score lower than whites on the scale and that this difference would primarily affect the self-acceptance and independence subscales. It was also anticipated that similar but lesser differences might be found on the identity and acceptance-of-change subscales.

The survey sample included approximately 2400 white 5th graders and 2800 white 11th graders. There were 1200 black students at each of these grade levels. The white students were randomly selected from a sample of 20,000 students at each grade level who were in turn selected from a random sample of Pennsylvania public schools. The black students include all who were tested in the original sample of 20,000.

The total psychosocial maturity score was analyzed by a four-way fixed effects analysis of variance incorporating tests of Grade level, Sex, Race, and Social Class effects. Following this a three-way multivariate fixed effects analysis of variance was applied to the subscales at the 11th grade. (The low reliability of the subscales at the 5th grade precluded a test of grade level effects.) After constituting the categories for the analyses of variance the samples were randomly split for purposes of replication.

Results of the analyses indicate a clear small-to-moderate race effect with blacks scoring lower than whites. The sex effect is more ambiguous. Girls score higher than boys but the effect is negligible. A large effect due to Grade level emerged, as expected.

The multivariate analyses indicate significant but small main effects for Sex and Race. The findings are primarily due to differences in the Independence subscale, such that girls score higher than boys and whites higher than blacks.

The failure to obtain other hypothesized race differences may have been due either to the inadequacy of the subscales at their present stage of development or to the incorrectness of the hypotheses themselves.

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INTRODUCTION

Recent years have witnessed a resurgence of interest in racial comparison studies, especially in regard to contrasts of academic and intellectual achievement. A number of controversial studies have been done in this area (e.g., Coleman, 1966; Jensen, 1968). Coleman's nationwide survey validated a common view among educators that there are clear and substantial gaps between blacks and whites on various scholastic performance measures. Black students were, on the average, one standard deviation below their white age-mates -- which means that fully 84% of them fell below the average performance level for whites in their school grade. Throughout the country, these minority students were generally offered educational services of inferior quality at schools which were predominantly segregated.

While these data seem to impressively document institutional racism, they are also important for the heuristic function they continue to serve. Thus, Katz (1967a) ascribed the increase in studies of cognitive and motivational development among children from different social backgrounds to the influence of the Coleman findings. The importance of such developmental studies lies not only in the uncovering of potential causal variables to account for the observed disparities, but also in the discovery of concomitant ontogenetic factors, which may result from the same type of causal influences. The influence of developmental variables on

achievement probably feeds back on these developmental variables themselves; e.g., self-image not only affects level of achievement, but level of achievement affects self-image.[1]

A number of variables bearing causal and/or concomitant relationships to the observed performance differential are affected by the school experience. Included in this complex of factors are some which have no patent relationship to traditional academic goals, but which affect such characteristics as self-concept or conformity. Indeed, it has been argued that the goals of educational institutions should be altered to encompass some broader elements of socialization (Clausen, 1963, 1968; Janowitz, 1969; Street, 1969).[2] It seems likely that there is sufficient commonality in socialization goals among the social classes to allow for the development of a number of formalized socialization objectives for implementation in the schools.

Psychosocial Maturity

Clearly one desired outcome might involve the development of psychosocially mature individuals. Although there may be some debate as to what constitutes psychosocial maturity, it is likely to have wide support as a social desideratum. As Greenberger

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[1] Traditional studies tend not to focus on the reciprocal nature of causal relationships (Farris, 1969).

[2] In a recent monograph, a number of introspective educators candidly disclosed aspects of the "unstudied curriculum" (Overly, 1970). Not only do they substantiate the existence of non-acdemic socialization activities, but they also provide evidence for some consistency across schools in the implementation of these objectives (e.g., Friedenberg, 1970). Since formalized academic goals are not implemented in an altogether consistent fashion, the two types of goals seem to differ along a dimension of overtness of the acknowledgement of their existence.

and Sørensen (1971) have observed:

> The mature individual is thought to be an asset to the society, so the commitment of schools to the orderly development of such persons might well be greeted with enthusiasm. A perfunctory readiness to promote maturity, however, would soon reveal ambiguity about what the term implies. [1971. p. 3]

These authors went on to evolve an interdisciplinary and (ideally) culture-free model of psychosocial maturity. In a subsequent paper (Greenberger, et al., 1971), these researchers developed a number of scales measuring various aspects of their model. Together these scales seem to yield an overall score indicative of psychosocial maturity.

The purpose of this investigation is to examine racial comparison data on psychosocial maturity. A brief review of the model produced by Greenberger and Sørensen and the scales constructed to assess the component traits is presented below. Various theoretical explanations of racial differences in achievement are then examined as a basis for predictive similar differences in psychosocial maturity. The position taken in this paper is that a number of critical developmental variables (e.g., psychosocial maturity), insofar as they are subject to the same factors which influence academic achievement, will reflect similar differences. Therefore attempts at explaining achievement inequalities should, on logical grounds, offer fruitful hypotheses concerning other developmental variables.[1]

[1] With a view toward avoiding major pitfalls in interpretation, some of the common difficulties facing racial comparison research are enumerated in Appendix A.

Greenberger's and Sørensen's (1971) interdisciplinary concept of psychosocial maturity comprises important elements of the biological, sociological, and psychological conceptualizations of maturity. Biologists have stressed the orderly temporal development of the requisite structures ensuring both species survival and individual growth in the average expectable environment. Sociological definitions of maturity emphasize societal survival via a stable social structure based upon the predictability and mutual trust of its members. Finally, psychological theorists maintain the importance of the development of mechanisms which are germane to: (1) a sense of self; (2) the establishment of relationships with others; (3) attitudes toward work; and (4) a superordinate system of values. A temporal dimension, implying orderly development over time, is integral to all of the above positions. From these multi-faceted approaches to maturity Greenberger and Sørensen distilled the general characteristics they believe to be the sine qua non of psychosocial maturity. An outline of these characteristics (adopted from their paper) appears in Table 1.

Subsequently, Greenberger et al. (1971) sketched a set of specific outcomes consistent with psychosocial maturity in this society. For example, they suggest that the specific socialization outcomes of self-esteem, sense of control, independence, stable self concept and an internalized humanistic morality increase a person's predictability -- and predictability is a factor that promotes "effective social relationships." The basic value system, to cite another concrete example, includes a humanistic

Table 1

An Interdisciplinary Concept of Maturity

Effective individual functioning

information

work-related skills and motives

Effective social relationships

predictability:

consistent self-attitudes

shared values

trust

System maintenance

reproduction

investment in socialization of the young

acceptance of basic value system

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ethic (comprised, in part, of tolerance of individual differences, and the concept that rules are made to serve social purposes) and an attitude of openness to change.

A scale to assess psychosocial maturity (hereafter referred to as PSM) was derived by Greenberger et al, from an item-pool administered independently and for other purposes by the Pennsylvania State Department of Education. Item choice was governed by two considerations. First, only theoretically apposite items were selected. In addition, items were preserved only if they were consistent with a notion of temporal growth. Thus, the second criterion for item survival required items to differentiate 5th from 11th grade respondents.[1] Furthermore, a minimal percentage difference of 7.5% between grade levels was employed.[2] The 54 resulting items were placed in 5 subscales on a theoretical basis. Subsequently, a 5-factor Principal Components solution corresponding closely to the theoretical grouping was devised. The factors were labeled self-esteem, acceptance of change, independence, identity, and social tolerance. The sources of the items and the psychosocial maturity scale are presented in Appendices B and C, respectively.

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[1] Because these samples, consisting of 3,000 respondents at each grade level, provide the normative data for our comparisons, their demographic characteristics (including racial composition) are discussed below.

[2] A 1% difference is significant at the .05 level with samples as large as these.

Variables relating to Achievement differences

Findings of a reliable achievement deficit among black children in this country (Coleman, 1966) have led to vigorous activity among theoreticians attempting to account for the performance differential. While Jensen has argued that such differences can be accounted for largely by hereditary differences in ability, only environmental explanations of race differences will be dealt with here, since it seems unlikely that psychosocial maturity is as heavily dependent on hereditary factors as a trait such as intelligience is thought to be. Katz (1967a; 1969) has catalogued and evaluated the status of a number of environmental explanations. These explanations (and the data they purport to explain) are examined here with a view toward generating hypotheses regarding aspects of PSM. Katz has characterized cultural deprivation, cultural conflict, and educational deprivation hypotheses.

Cultural deprivation hypotheses. A number of authors have postulated that important experimental deprivations among children of the black subculture may explain their performance deficit. Writers with a psychoanalytic bent have pointed to the inadequacy of early socialization as a prime causal factor. For example, Ausubel and Ausubel (1963) emphasize the authoritarianism and punitiveness of black parents, the psychological distance between parent and child, and the premature slackening of the parental reins as evidence for such inadequacy. Marked feelings of unworthiness, lack of trust, and the rejection of societal values are thought to result. Moynihan (1965) has noted that the high incidence of father-absence in black

homes deprives boys of appropriate role models.[1] These analyses, since they deal with concepts embodied in Greenberger and Sørensen's (1971) view of PSM, lead to predictions of lower maturity in blacks (especially males).

