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RACIAL INEQUALITIES IN ARMY REWARD SYSTEMS:

A DEFINITION AND EMPIRICAL EVALUATION

by
Patricia Anne Pecorella

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
(Psychology)
in The University of Michigan
1976

Doctoral Committee:

Associate Professor David G. Bowers, Chairman
Professor Louis A. Ferman
Assistant Professor James S. Jackson
Professor Stanley E. Seashore

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I.

STATEMENT OF THE PROBLEM

Racial disturbances in several U.S. cities since 1964 indicate that racial inequities have not yet been effectively dealt with. Conflicts on Army posts and Navy ships in recent years demonstrate that the "problem of the color line," as Jones (1972) termed it, is still a salient one for the military as well.

What caused these confrontations? One assumed cause was the low economic position of racial minorities. Yet government-sponsored programs and legal sanctions designed to raise the standard of living of these groups had been introduced earlier. Certain summary statistics indicate that these programs and sanctions made an impact. The median family income (in 1971 constant dollars) of Blacks and other non-white races rose from $2,930 in 1947 to $6,714 -- an increase of over 128 percent.[1] The median number of school years completed by Blacks and other minority races rose from 7.6 in 1952 to 12.1 in 1973.[2]

Several writers argue, however, that summary comparisons such as these are too simplistic. Jones (1972) states:

> It is true that the income of black Americans increased from 1947 to 1968 by 122 percent (from $2,514 to $5,590). But [taken as a percentage of] white family income, the increase is a mere 11 percent on the average (from 51 percent to 62 percent). At the higher SES levels, the income gap is closing more rapidly, but at the lower levels, it is in fact *widening*. (p. 109)

[1]The source for these figures is Social Indicators, 1973, published by the U.S. Government Printing Office, Division of Public Documents.

[2]The source for these figures is the Manpower Report of the President, April 1974.

Katz and Gurin's assessment (1969) is similar in conclusion:

> First, despite the movement of large numbers of Negroes into more secure and desirable positions in the social structure, sizeable differentials still exist in the extent to which Negroes and whites possess the rights and rewards valued in this society: employment, income, job status and mobility, housing, health, education, freedom of movement, and the respect of others; second, the comparative trends for Negroes and whites are such that Negroes in the 1960's are relatively as disadvantaged in several of these areas as they have ever been. (p. 351)

Thus, despite an increase in "goods" received by minority racial groups, race differentials show that discrimination still exists.

The race problem has been approached in a variety of ways. The approaches have varied in what they consider to be the problem, its causes, and the appropriate solutions (e.g., see Jones, 1972). One trend is for definitions of race discrimination to emphasize actions rather than attitudes. A second trend is to view race discrimination as involving more than personal and social interactions. Race discrimination is embedded in the policies and practices of institutions which -- intentionally or unintentionally, overtly or covertly -- deny equal opportunities to persons because of race (e.g., Knowles & Prewitt, 1969; Jones, 1972).

These trends have led to the emergence of "Institutuional Racism" as an important concept in race relations. The current need is for empirical studies which operationalize the concept.

Research is needed which measures accurately the magnitude of Institutional Racism. Racial inequalities in goods received can result from race discrimination or from other individual or situational differences. Yet, too many studies of the race problem do not separate

legitimate from discriminatory differences in rewards received.

An accurate operationalization of Institutional Racism is needed in order to monitor the effects of programs designed to reduce race discrimination and to identify the effective change strategies. Evaluation of change strategies is an underdeveloped field generally. But in no area are the effects of a "bad" strategy greater than in the area of race discrimination. The need for better measurement and definition of Institutional Racism was the primary motivation for conducting the present research.

In this study Institutional Racism is defined as reward allocation practices which result in Whites receiving more rewards than equally qualified Blacks. Institutional Racism in Army work-settings is the focus.

Three general questions are addressed:

(1) What criteria determine the organizational rewards received by Blacks and Whites?

(2) Do the criteria used to allocate rewards place Blacks at a disadvantage?

(3) Do work-setting characteristics affect race differentials in rewards received?

Organization of This Report

The following chapter is a review of the literature on race discrimination and reward allocation and is divided into two sections. The first details the definition of discrimination. The second section examines determinants of race differentials in organizations.

In Chapter III, the theoretical basis of the present study is fully elaborated. The research questions are also presented. In Chapter IV, the methodology and sample employed are described. The results are presented and discussed in Chapters V and VI.

II.

RACE DISCRIMINATION IN WORK SETTINGS: A LITERATURE REVIEW

Work organizations are major allocators of social and economic rewards and this makes race discrimination in work institutions important to study. When equality of reward distributions is achieved in work settings we will have moved a long way toward solving the race problem.

In this literature review the links between organizational reward allocation and race discrimination are examined. The review begins by defining race discrimination as a deviation from the social norm of justice and the achievement ideology. This definition leads to a distinction between legitimate and discriminatory sources of reward allocation.

Four sources of race differentials in reward distributions are then identified and the ramifications of each source discussed. Individual merit or qualifications are termed legitimate sources. Racial differences in motivation, ability, and access and the relationships between these characteristics and rewards received are examined.

Individual merit is espoused as the desirable criterion for reward allocation. Qualifications are shown to have less impact than one might expect, however.

Three other factors affecting reward allocation are considered in remaining sections of the paper: Social background characteristics (which are termed illegitimate criteria), formal organizational properties such as technology and job interdependence, and informal

organizational properties as encompassed by socialization and accommodation processes.

The needs for greater comprehensiveness in studies of reward allocation and greater precision in the methodology are emphasized throughout. The recurring question is the following: When are racial inequalities in reward allocation practices discriminatory?

Race Discrimination as Deviation from Social Norms

Prejudice, discrimination, and racism are evaluative terms because they imply divergence from social norms. Social norms are "ideal" standards of conduct which everyone in the society is somewhat obligated to follow, but which are not actually followed by everyone (Williams, 1960). Prejudice, discrimination, or racism is said to exist when one or more of the following social norms are violated (Jones, 1972; Harding, et al., 1969):

(1) Rationality - Beliefs, perceptions and expectations should be based on reasonable attempts to secure accurate information, correct misinformation, make logical deductions and careful inferences.

(2) Justice - Individuals should be treated equally except where differential treatment is based on individual differences defined as functionally relevant to the requirements of the situation.

(3) Human-heartedness - Relationships between individuals should be based on love, tolerance, human sympathy, and a positive affection for one's fellow human beings.

Discrimination in organizational reward allocation practices can be evaluated by whether they deviate from these social norms.

Race Discrimination and the Achievement Ideology

Concerning discrimination, Allport (1954) said:

> Discrimination comes about only when we deny to individuals or groups of people equality of treatment which they may wish.
>
> Differential treatment based on individual qualities probably should not be classed as discrimination. (p. 50)

Two phrases from these statements are basic to our definition of race discrimination: *equality of treatment* and *based on individual qualities*. The relationship between equality of treatment and discrimination stems from the social norm of "justice." The emphasis on individual merit reflects Allport's espousal of the "achievement ideology" as the guide for determining how rewards should be distributed.

The achievement ideology holds that individuals should receive rewards according to their skills, experience, and performance. Characteristics and behaviors that reflect the "merits" of a person -- education and professional training, for example -- are viewed as legitimate criteria for allocating rewards. Characteristics not related to effective performance -- race and social background, for example -- are viewed as illegitimate criteria that should not affect the rewards received. Written policies of many organizations state that promotions, pay increases, etc. are contingent on good performance. It is important to investigate how closely such statements match reality.

The norm of justice demands equal treatment. The achievement ideology acknowledges that an organization's resources are limited and prescribes a set of priorities for determining allocation of these resources. The present investigator follows the achievement ideology in defining legitimate and illegitimate criteria for reward allocation in work organizations.

Thus, it is not necessarily discriminatory to reward some people more than others. Race discrimination refers specifically to differential application of legitimate and illegitimate criteria which operates to the disadvantage of the minority group.[3]

Since race discrimination violates existing legislation, its practice is frequently covert. A decision to promote Whites rather than equally qualified Blacks may be rationalized on the basis of the "relative lack of initiative" on the part of the Black employees, for example. Therefore, investigations of race discrimination in organizations should acknowledge discrepancies between "official" policy and actual practices and should emphasize the latter.

SOURCES OF RACE DIFFERENTIALS IN REWARD ALLOCATION

Many researchers and writers define the crux of the race problem as persisting racial differences in rewards and opportunities (e.g., Katz & Gurin, 1969; Jones, 1972). As stated earlier, these differentials do not necessarily signify race discrimination. The real

---

[3]This view contrasts with definitions of the race problem which focus on undesirable ideologies (e.g., "the achievement ideology is discriminatory") and those maintaining that "just" or equitable treatment requires differential treatment of racial groups -- treatment which takes account of differences in cultural heritage and past experience.

question is whether the existing race differentials are attributable to legitimate factors.

Research efforts which identify reasons for the differentials in organizational settings commonly focus upon one or more of the following:

(1) Differences in job qualifications such as education, work experience, formal training, and ability.

(2) Differences in personal characteristics not related to one's ability to do a job well such as social background and race.

(3) Formal organizational properties such as organization size, technolgoy, or skill requirements.

(4) Informal organizational characteristics such as normative pressures from peers and supervisors regarding appropriate behavior at work.

The effects of these four factors on reward allocation and race differentials is discussed in the following pages.

Legitimate Individual Factors And Reward Allocation

According to the achievement ideology, rewards should be allocated on the basis of merit. The most direct measure of merit is performance in the person's present job. Performance data on individuals are usually very difficult to collect, however, especially when work is performed jointly and does not result in an immediate and identifiable "product." For example, managers make policy decisions and in other ways maintain the organization. The effects of a policy decision on the organization may not become visible for some time, however.

Organizations seldom collect the information necessary to evaluate empirically the long-run effectiveness of such policy making. Instead, a superordinate of the manager, by drawing upon personal impressions and experiences with the manager and perhaps by monitoring the productivity level in the manager's whole department, estimates the manager's effectiveness.

Researchers seldom have access to measures of performance because their data are not usually collected from actual work settings. Instead, researchers measure the abilities and motivations of employed people based on the theory that ability and motivation significantly affect performance.[4]

To the extent that (1) Blacks have less ability than Whites to perform well at work, and (2) ability is related to the rewards received by members of both racial groups, race differentials in such areas as income and occupational position probably should not be attributed to discriminatory practices by the current employer.[5]

The legitimacy of motivational factors in reward allocation is less clear. One hears statements like "Blacks don't have jobs because they don't want to work" and "Blacks don't have high-level jobs because they don't want to take the responsibility required by these jobs."[6]

---

[4]The theory that work performance is affected by a person's ability and motivation is widely accepted by psychologists (e.g., see Vroom and Deci, 1970).

[5]Defining ability differences as legitimate factors in current reward allocation, does not mean that illegitimate factors played no part in the past. Educational and training opportunities may have been unjustly denied to Blacks, which could then result in lower qualifications.

[6]The accuracy or inaccuracy of these statements regarding the motivations of Blacks will be addressed shortly.

In such statements it is hypothesized that Blacks possess certain traits inimical to achievement in school, work, and many other areas of life (c.f., Katz, 1973). The validity of this hypothesis depends not only upon whether there are racial differences in motivation and personality but also how significant the differences are and what their relationship is to performance. Even if the research supports the existence of racial differences, several more questions must be asked: Are the differences due to early experiences in the home? Current treatment? Innate tendencies? How modifiable are the characteristics once formed? (Katz, 1973).

Racial Differences in Motivation

The findings regarding the existence of motivational differences are mixed. Bloom and Barry (1967) found that Blacks were more extrinsically motivated than Whites. Quinn (1973) however, found no racial differences in extrinsic motivation. Using large samples of civilian and military work settings, Bowers (1975) concluded that:

> Similarity among racial groups in [job] preferences, rather than difference, is more often found. No real difference is apparent, for example, in importance attached to serving one's country, to making the world a better place, nor to pay, fringe benefits, and steady employment. Opportunity to control one's personal life, to stay in one place or move about, as well as the desire for supportive behavior from supervisor and co-workers, are preferred to essentially the same degree by both Blacks and Whites. At least five of the value differences which do attain statistical significance among racial categories seem capable of being explained in terms of adaptation to conditions actually experienced on these same dimensions. (p. 25-26)

Kirkpatrick (1973) concluded that Blacks had higher occupational aspirations than Whites but that Black job expectations were lower than their aspirations, and correspondingly lower than Whites' expectations. Blacks did plan less and had less achievement motivation than Whites. However, Blacks had lower average scores on almost every psychological test.

Motivations are related to performance (Katz, 1973; Hackman & Lawler, 1971) and social background has an effect on motivation (Katz, 1973). The current work-setting also has a significant effect, however. Situational conditions such as racial composition (Pettigrew, 1969) and treatment by superiors (e.g., Clark, 1965; Katz, 1964) affect students' incentives to work and their expectations of success. To the extent that race segregation and poor treatment of Blacks by superiors operates in a work-setting, the achievement motivation of Blacks is likely to be lessened. In these settings motivation should not be considered a valid criterion for reward allocation.

Racial Differences in Ability

By traditional measures, Whites are better qualified than Blacks: The average gap between Blacks and Whites on standardized IQ tests is 15 points, with Blacks scoring lower than Whites (Jencks, et al., 1972; Watson, 1973). This gap is present as early as first grade and persists

through college.[7] Jones (1972) reported that Blacks average two years less schooling than Whites. Blacks consistently have a higher unemployment rate than Whites and less tenure in most job positions (Killingsworth, 1969). Equally significant is the interrelationship between qualifications: I.Q. is related to educational attainment (Jencks, 1969) which is related to employment status and the type of job acquired (e.g., Turner, 1952; Duncan, 1968) -- at least for Whites.

The Role of Unequal Access

Another position is that racial differences in tenure and employment reveal unequal access to jobs and training opportunities more than unequal qualifications. A study by Duncan (1968) indicated that a college education was not sufficient to overcome access discrimination. It did not help Blacks enter prestigious occupations as much as it helped Whites. Turner (1952) also emphasized the weak relationship between qualification and entry into occupations. In his words:

> First, discrimination is more strongly focused at the stage of attaining a high-level occupational status than it is at the stage of attaining the *qualifications* for a high-level status....Second, the focus of discrimination is principally on the type of job which may be secured rather than on the mere attainment of employment. (pp. 249-250)

[7]The relative influence of genetic make-up versus environment on I.Q. has generated much debate. Many researchers proposed that environmental variations totally accounted for the 15 point difference between Blacks and Whites (e.g., Hunt, 1951; Katz, et al., 1964; Pettigrew, 1964; Rosenthal & Jacobson, 1968). Jenson (1969) however, argued that this IQ difference revealed racial differences in innate mental abilities. More recently, writers have asserted the importance of both inheritance and environment as sources of IQ differences (e.g., Jencks, 1969; Watson, 1973).