Katz (1969) presents four empirical criteria which carry the burden of proof for cultural deprivation explanations of racial performance differences. He notes the need to discover:

> (a) whether specific personality differences have been found between children from backgrounds of poverty and affluence[2] (b) whether demonstrated personality differences have been related to differences in achievement . . . (c) whether the traits have been shown to be products of early family influences, and (d) whether the traits appear to be relatively unmodifiable, once formed [p. 15]

Using these guidelines, Katz concludes that there is little evidence for the cultural deprivation position in spite of its wide currency. He castigates the researchers, generally, for their failure to include class controls.

Cultural conflict hypotheses. Katz (1969) presents a succinct summary of the cultural conflict viewpoint as applied to the black child: "The skills . . . valued in his own culture may be . . .

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[1]Implicit here is the assumption that males are perforce the appropriate socialization agents for male children. This can be taken to imply that a number of values are inculcated in males but not females, and vice-versa. There is, then, an interesting possibility in the development of separate empirical scales for measuring the maturity of males and females.

[2]Katz is confusing race and class.

difficult and require . . . a good deal of effort and persistence, yet be totally ignored by the educational establishment"[p. 2]. Katz goes on to examine racial differences in achievement orientation. For this highly selected area he finds little confirmation of conflict interpretation. However, there does seem to be data bolstering a cultural conflict viewpoint. Pertinent here are the clear class-and race-related differences in values and socialization practices (Bronfenbrenner, 1958; Hyman, 1966, Dreger and Miller, 1960; 1968; Blum and Rossi, 1969; Rossi and Blum, 1969). It would seem that these differences might have a pervasive effect on children's behavior.

Educational deprivation hypotheses. Clark (1965) reproves educators for their role in fostering conditions which produce racial inequalities in performance. He regards proponents of "deprivation" and "conflict" positions as little more than apologists for the educational establishment's lack of conern and involvement with minority children. Clark views ghetto teachers as serving primarily a custodial and disciplinary function. These instructors have minimal expectations regarding their students' abilities and they operate accordingly. Such children are deprived; but the deprivation, Clark maintains, occurs in the classroom. Attempts at corroboration of Clark's stance on the effect of teacher-set on classroom performance have been both scant and conflicting. Therefore its empirical status cannot, at present, be evaluated. As noted above, there are grounds for assuming that the quality of education offered to black children is inferior (Coleman et al,1966).

Moveover, the existence of segregated educational facilities is apparently inherently deprivational (McPartland, 1969; Pettigrew, 1969).

Earlier it was argued that the school experience influences a good deal more than traditional academic goals. Teacher lethargy (and more generalized attitudes toward minority group children) might be expected to "spill over," affecting other areas of socialization. It could be anticipated, for example, that a disciplinary orientation would result in the promotion of a number of objectives incompatible with the development of maturity. Thus, a disciplinary, authoritarian rule of the classroom stands in contravention to independence training.

Empirical findings. A number of findings on race differences are commensurate with our purposes (i.e., prediction of PSM differences). One finding which may be consistent with achievement differences and perhaps predictive of differences in PSM is the widespread anti-black prejudice which exists among black children (Katz, 1969). Already apparent at age 3, this attitude persists until late childhood where its decline may reflect a response suppression. A related more specific measure has uncovered fairly consistent racial discrepancies in self-concept (Dreger and Miller, 1968). Again, the scores of black children are depressed. Taken together, these findings (if they are not artifacts due to the absence of class controls) suggest that black children should score lower on the self-acceptance subscale of the Greenberger et al, (1971) PSM measure.

Katz (1969) also indicates that a good deal of hostility and distrust among black children is shown in a number of studies. It will be recalled from Table 1 that trust is vital to the notion of PSM. Other results do not bear a clear-cut relationship to PSM, but the patterning of results is suggestive of black deficits on the scales measuring PSM. For example, consistent class and race differences have been found on scales assessing the sense of control over the envrionment. Blacks and lower class individuals feel ineffectual when compared, respectively, to whites and higher status persons. While it is likely that these apparent race differences are actually due to social class differences between blacks and whites, further investigation is needed to sort out these effects. It is likely that the items gauging sense of control show content overlap with items on both our independence and identity subscales.

The Coleman et al. (1966) survey studied various student attitudes as well as students' aspirations and expectations toward themselves and their environment. In each case, they predicted positive (concomitant and causal) relationships. The white children scored high on these attitudes. Blacks did not differ from whites except in their lower sense of control of the environment.[1] Moreover, of all the measures tested (including family background and school variables), the attitudinal items were most cogent with regard to the prediction of achievement scores.

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[1] The findings regarding self-attitudes might have been more consistent with the general body of literature in this area had they not used their own three-item scale.

It seems reasonable to assume that there are racial differences in anxiety. Because blacks are subject to discrimination in this society they might be expected to be more anxious and perhaps adopt stylized modes of coping. While there is some evidence for school anxiety (Katz, 1969), results of studies of general anxiety are somewhat equivocal (Dreger and Miller, 1968). Such differences, insofar as they exist, could lead to less latitude for change among blacks. There are numerous studies demonstrating that anxiety produces behavioral fixity in both animals and humans.

Other racial discrepancies which have been found in studies not dealing with achievement have some limited implications for the assessment of PSM. Grier & Cobbs (1968) have inferred that girls are viewed as the primary socialization target to a much greater extent in black families. This suggests the utility of making racial comparisons by sex. Indeed, when empirical investigations have incorporated sex breakdowns, fairly large and consistent differences have emerged on some important measures. Thus, black females surpass males in their educational and occupational aspirations, achievement motivation, and planning behavior (Dreger & Miller, 1968). Whether or not these discrepancies relate to differential socialization remains to be seen. It does, however, seem reasonable to expect black girls to outscore black boys on the PSM measure, given that PSM is a product of socialization -- a process which appears to be differentially applied to the sexes in most societies.

Finally, attitude research, while most often concerned with adults, is relevant to our problem. Because adults bear a substantial

burden in the socialization process, their salient attitudes would likely be transmitted to their offspring. Small differences on the F-scale (Adorno, Frenkl-Brunswik, Levinson, and Sanford, 1950) have been documented which show blacks as more authoritarian than whites (Dreger and Miller, 1968). Here again one might reason that authoritarian attitudes are not compatible with the development of traits of independence or openness to change. No differences are predicted on the subscale measuring social tolerance.

Summary

This review of the achievement and other racial comparison literature lends some meager authenticity to the cultural deprivation, cultural conflict and educational deprivation hypotheses. Broadly, this analysis implies that racial differences in PSM will mirror those found for the various performance measures. Specifically, it indicates that black children will manifest less self-acceptance and independence than white children, and that the scores of the black students may be depressed (relative to those of white students) on the identity and acceptance-of-change subscales.

Method

Subjects

The subjects in this survey were selected randomly from a pool of 20,000 5th graders and 20,000 11th graders attending a random sample of Pennsylvania public schools. Selected by the Pennsylvania Department of Education, these students participated as respondents in the Educational Quality Assessment program.[1] The white sample was part of the normative group involved in the original scale development (Greenberger et al, 1971). This sample contained approximately 2400 5th graders and 2850 11th graders. The black sample at the two grade levels represented all of the black examinees among the original 20,000 (approximately 1,200 at each grade level).

Dependent Variables, Factors, and Design

The dependent variables employed here include the PSM total score and the five subscales developed by Greenberger et al (1971).[2] These scales are self-acceptance, acceptance of

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[1] For a detailed description of the objectives of this program, see Campbell, Beers, Coldiron, and Hertzog (1968).

[2] In view of the methodological difficulties involved in employing scale items not developed on black samples (Baratz & Baratz, 1970; White, 1970), the authors decided to test the items with the empirical criterion used on the standardization sample. Only 4 of the 54 PSM items failed to meet the criterion in both validation samples. (Each sample contained about half of the subjects in the present study). One of the four items failed by .01 of a point on one of the samples. While the items might have differential weightings within each race, the unweighted items appear to be appropriate for inclusion in black and white scales of PSM at this level of development.

change, independence, identity, and social tolerance. This investigation applies a three-way multivariate analysis of variance design to the subscales. Race, sex and social class effects on PSM are examined for both the 5th and 11th grades. Social class is constituted as a 3-level factor.[1] The multivariate F test provides information on differences in PSM while the step-down tests (see below) assess the distinctive contributions of the subscales to the overall differentiation. In addition, a four-way analysis of variance incorporating a test of grade-level effects is applied to the total maturity score.[2]

Statistical analyses[3]

Univariate analyses of variance are often reapplied to a number of dependent variables collected on the same subjects. By virtue of their common source, the multiple measures are

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[1] The composite class indicator was developed by Alexander J. Seidler. This indicator was intended to provide a single measurement of social class from four separate indicators (father's education and occupation and mother's education and occupation); and to minimize case-loss due to missing information on any one of the indicators. The procedure for forming the composite class indicator follows: Each separate indicator correlates positively with PSM. PSM was regressed on all possible combinations of the four social class indicators, each taken alone and in combination with 1, 2, or 3 other of these variables. Regression equations were generated for each combination. Respondents were scored using the appropriate regression equation for the amount of information present in their records. This prediction of PSM is the respondent's "CCI" (Composite class indicator) score.

[2] The total sample was randomly split into two large subsamples. The analyses on the first sample were replicated with the second one because added confidence in the results could be purchased at little expense in terms of statistical power with samples of the size employed here.