Other research findings attest to the existence of access discrimination. Strauss (1972) found that an industry hired Blacks in all occupations or not at all. Ashenfelter (1973) found that trade unions differed in their racial policies.

The military has probably led the nation in eliminating discriminatory "hiring" practices. Yet, branches of the armed forces differ in their racial policies, with the Army having the highest and the Navy the lowest percentages of Blacks in their ranks (Moskos, 1973).

While various industries, branches of the military, and unions have differing racial policies, one pattern of employment is prevalent in all of them: Blacks tend to be overrepresented in the lower paid occupations and underrepresented in the higher paid occupations (Ashenfelter, 1968; Strauss, 1972; Moskos, 1973). These skewed distributions cannot be explained solely by differences in merit.

While difficult, a study of discrimination should separate the effects of past and present treatment. This would not imply that discrimination is ahistorical. It emphasizes the importance of isolating the impact of various causes. Thus, to the extent that current race discrimination concerns present treatment of Blacks and Whites, differences in qualifications are legitimate determiners of organizational reward allocation. Whether racial differences in rewards received are in fact explained by differences in 'merit' is another question.

The Relationship Between Qualifications and Rewards Received

Studies in labor economics in the sixties zeroed in on race differentials in reward allocation. Rudimentary studies examined average income for working Blacks versus Whites and reported any changes in the "earnings gap" over time. Alternatively, the proportion of Blacks versus Whites at various organizational levels and in various occupations were compared. The race differentials in these studies were assumed to have two sources: (1) racial differences in education, experience, and other characteristics held as legitimate criteria for hiring and rewarding, and (2) race discrimination -- that is, paying Whites more than equally qualified Blacks or hiring and promoting Whites over equally qualified Blacks. This assumption was warranted. When the aggregate figures of income (by race) were stratified by, for example, education, the race differential was less but still present and sizeable (e.g., Hanoch, 1967, and Welch, 1967, as cited by O'Neill, 1970).

Labor-economic studies of race differentials at the individual level (as opposed to figures aggregated by race) typically focused on how well an individual's income or occupational location could be predicted from the person's qualifications or "merits" (e.g., Ashenfelter, 1968; Duncan, 1968; Fogel, 1967; Oaxaca, 1973; O'Neill, 1970; Weiss, 1970). Education, tenure, specialized training, and work experience were among the best predictors. The proportion of variance in income (or some such reward) explained by the legitimate predictors indicated the extent to which the achievement ideology was operating. Using this strategy, race discrimination was assumed to be reflected

by (1) differences in the weights applied to qualifications of Blacks versus Whites, and (2) the residual -- or the variance unexplained by legitimate criteria.[8]

The importance of race. While there has been some variation in the exact size of the race differentials found using various strategies, labor economists have consistently found that Whites earn more and are in higher-status, better-paying occupations than Blacks with similar qualifications. Mount and Bennett (1975) estimated that merely being White was worth $1,000 per year in one's income. Knowles and Prewitt (1969) found that studies taking into account variation in education and other legitimate characteristics still left between 13 and 38 percent of the income differential unexplained. Ashenfelter (1968) estiamted that educational differences could account for no more than one-third of the race differential in occupational positions. And Duncan (1968) found that education in fact only accounted for one-fifth of the variation in occupational position. The relationship between IQ tests and rewards is even weaker (Jencks, 1969).

These studies demonstrate the qualifications as measured by education and IQ tests explain only a portion of the racial differences in income and occupational position.

---

[8]Becker (1957) was the first to introduce and operationalize the concept of a 'discrimination coefficient.' His market discrimination coefficient was defined as the gross wage differential between two types of substitutable labor.

Many researchers have found that the qualifications of Blacks also carry less weight than those of Whites (i.e., Ashenfelter, 1968; Duncan, 1967, 1968, 1969; Fogel, 1967; Siegal, 1965; Weiss, 1970). Weiss (1970) found that the correlation between education and income was weaker for Blacks than for Whites. Duncan (1969) found that the compound path coefficient from education to occupation to income was weaker for Blacks than Whites. Well-educated Blacks had a more difficult time than comparable Whites in securing prestigious, high-paying jobs. This type of finding led Duncan and others to conclude that race discrimination is greatest against more highly educated Blacks.

How important is quality of schooling? Some researchers take issue with this conclusion. O'Neill (1970) and Gwartney (1972) found that, after adjusting for achievement,[9] the Black-White differential attributable to current discrimination was less for college graduates than for any other educational grouping. O'Neill interpreted his finding to mean that "quality of schooling rather than current market discrimination is probably the main cause of the observed low economic return to Negroe college education" (p. 484). However, this interpretation is based on two assumptions: (1) achievement differences reflect differences in quality of schooling, and (2) quality of schooling affects economic return. Neither assumption seems fully warranted.

---

[9]In order to adjust for differences in achievement, Black years of schooling were converted into equiproductive years of White schooling. This conversion was accomplished using scores on achievement tests for Blacks versus Whites at each of several educational levels and the actual and predicted outcomes (e.g., earnings) associated with these characteristics by race.

Differences in achievement test scores may reflect personal attributes such as motivation or family background more than quality of schooling. Jencks (1969) found that family background was correlated both with test scores and educational level. Jencks also reported findings somewhat inconsistent with the second assumption. He found that quality of schooling was essentially unrelated to income. While Jencks' analysis did not include college institutions, O'Neill offered no reason why quality of schooling at the college level should suddenly make such a difference. Secondly, Jencks' found the relationships between achievement test scores and rewards to be considerably weaker than the relationship between education and rewards.

Thus, the relative value of a college education to Blacks versus Whites is unclear. The findings of O'Neill and Gwartney highlight the importance of using comprehensive measures of qualification in order to test the influence of various factors. They call into question "crude" measures of qualifications like years of schooling exclusive of more direct performance measures. Nevertheless, researchers will continue to measure education because, although crude, it is often the best estimate of qualifications available.

Methodological Issues. Labor-economic studies of race discrimination have focused on racial differences in the extent to which legitimate criteria determine reward allocation. This approach to race discrimination emphasizes the importance of racial differences in reward allocation, rather than simply focusing on racial differences in status. The problem with this strategy is that the variance in race differentials not explained by legitimate criteria is automatically attributed

to race discrimination. In actuality, the unexplained variance in multi-variate analyses includes -- in addition to variance due to discrimination -- variance due to measurement error and legitimate factors not included in the predictor list (e.g., actual performance on-the-job). A better strategy would include two types of predictors -- some representing legitimate determiners of occupational rewards and others representing illegitimate criteria. Care should be taken to ensure that the list of both legitimate and illegitimate predictors are as complete as possible. The variance explained by both sets of predictors could then be compared within and across racial groups. This would yield a more complete and direct estimate of the extent to which actual reward allocation violates the prescriptions of the achievement ideology. A recent paper by Blinder (1973) took a step in this direction.[10] He considered differences in the weights applied to several legitimate and illegitimate criteria for Blacks versus Whites plus the unexplained variance for Blacks, as indicators of discrimination.[11] Using this approach, Blinder attributed 70 percent of the overall race differential to discrimination of various sorts.

It is the present author's view that the general approach taken by Blinder (1973) is a useful one for investigating the existence and nature of treatment discrimination and that research which builds on and extends this type of analysis is merited.

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[10] In the area of sex discrimination, Levitin, et al. (1971) and Staines, et al. (1973) employed strategies which partially address these issues.

[11] Hansen, et al. (1970) performed similar analyses but did not discuss their findings in terms of discrimination so much as in terms of the variety of factors affecting incomes.

Quality of Work as an Organizational Reward

Thus far, our focus has been discriminatory allocation of economic rewards. However, non-economic rewards such as quality of work also merit attention. Gwartney (1970) states:

> The terms and conditions of the sale of labor by an employee include not only wages and related monetary compensation, but also working conditions and other nonpecuniary benefits. Individuals have some trade-off between preferred working conditions and additional money income. (p. 396)

And in Adam's (1972) words,

> It should be emphasized that occupational movement is not an end in itself. More important is the quality of jobs involved, a factor often over-looked in the broad occupational categories used by studies of this kind. (p. 516)

Quality of working life has significant effects upon employees. It has been related to satisfaction (Barnowe, et al., 1973; Cammann, et al., 1974), depression, life satisfaction, self-esteem, overall physical health, psychological withdrawal, turnover tendency, and societal involvement (Cammann, et al., 1974). Variations in quality of work which are discriminatory should be identified.

Very recently a few studies have been conducted in the military which compare the quality of work experienced by Blacks and Whites. Generally, the results show Blacks to be equally or more satisfied with their work settings than Whites; Blacks also tend to report similar or higher quality of work than Whites (Parker, 1974; Pecorella, 1975). An exception to these findings occurs when perceptions of discriminatory treatment are measured. Blacks feel discriminated against; Whites do not (Borus, et al., 1972; Pecorella, 1975; Thomas, et al., 1974).

This body of research indicates that discrimination affects the distribution of economic rewards to the disadvantage of Blacks but that the quality of work experienced by them is no worse, and perhaps better, than that of Whites.[12] This implies a weak relationship between economic and non-economic indicators of discrimination.

The factors contributing to racial differences in quality of work have not been investigated empirically.[13] Two contributing factors are hypothesized: (1) Blacks are treated better than Whites, or (2) Blacks use lower standards of comparison of points of reference because of past deprivation. This relative deprivation may result in their rating similar or worse conditions higher than Whites.

Analyses similar to those conducted by labor economists to predict income could also be used to determine the factors related to quality of work. The extent to which legitimate versus illegitimate criteria are related to quality of work provides a basis for operationally defining occupational discrimination in non-economic areas.

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[12]It is, of course, possible that this finding is more true of military than of civilian work settings, since most of the relevant studies have been conducted in the military.

[13]Even less is known about the determinants of self reports of discrimination. Blacks feel discriminated against; Whites do not. Yet such feelings are very weakly related to economic or non-economic indicators of discrimination (Pecorella, 1975). Either "felt" discrimination is a generalized reaction to past and current treatment or investigators have not yet measured its specific sources.

A Few Words About the State of the Field

A great deal has been written about racial differences in ability and motivation both inside and outside of work settings. These studies indicate that Whites possess higher levels than Blacks of the abilities and motivations valued in our society but that these racial differences are not immutable. Situational conditions, both past and present, affect performance and motivation. Furthermore, socio-economic class and race are often confounded, both in empirical studies and in people's minds.[14] Thus, viewpoints which maintain that Blacks are less qualified because they possess inferior genes or counter-productive, fixed personality traits have little validity.

Are people in work organizations rewarded on the basis of merit? The studies indicate that, while merit plays some part in economic success, it is not by any means the sole criterion. Qualifications explain less than half of race differentials in income and occupational position, and far from 100 percent of the variance in success for either race. Yet several issues remain unresolved:

1. How much value does higher education and greater training have for Blacks? Are more highly qualified Blacks more discriminated against? Or are unmeasured but legitimate variables weakening the relationship for Blacks between, for example, education and mobility?

2. What factors explain the remaining variance in rewards received and in race differentials in rewards received?

3. Is it generally the case that the relationship between legitimate criteria and rewards is weaker for Blacks than for Whites? If the reverse were found, what would it mean?

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[14] Jones' (1972) discussion of this confusion in the ratings of Blacks by other Blacks sheds new light on earlier studies of racially connected self-derogation.

4. Are the answers to the above questions the same for all organizational rewards? Or do the answers depend upon the nature of the rewards (e.g., economic versus non-economic) being predicted?

Answers to these questions require more comprehensive measures of both predictors and rewards and more precise methodologies for assessing the relationships between these two classes of variables.

Illegitimate Individual Factors And Reward Allocation

The major criterion used to classify an individual characteristic as legitimate or illegitimate in the present discussion is the relevance of the characteristic to a person's ability to perform his or her job well. According to this criterion race, sex, age, social and family background, and marital status are considered illegitimate. The amount of variance in reward allocation explained by variables such as these, after controlling for differences in legitimate characteristics,[15] gives an indication of how strongly the achievement ideology is operating. Stronger relationships between these illegitimate factors and rewards received indicate that rewards are not being allocated according to the achievement ideology.

Early studies focusing upon characteristics of "promotable" personnel attested to the influence of illegitimate criteria on hiring decisions and reward allocation (Dalton, 1951, 1959; Coates & Pellegrin, 1957; Bowman, 1962, 1964; Powell, 1963). In these studies, managerial

[15]It is important to control for differences in legitimate characteristics to separate past influences of social background on educational attainment from current influences on rewards received.

personnel were asked to evaluate the importance of several characteristics in promotion decisions. Characteristics such as race and social background were termed informal criteria by these investigators because, although often listed as important criteria in the surveys, they tended not to be cited in formal organizational statements of evaluation procedures and policies.

Labor economic studies have also examined the importance of certain illegitimate criteria (often race or sex) using a very different approach. "Discriminatory" or illegitimate factors were said to be operating in each of the following situations:

1. The incomes or occupational positions associated with given levels of education, job tenure and other qualifications were lower for Blacks than for Whites (e.g., Duncan, 1968; Levitin, et al., 1971).
2. Measures of qualifications explained different amounts of variance in income and occupational position for Blacks and Whites. Usually, less variance was explained for Blacks (e.g., Duncan, 1968).
3. Variables (such as family background) labelled "personal" or "exogenous," rather than performance-related, explained different amounts of variance in income for Blacks and Whites (e.g., Blinder, 1973).
4. Race, as a predictor variable, explained a significant portion of the variance in income or occupational position (e.g., Corazzini, 1972; Mount & Bennett, 1975).

Methodological Issues

The pros and cons of several of the analysis methods employed have already been presented (see pages 18 to 19). Many of the studies cited here were weakened, in this investigator's view, because they either failed to include variables (other than race or sex) which might be considered illegitimate (e.g., Mount & Bennett, 1975), or because they included such variables but did not explicitly address the issue of their "legitimacy" (e.g., Duncan, 1968). The explicit classification of variables as legitimate or illegitimate was done here for the purposes of this review and not by the original authors.[16] For example, Duncan's (1968) discussion of the effects of social background on educational attainment, occupational position, and income did not address the issue of the relevance of social background to job performance. While it is well known that Blacks are disproportionately concentrated in the lower socio-economic levels, the achievement ideology implies that social background (once educational, performance, etc., differences have been controlled for) should not be used as criteria for reward allocation because they are unrelated to performance. Clearly addressing the legitimacy issue increases the precision of the definitions of discrimination stated or implied. Developing a more adequate and precise operational definition of race discrimination is a major objective of the present study.

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[16]Blinder's classification of variables as "endogenous" and "exogenous" comes very close to being an exception to this statement.

Race as an Independent and Moderating Variable

One remaining issue not explicitly addressed in previous studies is that of defining race as an independent or moderating variable.[17] When race is entered as a predictor in a regression analysis, it is an independent variable. On the other hand, when separate analyses are conducted for Blacks and Whites, race becomes a moderating variable. Race takes on different meanings in these two analysis designs. Using race as an independent variable tests the hypothesis of whether merely being Black or White affects the rewards received. Using race as a moderating variable tests hypotheses like 'educated Blacks are treated differently from educated Whites.' That is, it explores whether some subgroups of Blacks are treated worse than others.

Race, as an independent variable, has explained significant portions of variance in income in several studies (e.g., Corazzini, 1972; Mount & Bennett, 1975), although not in all (e.g., Staines, et al., 1973). Race is an important moderating variable also (e.g., Duncan, 1968; Blinder, 1973), although its statistical significance is not often tested. The present study explored the explanatory power of race as both an independent and a moderating variable.

In summary, both organizational surveys and labor economic analyses indicate that personal attributes other than qualifications affect rewards received. The relationship between illegitimate criteria

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[17] Another issue of definition, which is not addressed here is what characteristics of a person defines his or her race. See Katz and Gurin, 1969; and Simpson and Yinger, 1965, for discussions of this and related issues.

and rewards is less well investigated than it might be, however, due to methodological (and perhaps underlying conceptual) weaknesses in how discrimination is operationalized.

EFFECTS OF ORGANIZATIONAL FACTORS ON REWARD ALLOCATION

Thus far, only individual-level characteristics and their relationship to reward allocation have been considered. Stopping at this point would imply that rewards are allocated in a vacuum -- that is, in a "space" free of situational influences. Groves (1975) identified several types of research showing that situational factors do affect reward allocation. He cited research on differences in aggregate mobility rates across societies (e.g., Miller, 1960) and variations in occupational structures across cities (e.g., Lane, 1968) and industries (e.g., Ornstein & Rossi, 1970). He included research suggesting that occupational settings affect transition probabilities in stochastic models (e.g., Lipset & Zellerberg, 1966).

Groves also noted that situational factors are often hypothesized to account for race differentials in occupational achievement. Organizational factors are assumed to affect the rewards received by Blacks and Whites differently and to operate against Blacks. Organizational effects on race differentials are basic to the concept of Institutional Racism (e.g., Knowles & Prewitt, 1969; Jones, 1972).

The fact that situational variables affect the rewards received by a person indicates that a meritocracy -- a reward allocation system based soley upon individual merit -- never operates fully. In addition to the effects of illegitimate <u>individual</u> criteria on the rewards

received, situational conditions further weaken the correlations between qualifications and rewards.

The effects of intra-organizational factors on race discrimination in reward allocation practices have not been established empirically. The following discussion draws from studies of reward allocation and complex organizations to identify relevant intra-organizational variables. Two types of organizational factors are considered:

1. Formal organizational properties such as technology which are officially designed to accomplish the tasks of the organization, and
2. Informal organizational properties such as peer and supervisory norms regarding productivity which help employees to adapt to and cope with their work environment.

Formal Organizational Properties And Reward Allocation

With the exception of Groves' (1975) recent work, research on the effects of formal intra-organizational properties upon individual mobility is virtually non-existent. In Groves' opinion:

> Those [studies] which have occurred were either case studies with no power of inference to a large population of organizations (Dalton, 1959; Goldner, 1963), theoretical discussions with no empirical base (Martin & Strauss, 1965), or mathematical models which were dependent upon elaborate collections of personnel records, and which contained little analysis of the causes of different rate parameters across organizations (White, 1970; Mahoney & Milkovich, 1970; Keyfitz, 1973; Stewman, 1975). (p. 19)

While the analyses have been rudimentary, the work cited above can be integrated with studies on the inter-relationships of organizational structures and processes to provide a listing of the intra-organizational variables that affect reward allocation. Organizational size, technology, skill demands, nature of the work flow, and advancement sequences emerge as the most significant influences.[18]

Causal Models of Reward Allocation

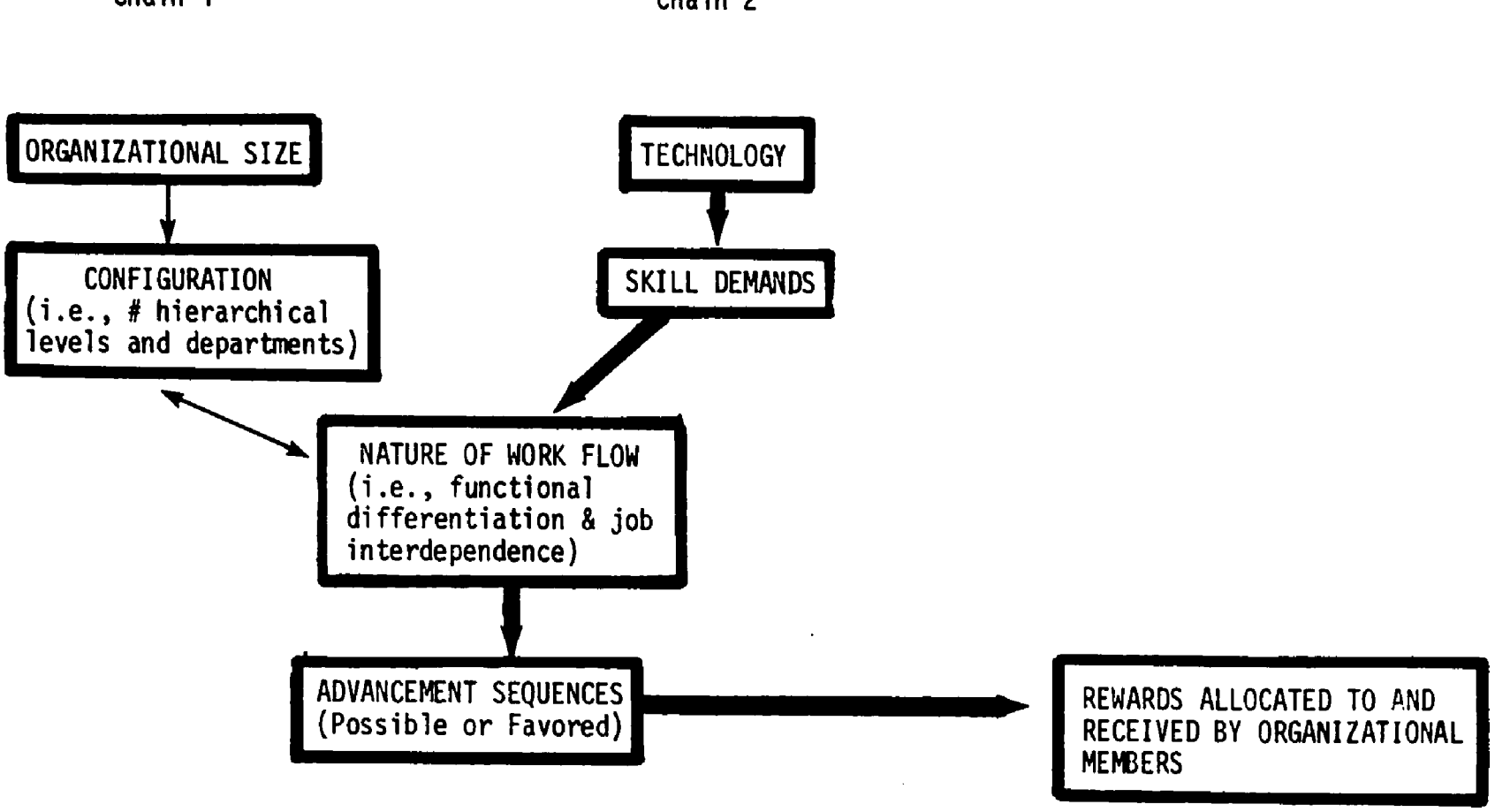
Figure 1 shows two sets of possible inter-relationships among formal organizational properties and reward allocation. The two causal flows are hypothesized to operate simultaneously. Briefly, Chain 1 suggests that organizational size affects configuration (or structuring of job levels and departments), which affects the degree of functional differentiation and job interdependence, which affects the advancement sequences possible in or favored by the organization, which in turn affects the rewards allocated to organizational members. The second chain flows from technology, to skill demands, to functional differentiation and job interdependence, to advancement sequences, and finally, to rewards allocated.

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[18]Some researchers and writers (e.g., Corazzini, 1972; Killingsworth, 1969) have used such variables as occupation, line versus staff or administrative versus technical positions as measures of organizational level structures and have found wage differences to be associated with them. Variables such as these reflect very gross differences however, and probably encompass more explanatory variables. For example, Groves (1975) found that occupational groupings added only negligible variance after taking account of such variables as size and growth.

Figure 1:

Hypothesized Causal Flow Between
Formal Organizational Factors and Rewards Received by Individuals



The flow lines in the second chain are "heavier" for two reasons. First, the present writer believes that technology has stronger independent effects on functional differentiation etc., than organizational size. Second, the present discussion focuses upon the effects of technology.

There is supportive evidence for both flows, however. Some of the studies congruent with each of the links in the two chains are listed in Table 1.[19]

Technologies require different numbers and types of skill levels. Complex technologies require a greater number of skills, both people- and task-related. Thus, complex technologies are associated with greater functional differentiation (i.e., greater separation of tasks; see Hage & Aiken, 1967). Greater functional differentiation requires better coordination of people and tasks.

Emphasizing on-the-job training and teaming up personnel with different skills are relatively inexpensive procedures for accomplishing needed skill mixes. Creating a structure of interdependent jobs is one way to foster these procedures. Functional interdependence also provides linkages for coordinating people and tasks.

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[19]There are studies supporting variations of the flows shown here (e.g., Groves, 1975) and evidence indicating that the relationships among the factors are less uni-directional than indicated in Figure 1 (e.g., Groves, 1975). The two chains are not "separate" since Woodward (1965) found that technology determined size and configuration.

TABLE 1

SOME STUDIES OF THE RELATIONSHIPS AMONG
FORMAL ORGANIZATIONAL FACTORS AND REWARD ALLOCATION

Size and Configuration

Groves, 1975
Hausser, 1975
Blau and Schoenherr, 1971
Hickson, et al., 1969
Meyer, 1968

Configuration and Functional Differentiation

Groves, 1975
Hausser, 1975
Pugh, et al., 1968

Technology and Skill Demands

Groves, 1975
Davis and Taylor, 1972
Hickson, et al., 1969
Mueller, 1969
Thompson, 1967
Woodward, 1965

Skill Demands and Functional Differentiation

Drexler, 1973
Davis and Taylor, 1972
Taylor, 1971
Thompson, 1967
Woodward, 1965

Functional Differentiation and Advancement Sequences

Groves, 1975
Doeringer and Piore, 1971
Hall, 1967

Advancement Sequences and Reward Allocation

Groves, 1975
Stewman, 1975
Doeringer and Piore, 1971
White, 1970

While reducing company training costs, job interdependence can familiarize the employees with a greater number of jobs, open up a variety of advancement sequences and make internal promotions more desirable than external hiring. All of these conditions are likely to increase the mobility of employees. This flow of events is also likely to increase the job challenge and satisfaction of workers (Mueller, 1969).

The concept of "advancement sequences" is akin to chains of opportunity (White, 1970), job vacancy chains (Stewman, 1975) and job clusters (Doeringer & Piore, 1971). Advancement sequences influence the career patterns (per Martin & Strauss, 1956) possible in given organizations. The concepts of job clusters, job vacancy chains, and advancement sequences acknowledge the constraints placed on reward allocation by intra-organization factors. Advancement sequences differ across organizational settings. Some are characterized by vertical movements, some by horizontal movements, and others by some combination of the two. Some are wide (i.e., appropriate to a wide variety of skills and skill mixes) while others are narrow (i.e., fillable by only a few, select people). Doeringer and Piore (1971) found that wide job clusters are associated with greater mobility.

A promotion is made possible by vacancies in a job chain. Vacancies occur due to employee exits, creation of new positions, or expansion of existing operations and services. Natural attrition, growth of the firm, technological changes, and their associated effects stimulate a greater number of desirable job vacancies. If job vacancies are filled internally, several personnel movements are made possible. If job vacancies are filled externally, however, the

company will be characterized by slower mobility rates. Wide job clusters, on-the-job training, and job interdependence are associated with internal promotions (Doeringer & Piore, 1971).

Formal Organizational Properties and Meritocracies

The effects of formal properties on the criteria used by organizations to allocate rewards is unexplored. Sociological literature on occupational inheritance -- by extrapolation -- provides some testable hypotheses, however. The propositions developed and tested by Cutright (1968) and Blumer (1965) are especially relevant.

Cutright, in a cross-national study, hypothesized that occupational inheritance is less influential in determining job placement in countries characterized by highly sophisticated technologies. His rationale was that higher levels of technology require more complex divisions of labor and make correct performance of tasks more crucial. These requirements put "pressure" on employers to fill positions according to the qualifications of the applicant rather than non-ability criteria such as place of birth, family background, and age. The findings supported this proposition.

Blumer (1965) had similar hypotheses but contradictory findings in a study of the effects of industrialization. Blumer expected the process of industrialization to undermine racial discrimination because industrialization implies rationality and decision-making according to cost-benefit ratios. Racial discrimination -- which indicates that rewards are allocated in terms other than qualifications and abilities -- is incongruent with a rational-economic order. Blumer found, however, that during the early phases of industrialization in the southern U.S.

and in South Africa (where racial stratification had been deeply entrenched for some time), industrialization did not change the established stratification but, instead, adapted to it. He concluded that preserving the superordinate positions of the dominant race far outweighed any rational-economic considerations.

The conflicting findings of Cutright and Blumer raise a crucial question: Does increasing technological sophistication create forces which reduce race discrimination, or must special forces such as affirmative action be created to deal with the race problem?

Organizations are characterized by different technologies just as societies are. Therefore, the question of whether a technological imperative affects intra-organization mobility needs to be addressed.

Summary

Technology, skill demands, functional differentiation, job interdependence, and advancement sequences were identified as significant intra-organizational influences upon reward allocation.

Extrapolation from research in related areas provided testable research questions regarding the relationship between these organizational properties and reward allocation. Intra-organizational factors are hypothesized to operate as both independent variables and as variables moderating the relationships between individual characteristics and rewards received.

Informal Organizational Factors And Reward Allocation

Informal organizational factors may play a part in creating and maintaining race differentials in reward allocation in two ways:

1. Certain informal practices -- especially those regarding treatment of employees -- may adversely affect the motivation, expectations, aspirations, and performance of Blacks relative to Whites, and
2. Certain informal practices -- especially those regarding evaluation of personnel performance and reward allocation -- may influence the individual evaluators/decision-makers who allocate the rewards. Many times, these evaluators are White.

Research on and discussion of factors affecting the performance of Blacks has tended to be very concrete and "molecular," while that on factors affecting evaluators has tended to be general and "molar." One goal of the present discussion is to identify variables at an intermediate level of generality which affect both Blacks and those evaluating Blacks.