[3] This section has been adapted from Starr (1971).

correlated in some arbitrary and unknown way; thus, the separate analyses of variance are not independent. Such an approach makes it impossible to assign an exact value to the probability of making a Type I error (i.e., falsely rejecting the null hypothesis). Multivariate tests take account of the correlations among multiple measures and yield statistics for which accurate probability values (alpha levels) are available (Bock and Haggard, 1968). Thus, a multivariate analysis of variance program (Finn, 1968) was used to analyze the data. Following the multivariate tests, individual variates (dependent variables) were scrutinized with the step-down F test.[1] The step-down procedure covaries all prior dependent measures in testing each current variate. Since the results are not invariant under different orderings of the dependent variables, they must first be ordered to reflect their a priori importance to the independent variables. For example, the present study hypothesizes race effects on the self-acceptance and independence subscales. These subscales should be ordered first. Each step-down F is independent of the others and the probability of a Type I error (overall) is easily calculable (Bock, 1963, 1966).

It should be noted that in non-orthogonal designs such as the one employed here, the multivariate Fs are not invariant under

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[1] For a more complete exposition of the step-down procedure see Roy and Bargman (1958). A useful general overview of multivariate analysis of variance procedure is provided by Bock and Haggard (1968).

the different orderings of the tests of hypotheses. Caution must be exercised to avoid the confounding of the race and class factors.

RESULTS

Assessment of the Overall Maturity Scores

A four-way analysis of variance on the PSM scores assessed the effects of grade level (5th or 11th), race, sex, and social class (trichotomized from a composite indicator of social class developed on a sample of these subjects for other purposes).[1] The subjects were randomly assigned to two samples for purposes of replication. The first of these two samples will be called the main sample, and the second, the replication sample. The cell means for the main sample appear in Table 2. It can be seen that for all sex, social class and grade categories the mean for whites is consistently higher than the mean for blacks. The analyses of variance on these data yielded the results shown in Table 3. Not only race, but each of the four main effects and the Grade level x Sex interaction were significant at the .0001 level. In addition, the Race x Social Class F-value indicated the existence of an interaction effect at a lower level of significance ($p < .01$). However, considerations centering on the power of statistical tests (see Cohen, 1965; 1969) suggest that samples of the size employed here could easily result in the detection of negligible effects. For this reason, the measure of effect size (f) developed by Cohen (1969) was computed for each statistically significant F-value. These measures appear in the last colum of Table 3.

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[1] The composite class indicator was trichotomized for purpose of the multivariate analysis of variance.

Table 2

PSM Means for the Main Sample

Groups		Social Class		
		Low[a]	Middle[a]	High[a]
Race	Sex	Grade 5		
White	Males	29.25 (134)	31.48 (215)	32.72 (186)
Black	Males	26.47 (122)	26.67 (88)	27.13 (53)
White	Females	29.09 (139)	32.00 (260)	34.43 (213)
Black	Females	26.53 (116)	28.29 (110)	26.51 (43)
		Grade 11		
White	Males	40.08 (167)	41.38 (167)	42.85 (174)
Black	Males	36.60 (90)	39.50 (50)	39.17 (53)
White	Females	43.45 (176)	44.51 (211)	45.62 (209)
Black	Females	40.39 (144)	40.59 (68)	41.69 (74)

[a]Numbers in parentheses represent the n upon which the means are based.

Table 3

Analysis of Variance on the Main Sample PSM Means

(Fixed Effects Model)

Source	df	MS	F	f
Grade Level (A)	1	114073.45	2082.79**	.80
Sex (B)	1	2665.06	48.66**	.11
Race (C)	1	12330.91	225.14**	.15
Social Class (D)	2	1909.10	34.86**	.10
A x B	1	1040.78	19.00**	.05
A x C[a]	1	181.61	3.32	---
A x D	2	62.70	1.14	---
B x C	1	11.19	< 1.	---
B x D	2	4.90	< 1.	---
C x D	2	261.01	4.77*	.04
A x B x C	1	0.43	< 1.	---
A x B x D	2	90.45	1.65	---
A x C x D	2	151.61	2.77	---
B x C x D	2	29.85	< 1.	---
A x B x C x D	2	85.85	1.57	---
Error (W)	3238	54.77		

* $p < .01$

** $p < .0001$

[a]This finding represents a large discrepancy between the main and replication samples. One or both of the F-values may be in error, but a careful inspection of the input and output does not enable us to detect the error.

The effect size measure is essentially a ratio of the standard deviation of the sampling distribution for the effect means to the standard deviation of the population. Thus, the indicant is independent of sample size (unlike the F statistic). Cohen (1969) has proposed that f values of .10, .25, and .40 be employed as standards characteristic of small,medium, and large effects, respectively. Classifying the effects on this basis, it can be seen that the Grade level effect is quite large while the other main effects are small. The two interaction effects which were detected are negligible. Especially notable here is the fact that the Grade x Sex interaction effect is negligible despite its easy detection via the F test ($p < .0001$).

Table 4 presents the cell means for the replication sample. Again it can be seen that, for each sex, social class and grade category, the mean PSM score is higher for whites than for blacks. The results of the analysis of variance on these data, shown in Table 5, are similar to the findings from the analysis of the main sample. In addition there was a significant Grade level x Social class effect ($p < .0003$). This finding is clearly unstable. The main sample revealed no differences. The F-ratio in the replication was ten times as large as that in the main sample. Because other sources of variation yield statistics which are quite compatible across samples we must conclude that one (or both) of these findings is (are) erroneous. The effects are graphed for both samples in Fig. 1. With one exception (the sex effect) the effect size indicants were similar to those

Table 4

PSM Means for the Replication Sample

Groups		Social Class		
		Low[a]	Middle[a]	High[a]
Race	Sex	Grade 5		
White	Males	29.64 (139)	31.05 (245)	35.07 (225)
Black	Males	25.95 (105)	25.67 (90)	28.12 (40)
White	Females	29.35 (137)	31.43 (225)	34.97 (206)
Black	Females	26.43 (129)	27.76 (95)	29.12 (52)
		Grade 11		
White	Males	39.94 (156)	41.95 (193)	43.29 (203)
Black	Males	37.14 (85)	38.26 (68)	41.54 (52)
White	Females	42.68 (152)	45.18 (198)	45.22 (193)
Black	Females	39.91 (123)	40.56 (82)	38.69 (68)

[a]Numbers in parentheses represent the n upon which the means are based.

Table 5

Analysis of Variance on the Replication Sample PSM Means

(Fixed Effects Model)

Source	df	MS	F	f
Grade Level (A)	1	105943.11	1964.11**	.78
Sex (B)	1	780.89	14.48**	.06
Race (C)	1	15328.77	284.18***	.16
Social Class (D)	2	3149.78	53.39***	.15
A x B	1	740.21	13.72**	.05
A x C	1	201.36	3.73	---[a]
A x D	2	598.86	11.10***	.06[a]
B x C	1	1.42	<1.	---
B x D	2	166.05	3.08	---
C x D	2	272.38	5.05*	.04
A x B x C	1	254.47	4.72	---
A x B x D	2	103.43	1.92	---
A x C x D	2	33.19	<1.	---
B x C x D	2	87.41	1.62	---
A x B x C x D	2	81.09	1.50	---
Error(W)	3237	53.94		

* $p < .01$
** $p < .0003$
***$p < .0001$

[a]See footnote a, Table 3.

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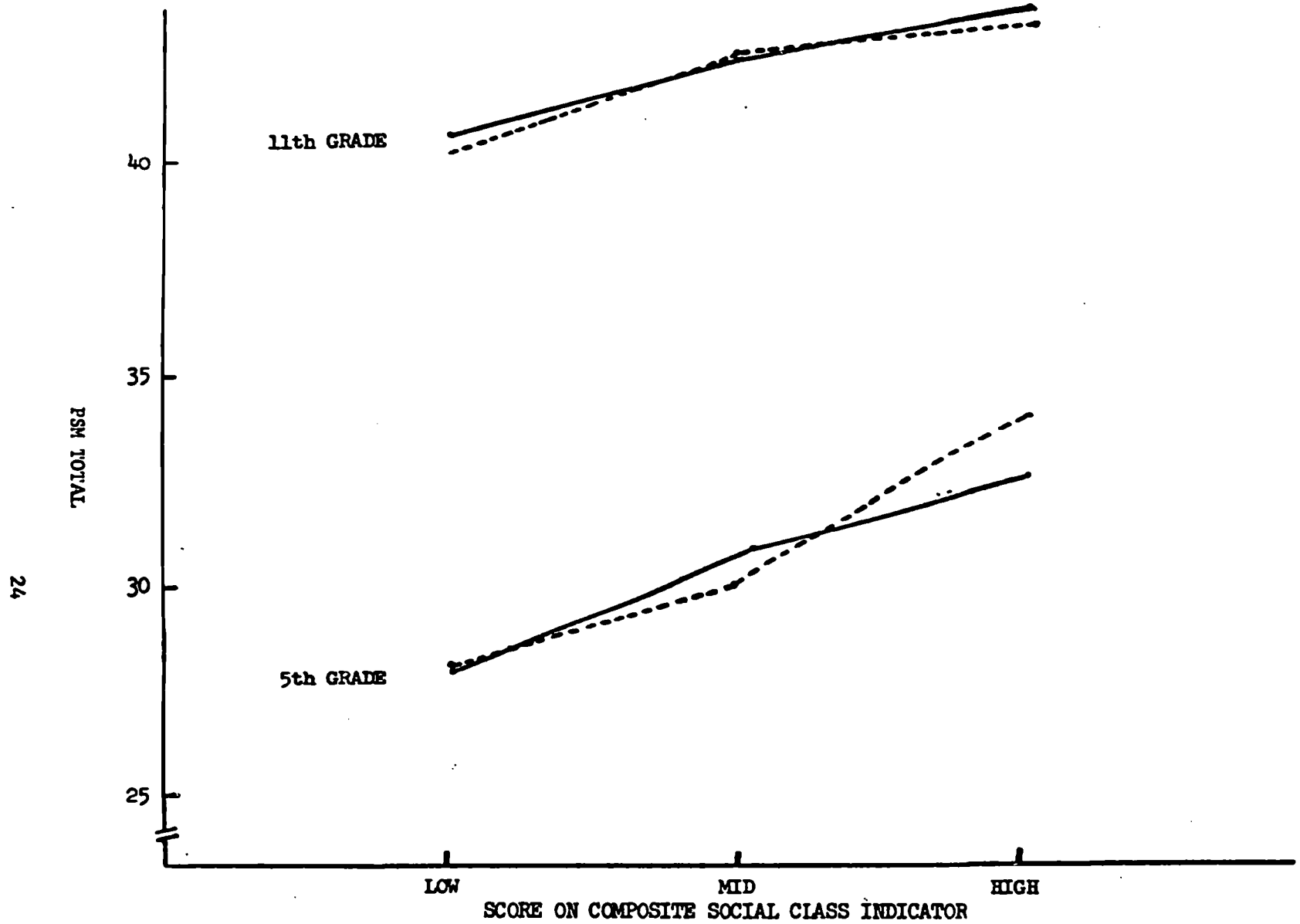