Factors Affecting the Performance of Blacks

Variables that have been associated with lowered performance of Blacks include poor treatment of Black job applicants by interviewers, biased employment tests, and racial composition of groups (where the groups are predominantly Black).

Several researchers maintain that written tests which assess the performance capabilities of Blacks in employment settings are often biased against Blacks (e.g., Gurin & Katz, 1966; Irvine, 1973).

Employment and placement tests have been criticized on several grounds:

- Their content is culturally biased.
- In many cases, the relationships between test results and relevant job performance variables is unestablished.
- In other cases, the relationships between test scores and job performance are different for Blacks and Whites.

Thus, the hiring and placement of Black and White workers may be subject to bias even though ostensibly objective means are used.

Biases and differential treatment continue to affect Blacks after they have acquired jobs, however. Word, et al. (1974) conducted two inter-related experiments designed to demonstrate the adverse effects of negative expectations on performance in inter-racial situations. Their reasoning was as follows:

> It has been demonstrated time and again that white Americans have generalized, negative evaluations (e.g., stereotypes) of black Americans....Such negative evaluations, of course, represent the kind of attitudes that can initiate an interpersonal, self-fulfilling prophecy. The general hypothesis that the present study sought to investigate, therefore, was that whites interacting with blacks will emit nonverbal behaviors corresponding to negative evaluations and that Blacks, in turn, will reciprocate with less immediate [i.e., cold and unresponsive] behaviors. If the context in which the interaction occurs involves a job interview, with the white interviewing the black, such reciprocated behavior may be interpreted as less adequate performance, thus confirming, in part, the interviewer's general attitude. (p. 111)

Using various racial combinations of trained versus naive interviewers and job applicants, Word, et al. found support for their hypothesis.[20]

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[20]White applicants who received treatment similar to that of the Black applicants also reciprocated with negative behaviors.

The rationale for Word's study has been emphasized because it seems generally applicable to many inter-racial situations in organizations -- i.e., screening interviews, performance-evaluation and feedback sessions, on-the-job supervisory and peer interactions. For example, studies of the military have indicated that Blacks desire good social relations with co-workers and that friendly relations are closely associated with high job satisfaction and lower levels of felt discrimination (Pecorella, 1975). Yet, there are studies indicating Blacks receive less attention (in the form of both praise and reprimands) from superiors (Hill, et al., 1973) -- indicating greater distance between Blacks and their superiors than between Whites and the same superiors. Negative expectations of Blacks coupled with interpersonal distance from coworkers and superiors probably affects both the ability and the motivation of Blacks to perform well on their jobs.

There is also evidence that physical separation of Blacks and Whites lowers Black performance, or conversely, that certain racial compositions in groups enhance that performance. The effects of racial segregation/integration has been most intensively studied in school settings. The best results are attained when some number of working class Black students come into contact with Whites from higher socio-economic backgrounds (e.g., Jencks, et al., 1972). The research indicates that when Blacks constitute a substantial minority but less than a majority of students, their performance is enhanced while the performance of Whites is relatively unaffected (Jencks, et al., 1972).

Several rationales for the positive effects of integration are possible. When Blacks constitute a substantial minority of a group rather than an isolated few, they can offer each other support. This

support may help to lessen the impact of rejection or disapproval by the White majority, which Irvine (1973) identifies as potential drawbacks of inter-racial educational settings.[21] Second, when Whites constitute the racial majority of the group, Blacks can compare their own ability and performance with that of Whites. The use of interracial comparisons in self-evaluations provides additional information and incentives to perform well regarding this standard of comparison (Irvine, 1973).

Pettigrew (1963) also discusses the performance-enhancing effects for Blacks of using Whites as a basis of comparison. Pettigrew points out that Blacks may develop a higher -- and more realistic (given improved learning conditions) -- evaluation of their own abilities.

Only a few studies have investigated the effects of racial composition of work groups in work-settings. These studies have focused more on attitudes than behaviors. For example, Parker (1974) found that racial composition of work groups moderated the relationships between organizational management practices and felt discrimination in the Navy. The effects of racial composition in organizational settings may be confounded with the effects of the type of work performed by Blacks versus Whites and the extent to which the work performed satisfies salient needs.

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[21] Whites also feel less threatened (i.e., less afraid) when they are the majority group (Allport, 1954). Allport hypothesized that race prejudice increases when the proportion of Blacks is high.

Socialization and Accommodation as Integrating Concepts

Two themes underlie the research findings reported in this section thus far. First, norms and expectations regarding task performance which are transmitted through peers and superiors in the organizational setting affect the motivation, expectations, self-evaluations, and job behaviors of Blacks. These job behaviors in turn affect the rewards received by Blacks. Second, several factors like employment testing and job placement indicate a lack of understanding of and an insensitivity to the needs, concerns, and abilities of Blacks in work-settings. These themes are captured by two basic organizational processes which in the present discussion, are termed (1) socialization and (2) accommodation.

Socialization refers to the influence processes which...

> encourage the individual to value activities which help to achieve organizational objectives, or to disvalue activities which do not help achieve objectives. Through the use of persuasion or modeling behavior, the individual may be encouraged to adapt as personal goals some of the organization's objectives. This might be referred to as positive socialization. Similarly, the individual may be encouraged to give up some personal goals that conflict or interfere with the achievement of objectives, and this might be called negative socialization. (Barrett, 1970, p. 8)

In the present context, it is suggested that the motivations, expectations, self-evaluations, and job behaviors of Blacks vary according to the direction and strength of the socialization mechanisms they are exposed to in their work-settings. Co-workers and supervisors constitute major agents of the socialization process in organizations (Likert, 1967).

The socialization of Blacks in their local work-settings can moderate the relationship between basic qualifications and organizational rewards received. A basically qualified Black may not advance in an organization because he is not socialized as to what behaviors, performance levels, etc., are valued and rewarded in the organization (e.g., Schein, 1961, 1967). Coates and Pellegrin (1956) maintained that organizational socialization affected an individual's career progress by influencing the individual's 'definition of the situation.'

Accommodation, on the other hand, refers to emphasis in the organization placed on

> taking individual goals into account in determining organizational objectives or designing procedures for attaining them. The needs and motives of the individual are taken [into account] and the organization is structured and operated in such a way that the pursuit of organizational objectives will be intrinsically rewarding and will provide for the simultaneous pursuit of individual's existing goals. (Barrett, 1970, p. 11)

The more the organization accommodates to Blacks, the more likely it is to be aware of and responsive to the needs, motivations, and abilities of Blacks.

Barrett lists two specific accommodation mechanisms frequently emphasized in modern organizational theory: job redesign (Herzberg, 1966; Argyris, 1964) and participative management (Likert, 1967, 1961; McGregor, 1960).

While the socialization process influences employees to emit appropriate behaviors, accommodation processes help to increase the likelihood that they will be able and encouraged to express their abilities and talents in a responsive work environment. Both

socialization and accommodation mechanisms operate in a work-setting and probably affect the performance of and rewards allocated to Blacks.

Factors Affecting Evaluators

The discussion now turns to those variables affecting evaluators. The crucial person in the process of interpretation and implementation of reward allocation criteria is the individual evaluator. Each evaluator conducts the evaluations within the context of the social network in the organization and is subject to formal and informal pressures from surrounding people. These pressures may not be consistent with the guidelines of the formal evaluation policy of the organization. Frequently informal norms, despite their importance, are either overlooked or supported implicitly by the organization.

Organizational variables which have been found to influence evaluation decisions include the norms and informal pressures regarding who should be rewarded and how; the clarity, strength, and rigidity of those norms and informal pressures; and the sanctions for conforming versus violating these norms and pressures (e.g., see Kirkpatrick, 1973; Triandis, 1973; Sanford, 1973; Quinn, et al., 1968; Allport, 1954; Lohman & Reitzes, 1952; Merton, 1949). The most potent agents of these pressures are, once again, the peers and superiors in one's organizational setting (Quinn, et al., 1968).

Much of the work on these topics has been theoretical rather than empirical, and has focused upon minority groups other than Blacks (e.g., Jews or women). The study by Quinn, et al., (1968) on discrimination against Jews stands out as the one empirical examination of these situational influences cited above. The findings of this study

also attested to the independent and moderating effects of the attitudes and values of the individual managers on promotion decisions. In their words:

> Discrimination was, for example shown in the preceding pages to be directly related to:
>
> --the manager's perception that his company's actions were undermining its equal opportunity policies;
>
> --the manager's exposure to third party pressures to discriminate;
>
> --the anticipated reactions of the potential subordinates of a Jewish candidate;
>
> --anti-Semitic attitudes;
>
> --beliefs that Jews are "different."
>
> Discrimination was *not* found, however, to be affected by:
>
> --the manager's understanding of his company's equal opportunity policies;
>
> --the manager's level in the corporate hierarchy;
>
> --the manager's functional assignment.
>
> Discrimination was further shown to be especially likely under certain combinations of conditions:
>
> --when an anti-Semitic manager perceived that his company's actions were undermining its equal opportunity policies;
>
> --when an anti-Semitic manager was exposed to third party pressures to discriminate;
>
> --when an anti-Semitic manager was unclear about his company's personnel policies;
>
> --when a nonability oriented manager viewed Jews as lacking the social credentials appropriate to a managerial position.
>
> (Quinn, et al., 1968, p. 109)

The Roles of Socialization and Accommodation Mechanisms

The concepts of socialization and accommodation also are helpful in understanding situational effects on evaluators and reward allocation decisions. When norms and pressures emphasize productivity and task completion, socialization regarding these norms may foster a more rational-economic stance on the part of evaluators -- which would, in turn, be associated with fewer discriminatory decisions. If norms regarding productivity are weak, however, and collecting as many people from good social backgrounds as possible is given priority, the qualifications of Blacks become less relevant and less valued.[22] Thus, the relationship between merit and reward is weakened.

The positive effects of strong accommodation mechanisms upon evaluators -- especially the participative management mechanism -- lie mainly in the possibility that contact with Blacks in task-related, problem-solving situations may dispel stereotyped notions and develop more positive attitudes toward Blacks (Allport, 1954; Pettigrew, 1971). Participative decision-making has been "used" in the past to facilitate changes in attitudes and behaviors and for reducing resistance to change (e.g., see Coch & French, 1948). By participating in work-related decisions Whites may also get more of their important needs met. Thus, accommodation mechanisms might reduce the prejudices which stem from

[22] Emphasis on high social status would also discriminate against Whites from low socio-economic backgrounds.

personal frustrations.[23] Dollard, et al. (1939) called this form of prejudice "scapegoating." Several studies show that participative decision-making is associated with greater job satisfaction (e.g., Barrett, 1970; Likert, 1961; 1967; Marrow, Bowers, & Seashore, 1967; Spencer, 1975).[24]

Summary

Socialization and accommodation mechanisms can be significant organizational factors affecting reward allocation. These mechanisms may affect race discrimination in reward allocation through two channels: (1) they may affect -- for good or ill -- the performance of Blacks, and (2) they may affect the decisions regarding reward allocation made by individual evaluators.

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[23]There is the possibility that an important "need" of some White employees would be to prevent Blacks from acquiring greater occupational statuses and to maintain segregated work-settings. If so, participative decision-making might make discrimination against Blacks more likely. It may be 'best' not to involve employees in all decisions. Some research in Britain has shown that the adverse effects of hiring and promoting Blacks which Whites seem to expect, often do not occur (Richmond, 1954 & Wright, 1968 as cited in Watson, 1973). In light of these findings, some race relations writers have advocated for unilateral decisions regarding the hiring of Blacks in previously all White job classifications (e.g., Watson, 1973).

[24]There is some evidence to indicate that individual differences moderate the relationship between participation and satisfaction (Vroom, 1964). For example, people holding authoritarian attitudes may desire less participation. Authoritarianism has also been associated with prejudiced racial attitudes (Adorno, et al., 1950; Sanford, 1973). Both race prejudice and authoritarianism have also been associated, with lower education, income, and socio-economic status levels (Richmond, 1973). Thus prejudiced people may want less participation and yet "need" or learn a great deal from it.

Socialization and accommodation are useful concepts because they are not so general nor so molecular as many of the situational factors often studied in the area of race relations. Finally, they are basic and on-going organizational processes tied to the goal integration, effectiveness, and subjective well-being of organizational members (Barrett, 1970).

RECAPITULATION

Past studies of reward allocation suffer from a lack of comprehensiveness in several areas:

1. They are limited in the types of variables (e.g., individual versus organizational) used to explain reward allocation.
2. Most consider one of two organizational rewards -- income or occupational position. The determinants of non-economic rewards such as quality of work should also be investigated.
3. They assume that only one reward system operates in an organization. The issue of whether the factors influencing reward allocation differ according to the reward being administered is not addressed.

In studies of race discrimination, the need is for greater precision. The conditions under which organizational reward allocation practices are discriminatory have not been clearly specified. Explicitly addressing the ideologies underlying reward systems would clarify the relationship between reward allocation practices and race discrimination by identifying the deviations from equality which are illegitimate according to a given ideology.

As a social problem, race discrimination is a deviation from "an existing situation which is preferred in accordance with certain values" (Wirth, 1939, p. 4). In this study reward allocation based upon individual merit is espoused as the preferred state in work settings. This preference resulted from the present investigator's belief in the norm of justice (i.e., fair treatment) and the achievement ideology as guides in determining legitimate and illegitimate criteria for reward allocation.

Rewarding on the basis of merit is seen as beneficial for both individuals and organizations. Performance-contingent rewards are associated with greater motivation and satisfaction and provide a clear path-goal relationship for employees. From the organizational point of view, reward based upon merit ensures that the most qualified people are placed in job positions and, through appropriate reward schedules, encouraged to remain with the organization.

In actuality, merit is one criterion for organizational reward allocation. It is not the sole influence. If it were, race differentials in pay, advancement rates, and other rewards would be fully explained by differences in education, training, performance, and other job qualifications. The fact is that differences in qualifications account for only a portion of racial inequalities in the rewards received.

In addition to qualifications, three other sets of factors are hypothesized to be related to reward allocation -- non-ability individual characteristics such as social background, formal organizational factors such as technology, and informal organizational characteristics such as socialization. While little research has been conducted directly on

these topics, extrapolation from related bodies of research on complex organizations, labor economics, and race relations provide support for the importance of these factors in explaining race differentials in reward allocations. The approach of the present study and the conditions under which race differentials reflect "Institutional Racism" are elaborated in the next chapter.

III.

THE PRESENT STUDY AND RESEARCH QUESTIONS

In the preceding chapter organizational reward allocation was viewed as a vehicle for studying Institutional Racism. A review of the reward allocation and race discrimination literatures revealed several gaps in previous research on these topics. This study attempts to reduce some of those gaps. The objectives of the study are:

(1) to provide a more comprehensive labor-economic study of organizational reward allocation

(2) to develop and operationalize a definition of Institutional Racism based upon patterns of reward allocation for Blacks and Whites and

(3) to explore the effects of some formal and informal organizational characteristics on the patterns of reward allocation.

Organizational Reward Allocation

The study examines the treatment and advancement of people once they have gained access to an organization. Organizational reward allocation practices are investigated using individual- and organizational-level variables as predictors of the rewards received by individuals.[25]

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[25]Stewman (1975) in a study of intra-organizational mobility referred to this as a "demographic" model. This approach was contrasted with a more structural analysis of job systems which he termed the "vacancy chain" model. The major difference between the two models is the former's emphasis upon movements of people versus the latter's emphasis upon movements of job vacancies.

The way individual-level predictors are related to rewards received reflects the criteria used by the organization to distribute rewards. Several sets of criteria for reward allocation are possible. An organization might reward its members according to their need, their qualifications and performance, their loyalty and obedience, or their political and social savoir faire.

This study assesses the extent to which individuals are rewarded on the basis of merit. Such a reward system has advantages for both employees and employers. Performance-contingent rewards have been associated with greater employee job satisfaction (Gupta, 1975) and motivation (Lawler, 1973), and are congruent with organizational decision-makers' task of ensuring that job positions are occupied by the most qualified people.

Definition of a Meritocracy. A "meritocracy" -- i.e., a reward system based upon merit -- exists only to the extent that the following practices prevail:

> Rewards are received by organization members in relation to their skills, experience, and performance. Personal characteristics not directly related to job performance, such as social background, should not be related to the rewards received.

According to this reward system, individual characteristics which reflect a person's qualifications are considered "legitimate criteria" for reward allocation, while non-ability characteristics are considered "illegitimate criteria" for reward allocation. The characteristics used to represent legitimate and illegitimate criteria are listed in Table 2.

TABLE 2

Legitimate Criteria	Illegitimate Criteria
Educational Level	Race
Time Spent in Civilian Jobs	Community of Origin
Technical Skills	Region of Origin
Supervisory Behavior	Socio-Economic Status
Army Training	Race of one's Supervisor
	Racial Composition of Work Group

Some characteristics of a person's immediate work-setting (i.e., race of supervisor and racial composition of work group) have been included as illegitimate criteria even though they are not "individual" qualities.

In a total meritocracy, only legitimate individual criteria are related to rewards allocated. Organizational factors play no part. Yet, this only occurs under conditions of unlimited resources. That is, when organizations are free to dispense as many rewards as their members deserve. Such complete freedom from constraints is unlikely.

Doeringer and Piore's (1971) concept of the internal labor market implies that organizations differ in their possibilities and preferences regarding the types and numbers of rewards to be allocated. The theory and research on complex organizations reviewed in Chapter II indicated that formal organizational properties such as technological sophistication affect the rewards available to personnel. In addition, informal organizational characteristics such as the strength of socialization mechanisms, were hypothesized to affect the number and type of individuals eligible for various rewards. These formal and informal properties vary across organizations and across specific work-settings within one organization.

The work-setting of each individual is the unit of analysis in the present study. The characteristics used to represent the formal and informal aspects of work-settings are listed in Table 3.

TABLE 3

Formal Organizational Properties	Informal Organizational Properties
Technological Sophistication	Socialization
Role Interdependence	Accommodation

Four sets of factors are hypothesized to be predictors of rewards received:

(1) Legitimate criteria

(2) Illegitimate criteria

(3) Formal organizational properties

(4) Informal organizational properties.

The relative strengths of the relationships between each of these factors and the rewards received indicate the type of organizational reward system operating. A meritocracy exists to the extent that legitimate individual characteristics bear strong relationships to rewards received. A meritocracy is postulated to operate partially for both Blacks and Whites.

In a system where rewards are allocated according to illegitimate criteria, only the "right" kind of people (i.e., those with particular social and demographic characteristics) are rewarded. In this reward system employees in the various job classifications are quite homogeneous. Such a system can be characterized as "elitist."

If rewards are most dependent on formal organizational properties such as technology, rewards differ by job classification. In this type of reward system -- which might be termed "profession-contingent" -- initial choice of occupation and non-discriminatory access to occupations become important.

Finally, if rewards are most contingent on work-setting characteristics like socialization processes, informal "contacts" and relations with people gain importance. This might be called a "protege system."

Different Allocation Strategies for Different Rewards? Another issue is whether an organization's reward allocation practices vary according to the particular reward. It might be to the organization's advantage to employ multiple reward systems since they would provide a variety of motivational bases. In some cases (e.g., unionized firms) contracts may require that a mixture of allocation parameters (e.g., seniority and merit) be employed.

Most organizations do employ more than one reward allocation strategy. Some rewards are allocated via membership in the organization. Fringe benefits such as retirement plans, cost of living raises, vacation and sick leave are common membership-contingent rewards. They serve to attract people to the organization and encourage them to remain (Katz, 1964).

Such rewards as extra pay increases and promotions are allocated selectively. They reinforce outstanding performance along some valued dimension and stimulate motivation to perform at a similar or higher level in the future.

In the present study two rewards serve as dependent variables -- promotion rate and quality of work. Promotion rate is the speed with which an individual moves up the job and pay-scale ladders. It is hypothesized to be a performance-contingent reward. Quality of work is a summary indicator of the working conditions, peer relations, fairness of treatment, and job characteristics experienced by an individual. It is hypothesized to be more contingent on work-setting characteristics than individual performance.

Definition of Institutional Racism

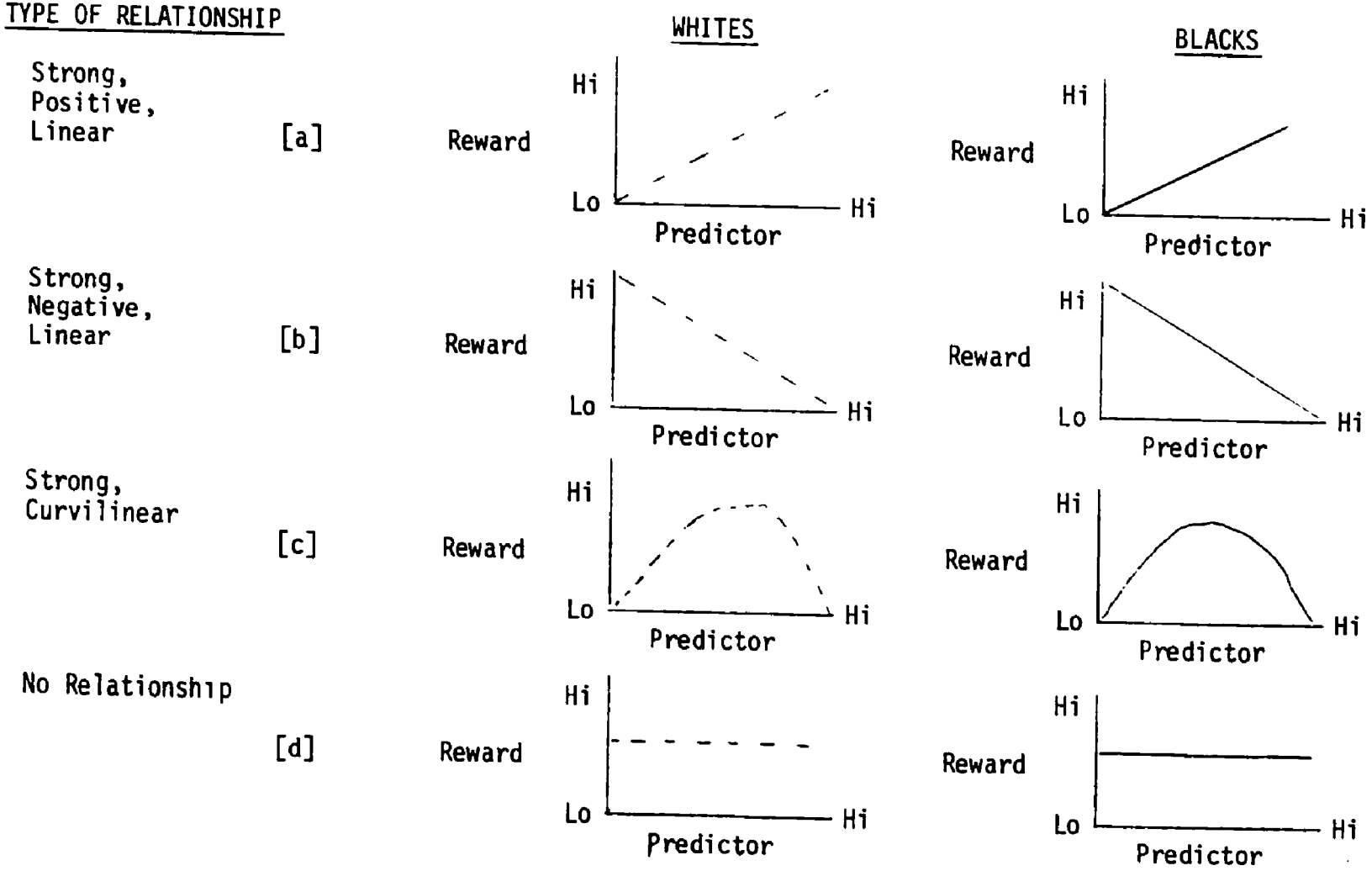
The previous section addressed whether there are different allocation strategies for different rewards. Another question is whether there are different allocation strategies for different subsets of people. Institutional Racism is posited to be operating when organizational properties and reward allocation criteria result in better treatment and more rewards for Whites than for Blacks. This definition is operationalized by examining racial differences in the nature of the relationships between the four sets of predictors described above and rewards received.

Institutional Racism can be viewed as deviations from racial equality. First, racial equality will be defined. Then, the deviations from equality which constitute Institutional Racism will be identified.

Racial equality in organizational reward allocation exists only when the (1) slope (i.e., strength), (2) direction, (3) intercept, and (4) shape of the statistical relationships between the predictors and the rewards received are the same for Blacks and Whites. Some hypothetical examples of racial equality are illustrated in Figure 2.

Figure 2

HYPOTHETICAL EXAMPLES OF RACIAL EQUALITY
IN ORGANIZATIONAL REWARD ALLOCATION



Assuming the predictor to be education and the reward to be promotion rate, the graphs show four different ways racial equality can exist. Graph A shows the case where promotion rate increases with education for both races. Graph B shows promotion rate declining with education. Graph C shows fastest promotion rates for intermediate education levels. Graph D shows no relationship between education and promotion rate. Thus, racial equality does not imply a specific reward system. It says that the same reward system must be applied with the same strength to Blacks and Whites.

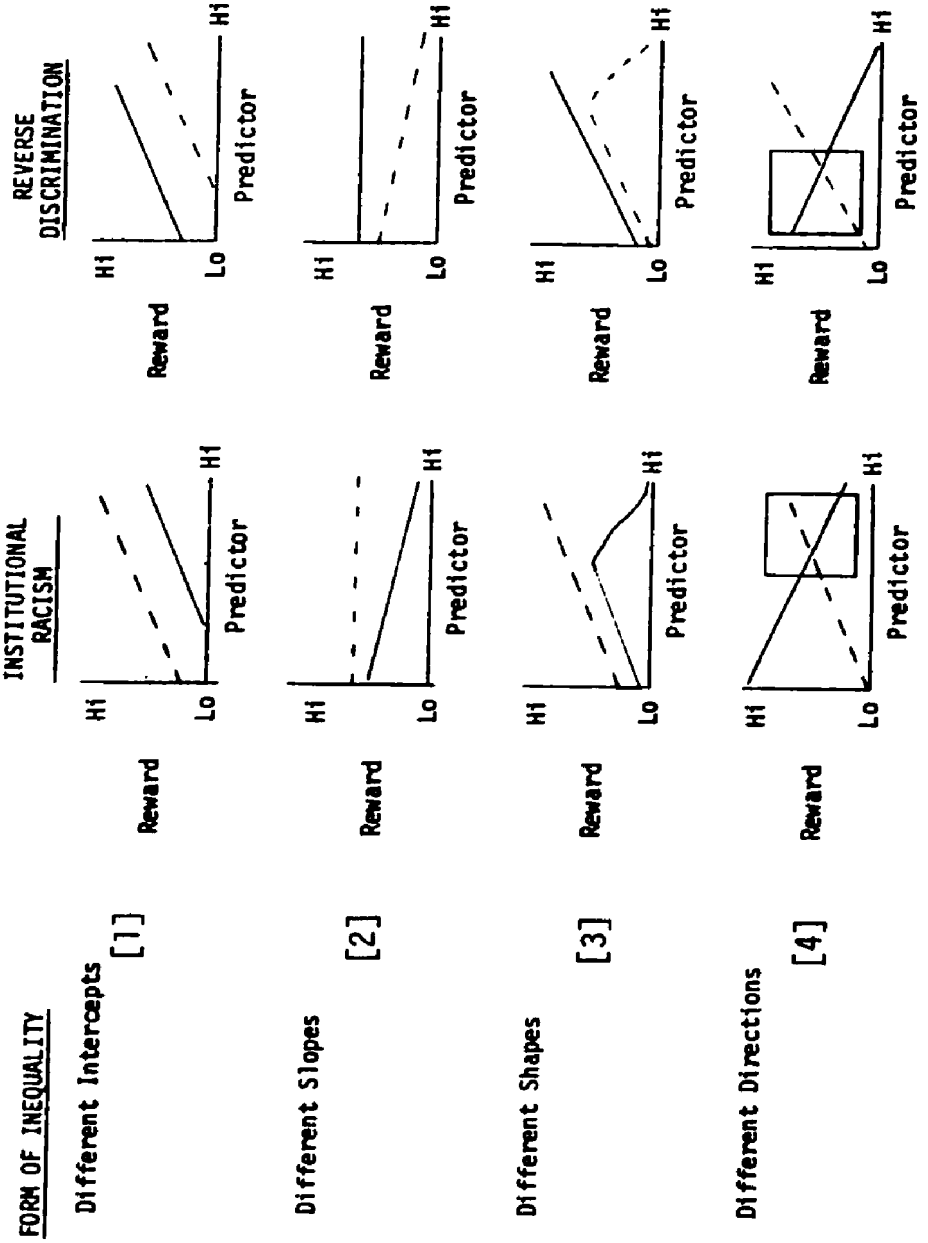
Deviations from equal treatment can take several forms. The relationships can differ for Blacks and Whites in any of the four statistical relationships listed above. Such deviations may be disadvantageous to Blacks (this will be called Institutional Racism) or to Whites (this will be called Reverse Discrimination). In either case, deviations from conditions of equal treatment indicate that race is illegitimately affecting the rewards allocated. A few hypothetical forms of deviation are illustrated in Figure 3.