Fig. 1. Grade x Social Class interactions reflecting the incompatibility of the replications. Means (from left to right) are, for the main sample, 5th graders: 27.93, 30.53, 32.32; for 11th graders: 40.64, 42.42, 43.43; for the replication sample, 5th graders: 27.99, 29.96, 33.91; and for 11th graders: 40.28, 42.46,43.23.

obtained on the main sample. Once again, the main effect for Grade level was quite large, and the effects of Race and Social Class were small. The detected interaction effects were negligible. For the replication sample however, the Sex effect was quite small -- a difference, so to speak, that makes no difference.

Taking the results of the analyses together, small and non-negligible effects were detected in both samples for Race and Social Class. For each sample the Race variable yielded the largest of the "small" effects. The effect means for these variables (shown in Table 6) indicate that 11th graders score about 12 points higher than 5th graders and whites score about 4 points higher than blacks on the PSM scale. Low scorers on the composite class indicator have PSM scores about one point lower than the medium scorers on the class variable. Membership in the uppermost group defined by the class variable yields a gain of approximately 2.5 points over the middle category on the PSM total. Finally, the large Grade level effect on PSM was due of course to the manner in which items were selected on the PSM scale.

Effect of the Independent Variables on the PSM Subscales

The structure of attitudes at the 5th grade is unstable, probably accounting for the lack of reliability of responses within subscales at this grade level. Subsequent analyses were therefore calculated on the 11th grade only. The effects of Sex, Race, and Social Class (composite class indicator) on the five PSM subscales were analyzed for a main sample and a replication sample. The cell means for the

Table 6

PSM Means for the Main Effects in Both Samples

Effect	Level	Main Sample		Replication Samples	
		$\bar{X}$	n	$\bar{X}$	n
Grand Mean		36.01	3262	36.09	3261
Grade	5	30.27	1679	30.59	1688
	11	42.10	1583	42.00	1573
Sex	M	34.82	1499	35.48	1601
	F	37.02	1763	36.68	1660
Race	W	37.36	2251	37.50	2272
	B	32.99	1011	32.87	989
Social Class	Low	34.67	1088	34.17	1026
	Mid	35.57	1169	35.62	1196
	Hi	37.96	1005	38.54	1039

five variates in the main sample (Self-Acceptance, Independence, Openness to Change, Identity, and Social Tolerance) appear in Table 7. The multivariate analysis of variance on these data is shown in Table 8. The multivariate $\underline{F}$ was significant ($\underline{p} < .0001$) for Race and Sex, as well as for Social Class ($\underline{p} < .005$). The step-down $\underline{F}$ ratios reveal that whites score significantly higher on all variates except Self-Acceptance and Identity. These differences result primarily from the higher scores for females on both the Independence and Acceptance of Change Subscales. Progressively higher Self-Acceptance scores appear to carry the burden of differentiating the Social Class levels. The effect size measures were extrapolated from those computed on the unadjusted (univariate) means and therefore should be considered estimates. These measures suggest that Independence is a small-to-moderate differentiator of Sex and Acceptance of change is related to a small Sex effect. Independence, Openness to change and Social Tolerance all reflect small Race effects. The effect sizes for Social Class, however, are negligible.

Subscale means for the replication sample appear in Table 9. The multivariate analyses in Table 10 reveal significant main effects ($\underline{p} < .0001$) for each of the independent variables (Race, Sex and Social Class) and no interactions among them. The Social Class effect is primarily due to a negligible effect size in the Identity variate. The Sex effect again reflects a small-to-moderate effect, with females scoring higher on the Independence Subscale.

Table 7

Mean Scores on the PSM Subscales in the Main Sample
by Social Class Category (Grade 11 only)

Group		n	PSM Subscale Means				
			Self Acceptance	Independence	Acceptance of Change	Identity	Social Tolerance
Race	Sex	Low Scorers on Social Class Variable					
White	Males	167	7.74	16.57	2.35	7.77	5.65
Black		90	7.21	14.60	2.30	7.59	4.90
White	Females	176	8.21	18.39	2.65	8.40	5.81
Black		144	8.06	16.51	2.67	7.92	5.23
		Medium Scorers on Social Class Variable					
White	Males	167	8.33	16.86	2.28	8.02	5.89
Black		50	7.82	15.33	1.96	8.10	5.51
White	Females	211	8.17	18.85	2.71	8.68	6.11
Black		68	8.15	16.76	2.71	7.93	5.04
		High Scorers on Social Class Variable					
White	Males	174	8.42	17.63	2.50	8.21	6.10
Black		53	7.85	15.53	2.38	8.00	5.42
White	Females	209	8.49	19.16	2.89	8.89	6.17
Black		74	8.19	16.77	3.04	8.34	5.35

Table 8

Multivariate Analysis of Variance on the 11th Grade Subscale Means for the Main Sample

Source	df	Mean Products					F
		Self-Accept.	Ind.	Accept Change	Identity	Social Toler.	
Sex (A)	5						16.53***
	1	22.53					4.90
	1	153.02	1039.50				57.93***
	1	39.78	270.20	70.23			12.28**
	1	47.63	323.55	84.10	100.71		4.89
	1	7.51	51.03	13.27	15.88	2.51	1.82
Race (B)	5						27.75***
	1	44.60					9.70*
	1	255.89	1468.09				78.37***
	1	6.05	34.70	0.82			17.17***
	1	54.07	310.19	7.33	65.54		1.19
	1	93.50	536.42	12.68	113.34	196.00	29.00***
Social Class (C)	10						2.94*
	2	24.88					5.41*
	2	45.47	84.15				2.39
	2	10.98	22.15	8.99			3.53
	2	26.08	47.81	11.79	27.36		2.19
	2	21.03	38.12	8.67	22.00	17.86	1.17
A x B	5						2.24
	1	17.24					3.75
	1	-6.01	2.09				1.19
	1	6.13	-2.14	2.18			1.65
	1	-16.78	5.85	-5.97	16.33		2.47
	1	-4.60	1.60	-1.63	4.47	1.23	2.11
A x C	10						1.19
	2	12.78					2.78
	2	3.17	7.40				1.00
	2	-4.42	-1.38	1.54			2.38
	2	2.09	-1.23	-0.65	0.81		< 1.00
	2	4.56	2.35	-1.63	0.42	1.85	< 1.00
B x C	10						< 1.00
	2	0.85					< 1.00
	2	1.92	4.94				< 1.00
	2	-0.71	-1.38	0.74			1.11
	2	0.06	0.38	0.04	0.10		< 1.00
	2	-0.01	0.55	0.24	0.23	0.54	< 1.00
A x B x C	10						< 1.00
	2	0.27					< 1.00
	2	-0.34	3.03				< 1.00
	2	0.06	-1.20	0.50			< 1.00
	2	-0.60	2.14	0.74	2.06		< 1.00
	2	-0.70	3.74	1.40	3.07	4.95	< 1.00
Error	7855[a]						
	1571	4.60					
	1570	3.03	16.57				
	1569	0.71	2.38	1.51			
	1568	0.62	2.22	0.31	6.96		
	1567	1.86	2.13	0.37	0.59	3.41	
Total	7910						
	1582						

Note: First F-ratio for each source is the multivariate F.

[a]The df for error are split in proportion to the df associated with each source of variation.

* $p < .005$

** $p < .0005$

*** $p < .0001$

Table 9

Mean Scores on the PSM Subscales for the Replication Sample

(Grade 11 only)

Group		n	PSM Subscale Means				
			Self Acceptance	Independence	Acceptance of Change	Identity	Social Tolerance
Race	Sex		Low Scorers on the Social Class Variable				
White	Males	156	7.99	16.36	2.44	7.65	5.51
Black		85	7.91	14.40	2.18	7.12	5.54
White	Females	152	7.95	18.14	2.61	8.14	5.84
Black		123	8.07	16.14	2.54	7.85	5.32
			Medium Scorers on the Social Class Variable				
White	Males	193	8.32	17.22	2.35	7.97	6.09
Black		68	8.15	15.01	2.29	7.53	5.28
White	Females	198	8.46	18.87	2.81	8.82	6.22
Black		82	7.72	16.51	2.60	8.20	5.54
			High Scorers on the Social Class Variable				
White	Males	203	8.49	17.54	2.59	8.58	6.09
Black		52	8.38	16.10	2.90	8.38	5.77
White	Females	193	8.33	18.96	2.80	8.97	6.15
Black		68	7.43	15.69	2.66	7.51	5.40

Table 10

Multivariate Analysis of Variance on the 11th Grade Subscale Means for the Replication Sample

Source	df	Mean Products					F
		Self-Accept.	Ind.	Accept. Change	Identity	Social Toler.	
Sex (A)	5						13.03***
	1	5.91					1.27
	1	-62.96	670.63				56.54***
	1	-12.03	128.13	24.48			2.66
	1	-21.69	231.02	44.14	79.58		4.25
	1	-2.24	23.89	4.56	8.23	0.85	1.00
Race (B)	5						28.17***
	1	37.74					8.13*
	1	261.03	1804.98				103.46***
	1	13.15	90.95	4.58			9.94**
	1	76.62	529.86	26.70	155.54		5.66
	1	63.02	435.83	21.96	127.94	105.23	11.28
Social Class (C)	10						3.66***
	2	9.57					2.06
	2	30.50	99.94				4.23
	2	6.23	22.89	7.41			2.35
	2	23.57	80.27	21.04	67.73		6.69**
	2	13.23	42.56	8.78	32.99	18.56	2.94
A x B	5						< 1.00
	1	6.29					1.35
	1	10.81	18.57				< 1.00
	1	2.27	3.90	0.82			< 1.00
	1	6.19	10.64	2.24	6.10		< 1.00
	1	5.94	10.20	2.14	5.85	5.60	< 1.00
A x C	10						1.15
	2	7.96					1.71
	2	14.64	26.96				< 1.00
	2	3.24	6.08	3.07			1.45
	2	10.75	19.96	7.10	18.74		1.90
	2	3.91	7.23	2.02	5.95	2.03	< 1.00
B x C	10						1.27
	2	11.23					2.42
	2	8.18	6.25				< 1.00
	2	-2.52	-2.35	1.46			2.16
	2	6.79	5.77	-2.97	6.44		< 1.00
	2	7.69	4.98	-0.63	2.86	6.63	1.09
A x B x C	10						1.42
	2	7.55					1.63
	2	9.69	24.45				1.02
	2	4.42	7.07	2.75			< 1.00
	2	9.12	18.78	6.16	15.18		1.44
	2	-2.74	2.20	-0.94	0.06	3.70	2.26
Error	7805						
	1561	4.64					
	1560	3.66	16.50				
	1559	0.79	2.34	1.60			
	1558	0.71	2.42	0.37	7.13		
	1557	1.55	2.17	0.39	0.31	3.22	
Total	7860[a]						
	1572						

Note: First F-ratio for each source is the multivariate F.

[a]The df for error are split in proprotion to the df associated with each source of variation.

* $p < .005$

** $p < .002$

*** $p < .0001$

Taking both analyses together it is readily seen that the Independence Subscale is clearly the most important variate. Whites score higher than blacks and females score higher than males. Similar (though negligible) racial scoring patterns exist for the Acceptance-of-Change and Social Tolerance Subscales.

DISCUSSION

In the opening section of this paper, possible sources of racial differences in academic achievement were described. Parallel differences in psychosocial maturity, favoring whites, were anticipated. It was predicted that the greatest differences between black and white children would appear on the self-acceptance and independence subscales; a weak prediction of differences on the identity and acceptance-of change subscales was also made.

Race Effects

In both samples blacks scored 3/5 of a standard deviation below the mean on the overall PSM scores. This finding suggests that some of the same factors which are operating to depress the scores obtained by blacks on other valued behaviors (as defined by the dominant culture) measured via paper-and-pencil tests (e.g., achievement) may also be operative with regard to the PSM scale. It seems reasonable to suppose that the types of attitudinal measures employed here are subject to non-negligible environmental influences.

Significant (through negligible in terms of effect size) Race x Social Class interactions were also discovered in both samples. As might be expected, the nature of the interactions, graphed in Figure 2, shows Social class to be more strongly related to PSM for whites than for blacks.[1] (The direction of association

[1] Because this paper focuses primarily on racial comparisons, in the interest of completeness we include the remaining means for interactions with Race in Appendix D. N.b. None of the interactions shown there are statistically significant.

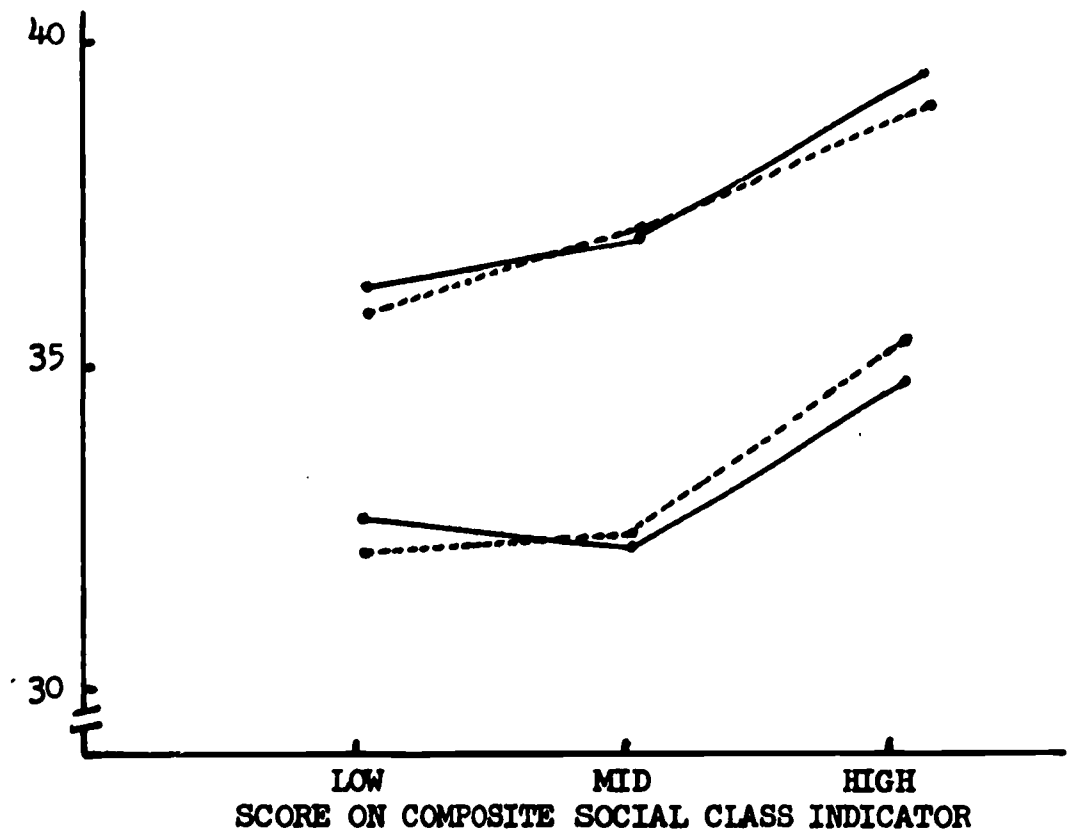

Fig. 2. Race x Social Class interactions. Means (from left to right) are, for the main sample, blacks: 32.66, 32.26, 34.70; for whites: 36.21, 36.80, 38.89; for the replication sample, blacks: 32.13, 32.46, 35.05; and for whites; 35.72, 36.84,39.43.

is for youngsters of higher social class to score higher on PSM.) This trend further supports the caution (Dreger and Miller, 1960, 1968; Rossi and Blum,1969) against interpreting "pure" race effects (i.e., effects uncontaminated by social class variables, since there is greater variance in social class among whites than among blacks).[1]

The Grade by Race interaction expected on the basis of findings of Greenberger et al (1971) did not emerge in these analyses. The present authors believe the contradictory findings to be artifactual. It seems plausible that the differences emerge from two sources. First, the n's in this study are noticeably smaller than those in the previous (Greenberger et al, 1971) study. This is so because they classified their S's on only two relatively straightforward dimensions (viz., Grade and Race). The present study, since it employed two additional classificatory variables, a complex composite indicator of social class and sex, retained fewer respondents due to missing data. Second, their "white" or state sample included 5% blacks. Taking these two bits of information together suggests a reasonable (though perhaps tenuous) explanation. The presence of blacks in the state sample had a suppressing effect on the mean PSM score. Inclusion in that study of Ss who do not answer classification questions regarding parental education and occupation may be linked with a lower degree of development (and, consequently lower PSM scores) in 11th graders than in 5th graders. Because

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[1] See Appendix A.

of this factor plus the initially high scores among white 11th graders, the mean suppression noted above would be more marked in the 11th grade sample. The same type of reasoning applies to the black samples (which have the higher proportion of unclassified Ss). However, since the black means on PSM are lower to begin with, the operation of a suppressor effect is less marked. The net effect of these factors operating jointly would be to remove an apparent interaction and more clearly contrast main effects.[1] The patterning of the means obtained by Greenberger et al (1971), when compared with our own, is compatible with this explanation. Moreover, an examination of the PSM scores of those individuals who were unclassifiable decidedly lends support to the notion that their inclusion would depress the PSM mean. Furthermore, as we have suggested, the suppression effect is most marked for whites and especially so at the 11 th grade as shown in Table 11.