Race may affect the rewards received independent of other personal and work-setting characteristics. The most simple type of deviation is when members of one race receive fewer rewards than members of another race regardless of qualifications, social backgrounds, or work-settings. Graph 1 in Figure 3 portrays two hypothetical systems where race is a significant independent variable.

It is also possible for some subgroups of a race to be more disadvantaged than others. Educated Blacks may be more discriminated against (i.e., receive fewer rewards than their White counterparts) than

Figure 3

HYPOTHETICAL EXAMPLES OF RACIAL INEQUALITY
IN ORGANIZATIONAL REWARD ALLOCATION



uneducated Blacks. Or Blacks in work-settings with unsophisticated technologies may be more discriminated against than Blacks in work-settings with sophisticated technologies. These differences imply that a person's race interacts with other personal or work-setting characteristics to affect the rewards received. Graphs 2 to 4 illustrate such deviations from racial equality. In Graph 2 the strength of the relationship between the predictor and the reward varies. In Graph 3 the shapes are different and in Graph 4 the directions are different.

Graph 4 is an especially interesting case. It illustrates how racial differences in reward allocation practices may cause certain subgroups of each race to be in an inferior position: Educated Blacks are at a disadvantage relative to educated Whites but uneducated Whites are at a disadvantage relative to uneducated Blacks. The overall impact of this situation depends on the proportion of each subgroup in the organization.

The reward system(s) of an organization may be characterized by three allocation practices: Racial Equality, Institutional Racism, or Reverse Discrimination.[26] While Institutional Racism is the focus of this study, the analytic emphasis on relationships between predictors and rewards would identify any of these practices.

Racial differences in meritocracies. A meritocracy is one of many possible reward systems which can lead to racial equality. Racial inequality exists when a meritocracy operates differently for two races. The nature of the differences determine whether such inequality is Institutional Racism or Reverse Discrimination.

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[26]Affirmative action programs can generate reward allocation practices which result in temporary reverse discrimination.

Given that disproportionate numbers of Blacks are still in low-paid, low-status jobs (Ashenfelter, 1966; Strauss, 1972; Moskos, 1973) and the recent implementation of most affirmative action programs, it is likely that Institutional Racism operates in most work-settings. Therefore, racial differences in reward systems are predicted to operate against Blacks -- especially when performance-contingent rewards are at stake.

Moderating Effects of Work-Settings

If racial differences in reward systems operate against Blacks, a crucial question is whether organizational properties affect the extent to which a meritocracy operates for Blacks and Whites. Previous research has shown that factors such as industry type, geographical location, and unionization affect the reward systems of organizations. These factors are far from explanatory, however. The focus in this study is on the effects of a selected number of intra-organizational characteristics on meritocracies.

According to Cutright's (1968) research on occupational inheritance, increasing technological sophistication and complex divisions of labor create pressures for employers to hire and reward employees more on "whether the man can fill the position and do the work" (p. 404), and less on criteria such as social background and race.

Blumer's (1965) analysis of the effects of industrialization on racial inequalities contradict Cutright's findings. Blumer argued that entrenched racial attitudes and practices undermined the pressures toward a meritocracy created by more complex technologies and labor divisions.

This study assesses whether technological sophistication and role interdependence moderate the strength of the meritocracy operating in military work-settings. Role interdependence is used as a measure of the complexity of labor divisions. Significant moderating effects would support Cutright's view. Non-significant findings would be more congruent with Blumer's findings.

This study also explores whether more informal work-setting characteristics -- i.e., socialization and accommodation mechanisms -- moderate the strength of a meritocracy.

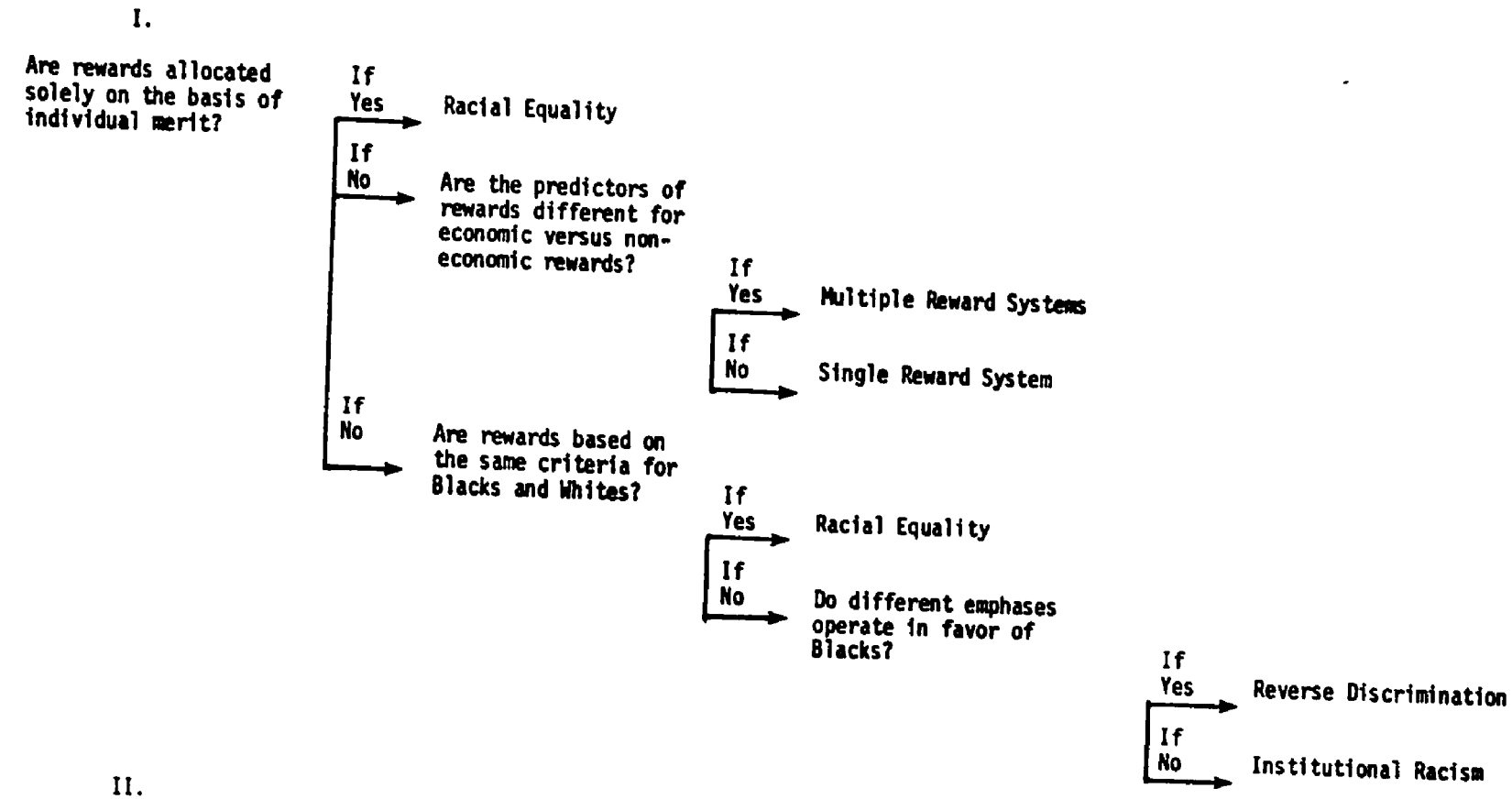
Socialization and accommodation mechanisms improve the fit between individual goals and organization objectives. If organizations and employees place greatest emphasis on working together to accomplish tasks and solve problems, stronger socialization and accommodation mechanisms should lead to stronger meritocracies. If priority is assigned to maintaining a political or social elite, however, the strength of socialization and accommodation mechanisms regarding task accomplishment would not affect the reward systems. In the latter case, Blumer's (1965) analysis would receive support.

Summary of Research Questions

At this point several research questions have been proposed. They are summarized below in Figure 4.

Figure 4

RESEARCH QUESTIONS



IV.

METHODOLOGY

The data used in the present study were collected as part of a larger research effort conducted in the U.S. Army by the Institute for Social Research. The data were collected during the spring and fall of 1975.

A detailed description of the sampling techniques as well as a description of the fit of the sample to an Army population is presented in a technical report entitled: A Methodology for the Studies of the Impact of Organizational Values, Preferences, and Practices on the United States Army (Spencer, 1975). A summary of these procedures follows.

Information was gathered in the form of data print-outs which described the active Army by command structure, geographic location, size, function, and mission. Since the research plan required data from intact organizational units, primary organizational groupings which potentially included any individual in the Army were identified. These groupings were termed "Parent Units" and each Parent Unit had a unique unit identification code (UICCC).

Once all Parent Units in the Army were listed, a total number could be obtained, a sampling frame determined, and every "Nth" Parent Unit selected for inclusion in the sample. However, it was felt that representativeness could be enhanced by some meaningful form of stratification. After much exploration and many trials, two strata were selected: geographic location and functional designation (UNCLAC) of each Parent Unit.

The study called for a sample of about 2,500 respondents, selected to include organizational units at least three hierarchical levels tall. These requirements suggested a "module" (intact hierarchical set of groups) size of approximately 50 respondents, and approximately 50 modules.

To select the 50 modules, two separate computer print-outs were obtained containing all Parent Units in the Army. One print-out listed Units by geographical location, while the second listed them by functional designation or UNCLAC code. The number of modules that should be drawn from each of the major strata was decided based upon the subtotals for major classifications within each of these print-outs. Since the size of the project's resources placed restrictions on the extent of data collection that was feasible, it was decided to restrict the geographic areas in which data collection would occur. The requested and obtained numbers of modules indicate that reasonable geographic representation was obtained:

Area	No. Modules Requested	No. Modules Obtained	Percent Obtained
Germany	15	12	80
Hawaii-Korea-Alaska	7	5	71
1st Army	10	7	70
5th Army	10	7	70
6th Army	6	6	100
7th Army	2	0	0
TOTAL	50	37	76

A next step in selecting the sample was to obtain a list of Parent Units by UNCLAC, constrained on the above geographic locations. Finally, there was needed some consideration for the size of the Parent Unit.

The resulting sample would not be representative of the Army if large units and small units had an equal chance of being selected. Therefore, a weighting scheme was applied to all listed Parent Units, based upon the number of personnel in the unit. The weighting scheme was:

Number of Army Personnel in Parent Unit	Weight
0-49	0
50-149	1
150-249	2
250-349	3
350-449	4
450-549	5
etc.	etc.

The number of modules to be selected from a given UNCLAC classification was divided into the total number of Parent Unit weighting numbers. The result represented the sampling number to be used in conjunction with a random numbers table. For example, if a module was to be selected from a classification whose total weighting numbers added to 67, then a random numbers table would be used containing numbers from 1 to 67 and some predetermined one would be selected (the first number). If the first number were to be used, and it happens to be 16, then the Parent Units would be counted from the first to the sixteenth (according to the appropriate weighting numbers.) The sixteenth Parent Unit would be selected for the sample.

Finally, the two stratifications--geographic and functional--were integrated. This was accomplished by creating a table with the geographic areas to be included and spaces for the number of units required for each. As Parent Units were selected, the table was completed.

Data Collection Instrument.

The questionnaire employed in the present study is a modified version of that used in earlier studies in military and civilian settings. As such, it draws heavily upon a standardized instrument, the Survey of Organizations,[27] and upon instrumentation designed for earlier studies conducted elsewhere.

Although the basic questionnaire has been used and validated in previous research, minor changes were needed to make it suitable for an Army setting. In certain instances, minor wording changes were required, and in rare instances items were added or deleted. The revised instrument was pretested for appropriateness using the 297th Medium Boat Company, located at Ft. Eustis, Virginia, on September 16, 1974. Staff members from the Institute for Social Research and from the Army Research Institute administered the questionnaire to 52 respondents. For the most part, this pretest indicated that the instrument was very suitable for an Army setting; most respondents reported finding the items understandable and relevant. A facsimile of the questionnaire is presented as Appendix A.

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[27] A detailed description of this instrument is provided in the questionnaire manual (Taylor & Bowers, 1972). The manual presents information concerning the reliability and validity of the survey's measures.

SAMPLE FOR THE CURRENT STUDY

A subset of the total Army sample -- enlisted Black and White men -- was used in the present study. This sample included 1,708 men with paygrades E1 through E9 of which 75 percent were White (N = 1,276) and 25 percent were Black (N = 432).

MEASURES AND DESCRIPTIVE STATISTICS

The measures in this investigation were (1) two organizational rewards, (2) five legitimate criteria, (3) five illegitimate criteria, and (4) four work-setting characteristics. Table 4 lists these measures and their sources.

Dependent Variables: Organizational Rewards

Two organizational rewards served as dependent variables: promotion rate and quality of work.

Promotion Rate. Promotion Rate was a measure of the rapidity of advancement through the enlisted pay rates from E1 through E9. Promotion Rate for each individual was determined by dividing the median number of years normally required to achieve his particular pay rate[28] by the number of years he was on active duty, rounded to the nearest whole year, thus:

$$F = \frac{\text{Median years normally required to attain pay grade (Based on total Army)}}{\text{Years of active duty}}$$

[28]Data on the median number of years of active duty to attain a particular grade was provided by the U.S. Army Research Institute for the Behavioral and Social Sciences in Arlington, Virginia.

TABLE 4

MEASURES OF REWARDS, CRITERIA FOR REWARD ALLOCATION AND WORK-SETTING CHARACTERISTICS

CONTENT AREA	MEASURE DESCRIPTION	SOURCE
I. Organizational Reward	Promotion Rate	Adapted from Navy AVN study (see Michaelsen, 1973)
	Quality of Work	Job content measures were adapted from Youth in Transition (see Johnston & Bachman, Young Men Look at Military Service. Ann Arbor, Michigan: Institute for Social Research, 1970); and other ISR studies of meaning of work, work satisfaction and motivation. Treatment items were adapted from the Navy AVN study (see Michaelsen, 1973) The remaining items were taken from Taylor & Bowers: Survey of Organizations. Ann Arbor, Michigan: Institute for Social Research, 1972.
II. Legitimate Criteria for Reward Allocation	Education	Adapted from current work at ISR.
	Experience	Same
	Critical Skills	Adapted from 1972 AVN study (see Michaelsen, 1973).
	R's Technical Skills	Constructed for this investigation
	R's Supervisory Leadership	Same

CONTENT AREA	MEASURE DESCRIPTION	SOURCE
III. Illegitimate criteria for Reward Allocation	Region of Origin	Adapted from current work at ISR
	Socio-Economic Status	Same
	Race of Supervisor	Same
	Work Group Racial Composition	Same
IV. Work-Setting Characteristics	Technological Sophistication	Taylor, J. Technology and Planned Organizational Change. Ann Arbor, Michigan: Institute for Social Research, 1971.
	Required Role Interdependence	Adapted from L. Mohr (1971).
	Socialization Mechanisms	Adapted from Barrett, J. (1970).
	Accommodation Mechanisms	Same

A promotion rate of one indicates that an individual advanced at a rate comparable to most Army men. To the extent that the score is greater than one, the individual had a promotion rate faster than most others at his particular grade; to the extent that it is less than one, the individual advanced at a rate slower than others at his pay grade. The measure was designed so that across pay grades, individuals who progressed at a particular rate had the same score.