The multivariate analyses of variance also revealed significant Race effects. The primary variate accounting for the racial differences seems to be the Independence subscale, on which whites score higher than blacks. The Independence items are occupation-related (see Appendix B); high scores tend to indicate (a) more internalized locus of occupation choice, (b) choice of jobs for intrinsic rather than extrinsic rewards, and (c) feelings of certainty about the future. Due to their position in society, it

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[1] See Appendix D.

Table 11

Mean PSM Scores of Respondents as a Function of Presence/Absence of Social Class Information*

	Blacks		State Sample+	
	Present	Absent	Present	Absent
Grade 5	26.9 (n=1051)	26.0 (n=225)	31.1 (n=2770)	27.3 (n=130)
Grade 11	39.3 (n=1002)	33.1 (n=192)	42.9 (n=2408)	33.1 (n=263)

*Presence signifies that at least one datum about father's and mother's education and occupation was codable; absence indicates that none of these was codable.

+95% whites.

is not at all surprising that blacks are less certain about their job prospects and control over job-opportunities, and more concerned with bread-and-butter issues in making occupational choices.

Other predicted effects did not emerge clearly. A significant but negligible Race effect was found for the Openness-to-Change variate. Self-acceptance and Identity did not discriminate race groups. The failure of the specific predictions regarding these subscales may well reflect the inadequacy of the subscales at this point of development rather than the inadequacy of the hypotheses.

Social Class Effects

A significant but small effect due to social class appears in both of the analyses of the total PSM scores. The differences, as expected, reflect a positive relationship between PSM and the composite class indicator.

As noted above, the composite class indicator was trichotomized into roughly equal-sized levels on the basis of the State sample. Two aspects of this procedure are noteworthy. First, the class levels employed here do not reflect the actual pyramidal class structure in society. Second, the presence of blacks in the state sample likely depressed the cutting points used to structure the class levels. It seems that any effects due to the actual social class structure in this society might be slightly underrepresented. The Race x Social Class interaction could be due to differences between the actual class structures

of blacks and whites. The trichotomizing of composite class indicator scores probably yields many fewer blacks in the middle segment than would be considered "middle class" relative to other blacks.[1]

The present analysis was structured as it was in order to statistically control social class in order to facilitate comparison between the races. Although quite small, the presence of the interaction which this analysis was designed to reduce (i.e., the Race x Social Class interaction) impairs any observation of a "pure" Race effect. Nonetheless, the present analysis does suggest that the differences found are, in good measure, racial differences.

The analyses of the subscales at the 11th grade reveal significant over-all social class effects. Although none of the subscales reliably differentiated the class levels employed here for both samples, a significant but negligible discrimination of social classes was found for the Self-Acceptance variate in one sample and for the Identity variate in the other.

Sex Effects

Although the PSM measure reliably differentiated males from females in both the main and replication samples, the effect size measure was negligible (.06) for the latter group. Greenberger et al (1971) did find between-sex differences for both 5th and

[1] An instructive PSM score comparison might be based on a trichotomy of the composite class indicator separately for each race.

11th graders. Their 5th grade sex-effect was most likely negligible since the t-value with 2850 students was only significant at $p < .05$. Effect size measures on their data were not computed by the present authors because the subjects from the earlier study were included in the present samples. However, the patterning of their results is similar to the findings of the current study. Sex differences in the earlier study were primarily due to differences in favor of the females at the 11th grade. This patterning of means is suggestive of a Grade level x Sex interaction -- a small but significant interaction -- which we did obtain for both the main and replication samples. These effects, although negligible, are shown in Figure 3. The above considerations indicate a trend toward more rapid growth among female adolescents. This result supports the view of many authors (e.g., Crutchfield, 1963; Gough, 1956, 1960; Greenberger et al , 1971) that females are more strongly socialized than are males in this society.

The results of the multivariate analyses are also consistent with an interpretation of clear sex differences emerging on PSM among 11th grade students. Statistically significant sex differences result primarily from the females' advantage on the Independence and Openness-to-Change subscales. The effect is small-to-moderate (as indexed by f) for the former, and small for the latter variate. At first these results appear to be contradictory to a substantial portion of the literature, but examination of the item content of the subscales suggests a feasible explanation of the results.

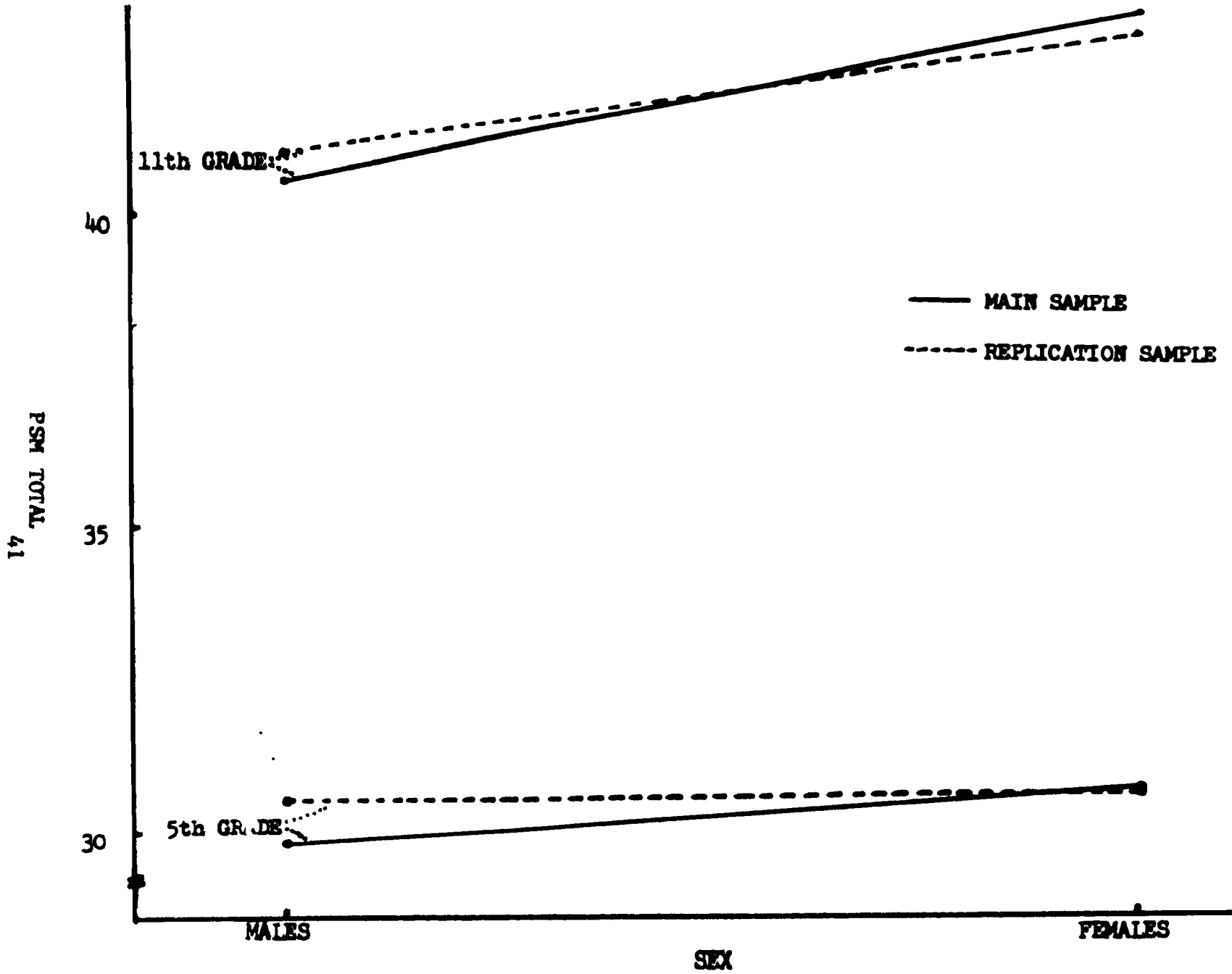

Fig. 3. Grade x Sex interactions. Means (for males and females) are, for the main sample, 5th grade: 29.81, 30.68; for 11th grade: 40.52, 43.35; for the replication sample, 5th grade: 30.54, 30.64; and for 11th grade: 40.99, 42.93.

The Independence subscale, as noted before, consists of occupation-related items. The 11th-grade girls make the more mature choice on such items, as determined by the a priori scoring of items and the developmental trend. There is a good deal of evidence to indicate that there are sex differences in job-related attitudes (e.g., with regard to need for achievement, see Atkinson, 1964; and Horner, 1968). Thus, for example, girls may be raised to see work as more important for its intrinsic satisfactions, while boys may be socialized to be more concerned about financial returns. Moreover, since the occupational role has generally been of more importance in the lives of men than of women, a higher degree of job-uncertainty exhibited by adolescent boys may be indicative of the fact that they weigh such decisions more carefully. Their occupational choice is likely to have a far-reaching effect on their lives.

Items on the Openness-to-Change subscale deal primarily with school-related change. Girls, generally, may be socialized to relate more positively to issues surrounding schools and teaching. One indication of the more positive orientation toward school among females is their better performance in school.

Finally, it should be noted that the hypothesized Race x Sex interaction was not found to be statistically significant in either the main or the replication sample.

Grade Level Effects

Both the main and replication analyses of PSM yielded large effects due to grade level. The 11th graders scored about 12 points

higher than the 5th graders. This finding is expected in view of the nature of the PSM concept: PSM should depict exactly this type of growth. In fact, the item-selection for the scale employed here was governed by the item's sensitivity to such age change.

No assessment of grade level effects was incorporated in either of the multivariate analyses due to the poor reliability of the subscales in the 5th grade samples (see Greenberger et. al , 1971).

PSM and Social Desirability

The mature direction of response on the PSM scale reflects the value system of the dominant culture. Race, sex, and social class differences in psychosocial maturity were attributed in this paper to differences in the thoroughness of socialization within this culture. One consequence of effective socialization is knowledge of the "desirable" point of view with respect to a number of socially approved attitudes and beliefs. This raises the possibility that youngsters who score high on maturity (a consequence of socialization) may do so because they know the socially desirable response and are motivated to present themselves in a favorable light -- to "fake good."

The issue of social desirability has received much attention in the literature on test construction. It was once customary to regard social desirability as an unwanted source of response to test items (Edwards, 1957). More recently, others have viewed

social desirability as an actual, though small, component in the trait that is supposed to be measured. The latter position seems reasonable in the present case. In an earlier paper (Greenberger and Sørensen, 1971) knowledge of norms and values and the desire to be in accord with them were conceptualized as components of psychosocial maturity. The relationship between PSM and social desirability will be an important topic of future research.

Some Final Statistical Considerations

Caution must be exercised in interpreting the effects size measure (f) for two reasons. The first reason has already been pointed out with regard to the multivariate case, i.e., f was not calculated directly but was, instead, extrapolated from the measures derived in the univariate case. Thus, the paper has had a discussion limited to terms indicating the ranges suggested by Cohen (1969), e.g., "small" effect sizes were discussed with regard to a number of our independent variables.

Discussion centering on size of effects could quite easily and naturally lead the reader into an interpretation of f as a measure of association between the independent and dependent variables. Indeed, Cohen (1969) makes this relationship quite explicit by developing a proportion-of-variance-accounted-for measure from f. Glass and Hakstian (1969) have cogently argued against the use of such indices in fixed effects analyses of variance. The logic of their position becomes abundantly clear when one considers the effect of truncation of the range of a

variable on relational measures (i.e., such coefficients will be spurious). Thus, the second, knottier interpretational problem has to do with the fact that fixed effects models often deal with independent variables whose levels are determined in such a way as to make them non-representative of the range of the variable. Depending on the levels chosen, correlation coefficients could fluctuate widely across investigations of the same independent-dependent variable pairs.

While Glass and Hakstian (1969) raise some key points regarding the use of relational measures with fixed effects models, an amplification on their analysis could shed more light on the basic problems.[1] The use of relational measures in the fixed effects analysis of variance should consider the bivariate structure of the relational measure and the meaning of the term "fixed effects."

First, it is apparent that both the independent and the dependent variable must have some degree of reliability in order to minimize the fluctuation of measures of association across investigations. Indeed, noise enters the system whenever we select for high, medium, and low scores on some (arbitrarily defined) independent variable, for this very reason (i.e., that the cutting points are likely to be quite different in different studies). Similarly changes in the structure of the dependent variable in the relational dyad in different research studies would likely also cause measureable fluctuation in measures of

[1] The first author is currently preparing a paper on this topic.

association. The first source of fluctuation is clearly highlighted by Glass and Hakstian. The second has importance for the present investigation. Some of the subscales employed here sample a very limited domain with regard to the construct they purport to measure. It is clearly desirable to the present authors to widen the range of item-types on the subscale of Independence (which consists primarily of occupation-related items). Moreover, more subscales are likely to be added as an attempt is made to operationalize more aspects of the Greenberger and Sørensen (1971) model. Such changes will surely cause changes in measures of association irrespective of the nature of the independent variable. The point is that fluctuation of associational measures is a necessary but not sufficient condition for suggesting their abandonment in research employing fixed effects factors.

Second, fixed effects is probably truly a hybrid category which may require a better refinement for today's research needs. Fixed effects variables do share the logical restriction on inference which defined the need for the classification. Beyond this defining characteristic important differences among types of fixed-effects variables are glossed over. Levels of a fixed effects independent variable may be mutually exhaustive of all categories of the variable (e.g., Sex in this study), mutually exhaustive of the categories of interest, (Race and Grade level), or arbitrarily chosen with regard to the possible levels (Social Class). This classification forms a crude continuum of associational measures

should fluctuate least for the less arbitrary methods of level selection. Thus, it is suggested that the effect size measure (in terms of small, medium, and large effects) is most dependable for Sex, somewhat less dependable for Race and Grade Level, and fairly undependable for Social Class.

Glass and Hakstian (1969) have suggested that one way of handling the sticky problems created by fixed effects variables is to graph the results and report the means and standard deviations or report mean differences in standard deviation units. The latter strategy is akin to our own -- or rather Cohen's (1969) -- and, it should be noted, is as prone to fluctuation among investigations employing fixed effects factors with arbitrarily selected factor levels as any relational measure. All of the foregoing is by way of urging the reader to exercise reasonable caution in the interpretation of effect sizes. Moreover, recognition of the basic issues in this area suggests that no fixed effects factor should be excluded from further study unless the dependent variable is fully developed (and stable) and the factor is of the type whose levels are mutually exhaustive of all the possible levels.

Finally, it should be noted that the canonical correlation procedure might have provided an interpretationally "cleaner" analysis than the procedure employed here. It is felt that this was unnecessary for an exploratory study on a scale in preliminary stages of development. The technique will have obvious advantages over the present one when the scale is fully developed.

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APPENDIX A

Methodological Difficulties

Because the thrust of this paper is to assess racial aspects of psychosocial maturity, it is important to consider some factors which have been found to be major obstacles in racial comparison research.[1] A number of such factors are tangential to our purposes and thus will only be briefly mentioned. Our analysis has led us to delineation of two basic problem-areas: Classification errors and sources of interpretational error.

Classification errors. The cautionary note sounded in the monumental reviews by Dreger & Miller (1960; 1968) require reiteration here. One obvious source of contamination lies in the fact that in a good many studies racial classification is largely a matter of self- (or community) determination. Errors resulting from such selection procedures are probably irrelevant to the outcomes of a number of studies; but obviously this does not hold true for other research (e.g., genetic studies). While gene-pool impurities may have a contaminating effect on racial comparisons, a more devastating source of error emanates from the racial discrimination long characteristic of this society. Thus, a

[1] There are, of course, other methodological difficulties with the data to be analyzed. Some of these more specific problems have been attended to in the context of interpreting the results. In addition, the comments of Greenberger & Sørensen (1971) and Greenberger et al, (1971) are relevant to these difficulties (e.g., the problem of pseudo-longitudinality).

situation has been created wherein even the best attempts at partialing out social class effects falls short because skin color is employed to structure castes within classes (cf. Rossi & Blum, 1969). At present there is little hope of separating the confounded effects of race and caste.

Sources of interpretational error. Perhaps it is worthwhile to repeat here the common admonition to fledgling behavioral scientists that correlation does not mean causation. Racial comparison research is, by nature, correlational. Few trained investigators would maintain that blacks score lower on achievement tests because they are black. Yet there is no great hesitancy among many of these same researchers to ascribe a causal role to one of a host of variables that reflect race differences. Blacks and whites in this country differ on so many variables (Dreger & Miller, 1960; 1968; Rossi & Blum 1969; Blum & Rossi,1969) that finding a difference on any one them can at best only provide clues as to causation. Any one (or combination) of these differentiating factors (or other potentially discoverable ones) could account for observed differences on any other measure. Until a proposed causal factor is manipulated and its presence produces change where its absence does not, we are hard put to impute causation.

Another predicament arises from the indiscriminate application of theories and tests to people with different life styles and psychological experiences than those who acted as original data sources. Such practices have resulted in weak theories and

incorrect conclusions regarding black people (see Baratz and Baratz, 1970; White, 1970).[1] Similarly recent studies (Katz, 1967a; 1967b; 1969) have underscored the importance of the race-of-tester (or experimenter) variable which may interact with a number of other factors to affect performance.

Taken together all of these difficulties attenuate interpretations from any single investigation; but they also provide cause for alarm with regard to another recent tendency. It has become fashionable of late to compare different racial investigations with little appreciation of the complexity of interrelationships among the many potentially "live" variables affecting any single study. The problem is compounded by the rapidly changing historical influences on the racial situation in our society. On the one hand, one can point to the burgeoning black middle class as one such influence; while on the other hand, black people's classic role as an economic buffer -- the first segment of society to suffer privations due to unemployment in any transient economic "squeeze" -- is still very much a factor. Thus, recent studies even only a few years apart in time are likely to reflect very different causal gestalts.