The Promotion Rate measure requires some qualification. First, since no one has a rate lower than E-1, E-1's were excluded from analyses which used this measure. Second, in the current sample, all E-2's had promotion rates lower than one. This is because the median time to attain the grade of E-2 was 0.3 years and respondents were asked to round their number of years of active duty to the nearest whole year. No respondent reported zero years of active duty. Because of this, E-2's were eliminated from analyses where promotion rate was used as a variable.

Table 5 shows the mean Promotion Rate for Blacks and Whites. Table 6 presents the frequency distributions of the two racial groups; for the purposes of this comparison, promotion rate for the combined sample was divided into quintiles. Taken in combination, Tables 5 and 6 indicate that Blacks tended to advance more slowly than Whites. While the mean rates of advancement for the two racial groups were not significantly different, greater percentages of Whites had advanced faster than Blacks ($\chi^2 = 11.1$, $p<.05$).

TABLE 5

DESCRIPTIVE MEASURES AND T-STATISTICS
FOR PROMOTION RATE

	Whites			Blacks			T-Statistics
	Mean	SD	N	Mean	SD	N	
Promotion Rate	1.02	.46	1,128	.98	.52	367	1.17

Includes paygrades E3 through E9 only.

TABLE 6

DISTRIBUTION AND CHI SQUARE FOR PROMOTION RATES*

	Promotion Rate (Quintiles)				
TOTAL	21.3%=.625	44.7%=.833	62.3%=1.12	88.3%=1.25	100%=4.50
	Slowest				Fastest
Race	1	2	3	4	5
Whites	222	275	201	289	141
N = 1,128	19.%	24.4%	17.8%	25.6%	12.5%
Blacks	97	75	62	100	33
N = 367	26.4%	20.4%	16.9%	27.2%	9.0%

Missing Data N = 213

Chi Square = 11.1

p<.05

N = 1,495

*Includes enlisted men with paygrades E3 - E9 only.

Quality of Work. This measure was largely based on research done by Quinn, et al. (1973) on the quality of working conditions. It was a summary index based on 24 questions dealing with how good each respondent's job was. The areas included in the index were job challenge, resource adequacy, social relations, fairness of treatment, and comfort. The questions used to measure each of the five areas are listed in Table 7. Reliability statistics for the Quality of Work measure and each of the component areas are presented in Table 8. This measure had an overall alpha coefficient of .86 and a homogeneity ratio (HR) of .20; these coefficients demonstrated respectable internal consistency. The alpha's for the component areas ranged from .31 for the comfort items to .82 for the resource adequacy items. The HR's for these two areas were .07 and .43, respectively.

Descriptive statistics for Blacks and Whites on the quality of work measure and its five component areas are given in Table 9. The mean scores for the two racial groups were significantly different on the overall Quality of Work measure as well as in three out of five of the component areas. Whites had a significantly higher mean than Blacks (3.46 vs. 3.30) on fairness of treatment, while Blacks had significantly higher means on the overall quality of work measure (3.04 vs. 2.94), and on the job challenge (2.70 vs. 2.46), and resource adequacy (3.23 vs. 3.06) components. There were no significant racial differences in the areas of comfort or social relations.

Thus, even though Blacks tended to advance at slower rates than Whites, the quality of work experienced by Blacks and their reactions to their work settings were more positive than those of Whites.

TABLE 7

ITEMS INCLUDED IN THE QUALITY OF WORK MEASURE

Area	Item	
	1 = Very Untrue... 5 = Very True	
Job Challenge	A86.	There's no one to boss me on the work.
	A88.	I can learn new things, learn new skills.
	A91.	It (my job) has good chances for getting ahead.
	A96.	It (my job) uses my skills and abilities--lets me do the things I can do best.
	A103.	I can control my personal life.
	1 = To a very little extent... 5 = To a very great extent	
Resource Adequacy	A7.	To what extent are you told what you need to know to do your job in the best possible way?
	A28.	To what extent does your supervisor handle well the technical side of his job--for example, general expertness, knowledge of job, technical skills needed in his profession or trade?
	A41.	To what extent does your supervisor provide you with the help you need so that you can schedule work ahead of time?
	A43.	To what extent does your supervisor offer new ideas for solving job related problems?
	A68.	To what extent do persons in your work group provide the help you need so that you can plan, organize, and schedule work ahead of time?
	A70.	To what extent do persons in your work group offer each other new ideas for solving job related problems?

Area	Item	
Social Relations	A56.	How friendly and easy to approach are the persons in your work group?
	A58.	When you talk with persons in your work group, to what extent do they pay attention to what you're saying?
	A60.	To what extent are persons in your work group willing to listen to your problems?
	A97.	There are nice friendly people to work with.
		(1 - Very Untrue... 5 = Very True)
Treatment	A112.	To what extent does your present job provide an opportunity to work for competent, fair supervisors?
	A113.	To what extent does your present job provide an opportunity to be evaluated fairly in proportion to what you contribute?
	A114(R)*	To what extent do you feel in any way discriminated against in your job because of your race or national origin?
		1 = Very Untrue... 5 = Very True
Comfort	A87.	It (my job) is steady, no chance of being laid off.
	A89.	I don't have to work too hard.
	A90.	It (my job) has good chances for getting ahead.
	A94.	The pay is good.
	A102.	The fringe benefits (medical care, retirement plan, etc.) are good.
	A107(R)	On the job, to what extent do you feel pressure from your supervisor for better performance, over and above what you think is reasonable?

*(R) indicates that the item score is reversed in the computation of index scores.

TABLE 8

RELIABILITY STATISTICS FOR THE
QUALITY OF WORK MEASURE AND COMPONENT AREAS

Measure	#Items	Alpha	Scott's Homogeneity Ratio
Quality of Work	24	.86	.20
Job Challenge	5	.69	.30
Resource Adequacy	6	.82	.43
Social Relations	4	.80	.51
Treatment	3	.56	.30
Comfort	6	.31	.07

TABLE 9

DESCRIPTIVE MEASURES AND T-STATISTICS FOR QUALITY OF WORK INDEX AND COMPONENT AREAS

Index	Whites			Blacks			T-Statistic
	Mean	N	SD	Mean	N	SD	
QUALITY OF WORK	2.94	1,273	.55	3.04	426	.52	3.10**
Job Challenge	2.46	1,273	.71	2.70	427	.65	6.19***
Resource Adequacy	3.06	1,273	.91	3.23	429	.91	3.43***
Social Relations	3.40	1,266	.87	3.41	423	.84	.32
Fairness of Treatment	3.46	1,266	.86	3.30	423	.89	3.24***
Comfort	2.67	1,273	.48	2.72	428	.50	1.58

***=p<.001

**=p<.01

PREDICTORS: LEGITIMATE AND ILLEGITIMATE CRITERIA

Two types of criteria for reward allocation were of interest in the present study--(1) those representing a person's qualifications (i.e., legitimate criteria for reward allocation) and (2) those reflecting social background and presumably unrelated to effective work performance (i.e., illegitimate criteria for reward allocation). Education, length of time spent in full-time civilian jobs, critical skills, and the respondent's technical skill and supervisory leadership behavior were included as estimates of his qualifications. The education and experience in civilian jobs measures are quite straightforward. The remaining three measures require further description.

Critical Skills. Critical Skills was a measure of the estimated "value" of individuals to the Army on the assumption that highly trained and skilled personnel require greater training costs and perform more critical tasks than do less skilled personnel. The presence or absence of a critical skill was determined by comparing the relative costs of teaching an enlisted man the skills required to attain the various MOS ratings. Specifically, respondents were asked what their MOS was (D27) and MOS's were recoded to reflect the cost of attaining this rating. These cost data for respondents were then broken into quintiles. (The sizes of the five groups vary due to the fact that the 20th, 40th, etc., percentile often fell within categories rather than between them.)

R's Technical Skill. The mean of subordinates' ratings of the respondent's technical expertise (A28) [as their supervisor] was used as a measure of the respondent's technical skill. Thus, this measure was only available for supervisory personnel.

R's Supervisory Leadership. The mean for supervisors of subordinates' ratings on ten questions which ask about the extent to which the respondent is supportive (A29, A31, A33), emphasizes goals (A35, A37), facilitates work accomplishment (A39, A41, A43), and encourages team work (A45, A47) was used as a measure of the respondents' supervisory behavior. Thus, this measure was only available for supervisory personnel.

Descriptive statistics for the current sample on measures of legitimate criteria are presented by race in Tables 10 to 13. Either Chi Squares or T-Statistics were also computed, depending upon which test was appropriate. As these tables indicate, Blacks and Whites differed significantly in a few areas but not in most. The two racial groups were not significantly different in terms of educational level (see Table 10), technical skill (see Table 13), or supervisory behavior (see Table 13). Whites had spent more time in full-time civilian jobs than Blacks ($p<.05$, see Table 11). However, Blacks possessed more expensive critical skills than Whites ($p<.05$, see Table 12). All in all, the qualifications of the two racial groups seemed equal.

Five illegitimate criteria were investigated:

Community of Origin. Whether the respondent grew up in a rural area, town, suburb, or large city (D8).

TABLE 10

DISTRIBUTION AND CHI SQUARE FOR
WHITE AND BLACK ENLISTED ARMY MEN
BY EDUCATION

	Education		
Race	High School Not Completed	Completed High School	At Least Some College
Whites N = 1,264	186 14.7%	685 54.2%	393 31.1%
Blacks N = 429	60 14.0%	254 59.2%	115 26.8%

Missing Data N = 15 Chi Square = 3.5 p<.17 N = 1,693

TABLE 11

DISTRIBUTION AND CHI SQUARE FOR
WHITE AND BLACK ENLISTED ARMY MEN
BY TIME SPENT IN CIVILIAN JOBS

	Time Spent in Civilian Jobs				
Race	None	Up to 6 Mos	6 Mos. to 1 yr	1 to 3 yrs	More Than 3 yrs
Whites	129	123	230	453	329
N = 1,264	10.2%	9.7%	18.2%	35.8%	26.0%
Blacks	64	45	68	148	92
N = 417	15.3%	10.8%	16.3%	35.5%	22.1%

Missing Data

N = 27

Chi Square = 10.2

$p<.05$

N = 1,681

TABLE 12

DISTRIBUTIONS AND CHI SQUARE FOR
WHITE AND BLACK ENLISTED ARMY MEN
BY CRITICAL SKILLS

Race	Critical Skills: Lowest 1	2	3	4	Highest 5
Whites	315	210	296	208	220
N = 1,249	25.2%	16.8%	23.7%	16.7%	17.6%
Blacks	104	56	86	98	73
N = 417	24.9%	13.4%	20.6%	23.5%	17.5%

Missing Data
N = 42

Chi Square = 11.5
p<.05

N = 1,666

TABLE 13

DESCRIPTIVE MEASURES AND T-STATISTICS FOR
SOME REWARD ALLOCATION CRITERIA

Index	Whites			Blacks			T-Statistic
	Mean	N	SD	Mean	N	SD	
Legitimate Criteria							
R's Supervisory Leadership[1]	3.47	201	.74	3.46	82	.80	.10
R's Technical Skills[1]	3.48	201	.94	3.44	82	.85	.34
Illegitimate Criteria							
Socio-Economic Status	2.64	1,236	1.05	2.33	414	1.01	5.21***

***=p<.001

[1]These measures were available only for supervisory personnel since they are comprised of the respondent's (R's) subordinates' ratings of his skills.

Region of Origin. Whether the respondent grew up in the Southern U.S., non-Southern U.S., or outside the U.S. (D9).

Socio-Economic Level. This measure is comprised of the mean of two items measuring the educational level of the respondent's parents (D6, D7).

Race of Respondent's Supervisor.

Race of the Majority of the Members in the Respondent's Work Group.

Socio-economic status, community of origin, and region of origin were considered measures of social background characteristics. Descriptive statistics by race and tests of significance for these measures are presented in Tables 13 to 17. As these tables indicate, Blacks and Whites differed substantially in their social backgrounds:

Socio-economic status - Whites, as a group, had a significantly higher ($p<.001$) socio-economic status than did Blacks (see Table 13). With 5.00 as the highest possible score, Whites had a mean score of 2.64 versus Blacks who had a mean score of 2.33.

Community of Origin - More Whites than Blacks came from rural areas (34% vs. 20%) and more Blacks than Whites came from large cities (28% vs. 9%). (See Table 14, $p<.001$).

Region of Origin - Over one-half of the Blacks (53%) came from the South, while nearly three quarters of the Whites (70%) came from areas other than the South in the U.S. (See Table 15,

TABLE 14

DISTRIBUTION AND CHI SQUARE FOR
WHITE AND BLACK ENLISTED ARMY MEN
BY COMMUNITY OF ORIGIN

	Community of Origin			
Race	Rural Area	Town	Suburb	Large City
Whites	428	472	247	118
N = 1,265	33.8%	37.3%	19.5%	9.3%
Blacks	88	160	50	122
N = 429	20.5%	37.3%	13.8%	28.4%

Missing Data N = 14

Chi Square = 107.1

p<.001

N = 1,694

TABLE 15

DISTRIBUTION AND CHI SQUARE FOR
WHITE AND BLACK ENLISTED ARMY MEN
BY REGION OF ORIGIN

	Region of Origin		
Race	Non-South	South	Outside U.S.
Whites	841	286	78
N = 1,205	69.8%	23.7%	6.5%
Blacks	153	204	30
N = 387	39.5%	52.7%	7.8%

Missing Data N = 116

Chi Square = 123.6 p<.001

N = 1,592

$p<.001$).

Thus, Blacks and Whites were much more similar in their qualifications than in their social backgrounds.

Race of supervisor and majority race in the work group were also considered illegitimate criteria for reward allocation. These two measures were classified as predictors rather than as work-setting characteristics because they characterized the immediate work environment rather than the more pervasive work surroundings. Tables 16 and 17 show that proportionately more Blacks than Whites said they had Black supervisors and considered the majority of their workers to be Black ($p<.001$).

MODERATORS: WORK-SETTING CHARACTERISTICS

Four work-setting characteristics were investigated:

Technological Sophistication. This measure was based on research by Taylor (1970, 1971) and included three items which tap the sophistication of the three job dimensions of input, throughput, and feedback:

Required Role Interdependence. This measure was comprised of two items which measure (1) the extent to which the respondent collaborated with others in order to do a good job, and (2) the extent to which the respondent's job was a one-person job (Mohr, 1971).