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[1] The standardization sample for the scales of PSM consisted of children 95% of who were white. Greenberger, et al, (1971) have observed that these scales are, in some measure, culture-bound. As noted above, however, the PSM items are appropriate for black Ss.

APPENDIX B

Questionnaire Format and Maturity Key

The questionnaire format for the 54 items of the psychosocial maturity scale is given below. The asterisk indicates which response or responses are "mature."

DIRECTIONS: Please mark each statement in the following way: If the statement describes how you usually feel, check "Like me". If the statement does not describe how you usually feel, check "Unlike me". There are no right or wrong answers.

	Like me	Unlike me
1. Luck decides most things that happen to me.	_____	* _____
2. Someone always has to tell me what to do.	_____	* _____
3. It takes me a long time to get used to anything new.	_____	* _____
4. I'm popular with kids my own age.	* _____	_____
5. If I work hard, I can be what I want to be.	* _____	_____
6. If I stick to something long enough, I can make it work.	* _____	_____
7. If I work hard, I can get a good job.	* _____	_____
8. If I have something to say, I usually say it.	* _____	_____
9. There isn't much of a chance for a person like me to succeed in life.	_____	* _____
10. If I work at something long enough, I will succeed.	* _____	_____

SOME PEOPLE SAY THAT IN ORDER TO KEEP UP IN A FAST MOVING WORLD IT WILL BE IMPORTANT TO KEEP LEARNING AND STUDYING ALL DURING OUR LIVES. OTHER PEOPLE SAY THAT ONCE A PERSON FINISHES SCHOOL, HE SHOULD BE ABLE TO HANDLE ANYTHING THAT COMES ALONG.

DIRECTIONS: Check the one column that best describes you. If you wish to change an answer, erase completely your first mark.

DO YOU THINK YOU WILL HAVE TO KEEP LEARNING AND STUDYING (IN OR OUT OF SCHOOL) IN ORDER TO:

	It will be very important	It will be quite important	It will be somewhat important	It will not be important	I can not say
11. Make good decisions in voting.	* _____	* _____	_____	_____	_____

DIRECTIONS: TRY TO PLACE YOURSELF IN THE FOLLOWING SITUATION:

BEFORE SCHOOL BEGAN ONE MORNING, YOU AND A GROUP OF CLASSMATES WERE HAVING A TALK ABOUT THE YEAR 1989 AND YOU WERE TRYING TO IMAGINE YOURSELVES GOING TO SCHOOL IN 1989. ITEMS 12 to22 ARE SOME OF YOUR CLASSMATES IDEAS.

	I accept it	I can not say	I do not accept it
12. There will be no marks and no report cards. Pupils will talk over their work with their teachers as often as they like.	* _____	_____	_____
13. Schools will be open 24 hours each day. Pupils can use the building at any time.	* _____	_____	_____
14. Pupils will work with teachers alone or in small groups.	* _____	_____	_____
15. All the latest and best reading materials will be quickly available through a computer.	* _____	_____	_____
16. There will be TV, movies, records, and tapes which pupils can use by themselves.	* _____	_____	_____

	I accept it	I can not say	I do not accept
17. Pupils will have the use of a computer for arithmetic and many other things.	*		
18. There will be quiet places to learn and study on one's own.	*		
19. To learn about the people and the language of another country, pupils will spend some time living in foreign countries.	*		
20. To learn about different people in this country, pupils will spend time living in different sections of the United States.	*		
21. Pupils will learn in factories, laboratories, hospitals, museums theaters and offices. Pupils will visit these places if they wish to learn about them and about the people in them.	*		
22. Pupils will talk with others all over the world by way of satellite.	*		

DIRECTIONS: READ EACH STATEMENT, THINK ABOUT WHAT YOU HAVE DONE IN THE PAST IF YOU WERE EVER FACED WITH THE SITUATION AND MARK YOU ANSWER BY CHECKING THE COLUMN THAT FITS BEST. IF YOU NEVER FACED THE SITUATION, TRY TO IMAGINE WHAT YOU WOULD DO. DON'T SPEND TOO MUCH TIME ON ANY ONE ITEM.

	Always	Most of the time	Some-times	Very seldom	Never
23. I like to earn my own money when I can.	*	*			
24. A man should work and earn his own living if he can.	*	*			
25. A man should vote the same way his friends do.				*	*
26. People should not be allowed to say what they think.				*	*

DIRECTIONS: THE ITEMS BELOW ARE STATEMENTS ABOUT OCCUPATIONAL CHOICE AND WORK. OCCUPATIONAL CHOICE MEANS THE KIND OF JOB OR WORK THAT YOU THINK YOU WILL PROBABLY BE DOING WHEN YOU FINISH ALL OF YOUR SCHOOLING. IF YOU AGREE OR MOSTLY AGREE WITH THE STATEMENT, PUT A CHECK IN THE SPACE HEADED TRUE. IF YOU DISAGREE OR MOSTLY DISAGREE WITH THE STATEMENT, PUT A CHECK IN THE SPACE HEADED FALSE.

	True	False
27. I plan to follow the line of work my parents suggest.	____	* ____
28. I'm not going to worry about choosing an occupation until I'm out of school.	____	* ____
29. Your parents probably know better than anyone else which occupation you should enter.	____	* ____
30. Why try to decide on a job when the future is so uncertain.	____	* ____
31. I seldom think about the job I want to enter.	____	* ____
32. It doesn't matter which job you choose as long as it pays well.	____	* ____
33. You can't go very far wrong by following your parents' advice about which job to choose.	____	* ____
34. Whether you're interested in a particular kind of work is not as important as whether you can do it.	____	* ____
35. You get into an occupation mostly by chance.	____	* ____
36. It's who you know, not what you know, that is important in a job.	____	* ____
37. When it comes to choosing a job, I'll make up my own mind.	* ____	____
38. I have little idea of what working will be like.	____	* ____
39. Choose an occupation, then plan to enter it.	* ____	____
40. I really can't find any work that appeals to me.	____	* ____
41. Choose a job in which you can be famous.	____	* ____
42. The most important part of work is the pleasure which comes from doing it.	* ____	____
43. Why worry about choosing a job when you don't have anything to say about it.	____	* ____

	True	False
44. I don't know how to go about getting into the kind of work I want to do.		*
45. I don't know what courses I should take in school.		*
46. I know very little about the requirements of jobs.		*
47. I can't understand how some people can be so set about what they want to do.		*

DIRECTIONS: READ EACH QUESTION CAREFULLY AND DECIDE HOW YOU FEEL ABOUT IT. THERE ARE FIVE POSSIBLE ANSWERS TO CHOOSE FROM. BE SURE TO ANSWER EACH QUESTION. CHECK ONLY ONE SPACE FOR EACH QUESTION.

	I would like it	I would not mind it	I would rather not	I would dislike it	I can not say
48. How would you feel about sitting in class next to a person whose skin color is different from your own?	*	*			
49. How would you feel about having as a best friend a person whose ideas about God are very different from your own?	*	*			
50. How would you feel about playing on the same team with a person whose ideas about God are very different from your own?	*	*			
51. How would you feel about sitting in class next to a person whose ideas about God are very different from your own?	*	*			
52. How would you feel about having as best friend a person whose family is much poorer than yours?	*	*			
53. How would you feel about playing on the same team with a person whose family is much poorer than yours?	*	*			
54. How would you feel about sitting in class next to a person whose family is much poorer than yours?	*	*			

APPENDIX C

Sources of Items

Item	Identification
1	Educational Testing Service
2	Self-Esteem Inventory, Stanley Coopersmith, 1967
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10	Educational Testing Service
11	Pennsylvania Department of Education
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27	Vocational Development Inventory, John O. Crites, 1969
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[1]The 54 items appear in the order listed in Appendix C.

[2]Further bibliographic information may be found under References.

Item	Identification
30	Vocational Development Inventory, John O. Crites, 1969
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48	Pennsylvania Department of Education
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APPENDIX D

Means of Non-Significant Interactions Involving Race

Variable(s)	Levels		Sample and Race			
			Main		Replication	
			Blacks	Whites	Blacks	Whites
	Two - way Interactions					
Sex	Male		31.49	36.28	32.00	36.81
	Female		34.22	38.30	33.56	38.22
Grade	5th		26.96	31.80	26.85	32.21
	11th		39.68	43.15	39.30	43.17
	Three - way Interactions					
Sex x Grade	Male	5th	26.67	31.35	26.21	32.21
		11th	38.06	41.46	38.63	41.87
	Female	5th	27.25	32.19	27.39	32.21
		11th	40.77	44.59	39.80	44.50
Sex x Class	Male	Low	30.77	35.26	30.96	35.08
		Mid	31.32	35.81	31.09	35.86
		Hi	33.15	37.61	35.71	38.96
	Female	Low	34.21	37.11	33.01	36.36
		Mid	32.99	37.61	33.69	37.87
		Hi	36.11	39.97	34.54	39.93
Grade x Class	5th	Low	36.50	29.17	26.22	29.50
		Mid	27.57	31.77	26.74	31.23
		Hi	26.85	33.63	28.68	35.02
	11th	Low	38.93	41.81	38.78	41.29
		Mid	40.13	43.13	39.52	43.59
		Hi	40.64	44.36	39.92	44.23