Socialization Mechanisms. This measure was based on research by Barrett (1970). The measure was comprised of four items which referred to the extent to which supervisors and peers generate enthusiasm for achieving excellent performance levels. This generation of enthusiasm is distinguished from pressuring workers to produce.

TABLE 16

DISTRIBUTION AND CHI SQUARE FOR
WHITE AND BLACK ENLISTED ARMY MEN
BY RACE OF SUPERVISOR

	Race of Supervisor		
Respondent's Race	White	Black	Other
Whites	861	269	134
N = 1,264	68.1%	21.3%	10.6%
Blacks	253	134	35
N = 422	60.0%	31.8%	8.3%

Missing Data N = 22

Chi Square = 19.4 p<.001

N = 1,686

TABLE 17

DISTRIBUTION AND CHI SQUARE FOR
WHITE AND BLACK ENLISTED ARMY MEN
BY MAJORITY RACE OF WORK GROUPS

	Majority Race of Work Group		
Respondent's Race	White	Black	Other
Whites	1,064	114	81
N = 1,259	84.5%	9.1%	6.4%
Blacks	301	88	32
N = 421	71.5%	20.9%	7.6%

Missing Data N = 28

Chi Square = 44.0 p<.001

N = 1,680

Accommodation Mechanisms. This measure, also based on research by Barrett (1970), was defined operationally by the level of participative decision-making practices in a work-setting. The measure was a mean of five items. Four of the items were taken from the Decision-Making Practices (DMP) index in the Survey of Organizations (Taylor & Bowers, 1972). These items measure the manner decisions are made in the system: whether they are made effectively, made at the right level, and based upon all available information. The final item, not included in the DMP index, concerns whether supervisors use group meetings to help solve work-related problems.

The items comprising these four indices are listed in Table 18. Reliability statistics for these measures are given in Table 19. The alpha coefficient and homogeneity ratio (HR) for the technological sophistication measure were very low (alpha = -.05; HR = -.02). The measure was retained although the relationships between individual items in the index and the dependent variables will have to be investigated. The role interdependence measure demonstrated moderate internal consistency (alpha = .36; HR = .22). The Socialization and Accommodation measures had very respectable reliabilities (alpha = .78; HR = .45).

Table 20 presents descriptive measures and statistical tests of differences for Blacks and Whites on these four work-setting characteristics. Turning first to those characteristics classified as formal properties, Table 20 shows that Blacks worked in less technologically sophisticated settings than Whites ($p<.001$). Whites and Blacks did not report different levels of required role interdependence, however. Concerning characteristics classified as informal properties, Blacks reported significantly higher levels of socialization and accommodation

TABLE 18

ITEMS INCLUDED IN WORK-SETTING MEASURES

Measure	Items
Technological Sophistication	A116. Input (R)* Are the objects of materials you work on in your job the same or different? 1. There is no variation. 2. There is only slight variation. 3. Some of the objects are similar and some are unique. 4. Many objects are unique. 5. Almost all objects are unique. A115. Throughput Nearly all jobs involve using some kind of tool or machine. In your job, what is the most complex type of tool or machine you use every day? 1. Simple devices (pencils, letter opener, wiping cloth). 2. Hand tools (manual typewriter, wrenches, wheelbarrow). 3. Small power-driven machines (electric drill, electric typewriter, 2-cycle engine). 4. Power-driven equipment (car or truck, airplane, electronic equipment, copy machine, hoist). 5. Automated equipment (largely computer-directed). A117. Feedback In your job, how much time usually passes between your performance of an average unit of work and the time you find out how well you did? 1. Longer than a day. 2. Less than a day. 3. Less than an hour. 4. A few minutes. 5. A few seconds or less.

*(R) indicates that the item was reversed when the index was constructed.

Measure	Items
	1 = To a very little extent... 5 = To a very great extent.
Role Interdependence	A108 (R). To what extent is your job a one=person job; you have little need to check or work with others?
	A109 To what extent do you have to work closely with others in order to do a good job?
Socialization Mechanisms	A35. How much does your supervisor encourage people to give their best effort?
	A37. To what extent does your supervisor maintain high standards of performance?
	A62. How much do persons in your work group encourage each other to give their best effort?
	A64. To what extent do persons in your work group maintain high standards of performance?
Accommodation Mechanisms	*A23. How are goals set in this organization?
	A24. In this organization to what extent are decisions amde at those levels where the most adequate and accurate information is available?
	A25. When decisions are being made, to what extent are the persons affected asked for their ideas?
	A26. People at all levels of an organization usually have know-how that could be of use to decision-makers. To what extent is information widely shared in this organization so that those who make decisions have access to all available know-how?

*Please refer to Appendix A for the response alternatives to these items.

Measure	Items
	A27. When your supervisor has problems related to the work to what extent does he use group meetings to talk things over with his subordinates and get their ideas?

TABLE 19

RELIABILITY STATISTICS FOR
WORK-SETTING CHARACTERISTICS

Measure	Items	Alpha	Scott's Homogeneity Ratio
Technological Sophistication	3	-.05	-.02
Role Interdependence	2	.36	.22
Socialization Mechanisms	4	.78	.47
Accommodation Mechanisms	5	.78	.42

TABLE 20

DESCRIPTIVE MEASURES AND T-STATISTICS FOR WORK-SETTING CHARACTERISTICS

Index	Whites			Blacks			T-Statistics
	Mean	N	SD	Mean	N	SD	
Formal Properties							
Technological Sophis.	3.43	1,270	.67	3.24	426	.71	5.07***
Role Interdependence	3.51	1,259	1.00	3.49	414	.96	.40
Informal Properties							
Socialization Mechanisms	3.37	1,274	.96	3.61	430	.90	4.52***
Accommodation Mechanisms	2.48	1,272	.84	2.81	428	.87	6.85***

**=p<.01

***=p<.001

[1]A higher score on this index indicates less experienced bureaucracy.

than Whites ($p<.001$). While higher scores are usually considered to reflect more desirable work-settings, the favorableness of these scores also depends in part upon their relationship to the organizational rewards.

These analyses performed using the four work-setting characteristics required that the respondents' scores on these measures be categorized. Accordingly, the scores for the combined sample on each measure were divided into five sub-groups of approximately equal N. Table 21 shows the resulting frequency and percentage distribution by race for the categorized measures.

TABLE 21

FREQUENCY AND PERCENTAGE DISTRIBUTIONS BY RACE
FOR CATEGORIZED WORK-SETTING CHARACTERISTICS

TECHNOLOGICAL SOPHISITICATION

Sample	1	2	3	4	5
Total (N = 1,696)	598 35.3%	293 17.3%	344 20.3%	270 15.9%	191 11.3%
Whites (N = 1,259)	411 32.4%	219 17.2%	267 21.0%	217 17.1%	156 12.3%
Blacks (N = 414)	187 43.9%	74 17.4%	77 18.1%	53 12.4%	35 8.2%

ROLE INTERDEPENDENCE

Sample	1	2	3	4	5
Total (N = 1,673)	320 1 .1%	428 25.6%	499 29.8%	181 10.8%	245 14.6%
Whites (N = 1,259)	236 18.7%	326 25.9%	369 29.3%	141 11.2%	187 14.9%
Blacks (N = 414)	84 20.3%	102 24.6%	130 31.4%	40 9.7%	58 14.0%

TABLE 21 (Continued)

SOCIALIZATION

Sample	1	2	3	4	5
Total (N = 1,704)	485 28.5%	302 17.7%	300 17.6%	306 18.0%	311 18.3%
Whites (N = 1,274)	396 31.1%	230 18.1%	213 16.7%	223 17.5%	212 16.6%
Blacks (N = 430)	89 20.7%	72 16.7%	87 20.2%	83 19.3%	99 23.0%

ACCOMMODATION

Sample	1	2	3	4	5
Total (N = 1,700)	410 24.1%	292 17.2%	408 24.0%	339 19.9%	251 14.8%
Whites (N = 1,272	343 27.0%	234 18.4%	304 23.9%	230 18.1%	161 12.7%
Blacks (N = 428)	67 15.7%	58 13.6%	104 24.3%	109 25.5%	90 21.0%

ANALYSIS PROCEDURES

The research questions developed in Chapter III required two analytic phases: (1) examination of the relationships between rewards and criteria and (2) examination of the moderating effects of work-setting characteristics on these relationships. Separate analyses were performed for Blacks and Whites.

During the first phase, Multiple Classification Analysis (Andrews, et al., 1973) was employed. MCA assesses the efficiency of a set of predictor variables (such as legitimate criteria for reward allocation) in predicting the scores of respondents on a particular outcome measure (such as promotion rate or quality of work). MCA in many respects achieves the same results as an analysis of variance, multiple correlation, or regression, and one of its products is a multiple correlation coefficient. The latter techniques, however, involve more stringent assumptions about the data than does MCA. Analysis of variance assumes that predictors are not inter-correlated while multicolinearity poses a problem for MCA only in extreme cases of perfect or near perfect overlap. Both dummy variable multiple regression and MCA can handle both categorical (e.g., Black versus White supervisor) and continuous variables. Regression, however, assumes linearity while MCA does not. In short, MCA achieves the same purpose as the more classical analysis techniques through a somewhat different strategy which involves less rigorous assumptions.

The technique is capable of revealing the effects of: (1) each predictor variable taken by itself -- that is, the zero-order association between the predictor and the dependent variable; (2) each predictor variable after adjustment for its correlations with other predictor variables in the analysis, that is, the "unique" association between the predictor and the dependent variable.

In addition, MCA answers a number of questions about the degree of relationship between the predictors and a particular dependent variable. These questions are:

1. How much of the variation in an outcome measure can be explained by an entire set of predictors? (Multiple R^2)[29] Is this significantly different from zero?
2. Can a given predictor by itself explain a significant proportion of the variation? (Eta^2)

These questions are relevant to identifying the best predictors of rewards received by Blacks and Whites. MCA's were used to assess the predictive power of individual and work-setting characteristics.

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[29]Actually MCA computes two R^2 -- one adjusted for degrees of freedom and one unadjusted. The adjusted R^2 takes into account shrinkage due to sample size and number of predictors and categories.

One aspect of this analysis involved a two-step procedure. First, the legitimate criteria were entered as predictors of each organizational reward. The residuals from these analyses were saved and then, the illegitimate criteria were entered as predictors of the residuals from the first MCA. This provided estimates of the variation in outcomes explained by illegitimate criteria once the variance explained by legitimate criteria had been removed or "partialled out." There was a downward bias in the estimated effects of and variance explained by the illegitimate criteria, because they were entered as second-stage predictors. However, the two-step procedure was still deemed preferable.

During the second phase, the moderating effects of the work-setting characteristics were tested using an analysis strategy suggested by Cohen (1968). Cohen's strategy would suggest that moderating or interaction effects be tested by entering a given predictor along with a pattern variable (comprised of possible interactions between the predictor and the moderator) and the moderator variable into an MCA. A significant change in the amount of variance explained by the predictor-plus-interaction-plus-moderator variable list over the predictors-plus-moderator variable list indicated a significant moderating effect. The marginal (or unique) predictive power of each work-setting characteristic over the predictors could be likewise assessed.

V.

RESULTS

This chapter includes three major sections. The first summarizes analyses pertaining to predictors of reward allocation. The second section assesses the moderating effects of four work-setting characteristics on reward systems. Finally, additional analyses prompted by initial results of the study are presented.

This chapter describes the statistical findings. Interpretation of these findings and discussion of their implications are provided in Chapter VI.

The Applicability of MCA

Preliminary analyses addressed two issues regarding the MCA technique and its possible limitations. First, perfect or near perfect overlap among categories of predictors is a problem in MCA analyses. One issue, therefore, was the degree of multi-collinearity within each set of predictors.

Second, when a two-stage analysis is used (i.e., when the residuals from one analysis are used as the dependent variables for a second list of predictors) the predictive power of the second-stage predictors is subject to a "downward bias." This downward bias increases as the correlations among the first and second-stage predictors increase. In its present use the two-stage analysis gave "priority" to the legitimate criteria, since they were entered first. Thus, the two-stage analysis was a conservative approach. The greater the correlations between the legitimate and illegitimate predictors the more conserva-

tive the two-stage analysis would be.

Frequency distributions and non-parametric measures of association were computed for pairs of the predictor variables. These analyses are presented as Appendix B. The frequency distributions within each set of predictors indicated no cases of perfect or near perfect overlap. Thus, multicollinearity was not a problem.

Measures of association between the sets of legitimate and illegitimate criteria indicated that they were related, but weakly. Thus, the two-stage analysis was not overly conservative.

ORGANIZATIONAL REWARD ALLOCATION

Four factors were hypothesized to predict organizational rewards received: legitimate and illegitimate individual characteristics and formal and informal work-setting characteristics. The statistical strength of the predictors reflects the reward system(s) utilized in the Army. Racial differences in the relationships indicate deviations from racial equality.

Legitimate Criteria and Rewards Received

Tables 22 and 23 summarize the MCA analyses of legitimate critera as predictors of promotion rate and quality of work. The most important statistic for our purposes is the adjusted R^2, which is the percentage of variance in the dependent variable explained by the predictor set after adjustment for shrinkage.

TABLE 22

RELATIONSHIPS BETWEEN LEGITIMATE CRITERIA AND PROMOTION RATE[1]

	WHITES				BLACKS			
BIVARIATE RELATIONSHIPS	β	η	η^2	$F(\eta^2)$[2]	β	η	η^2	$F(\eta^2)$
R's Technical Skills	.05	.06	.00	0.0	.17	.09	.01	.72
R's Supervisory Leadership	.08	.08	.01	2.24	.22	.16	.02	1.44
Critical Skills	.05	.06	.00	0.0	.16	.15	.02	1.44
Education	.07	.08	.01	3.75**	.14	.13	.02	2.42[3]
Time in Civilian Jobs	.03	.03	.00	0.0	.14	.10	.01	.72
MULTIVARIATE RELATIONSHIPS	WHITES				BLACKS			
R (unadjusted)	.0500				.3088			
R^2 (unadjusted)	.0025				.0953			
R (adjusted)	.0000				.1862			
R^2 (adjusted)	.0000				.0347			
F (R^2 adjusted)[4]	0.0				3.25*			
N	1,128				367			

*p<.05
**p<.01

[1]Includes enlisted men with paygrades E3 through E9 only.

[2]The significance of η^2 was determined using the ratio:

$$F = \left(\frac{\eta^2}{1-\eta^2}\right)\left(\frac{N-C}{C-1}\right)$$

where N equals the number of cases in the sample and C equals the number of categories of the predictor being tested. The significance of F was evaluated using C-1 and N-C degrees of freedom (McNemar, 1969).

[3]p<.05: $F \cong 2.60$.

[4]The significance of R^2 (adjusted) was determined using the ratio:

$$F = \left(\frac{R^2}{1-R^2}\right)\left(\frac{N-D}{D-1}\right)$$

TABLE 23

RELATIONSHIPS BETWEEN LEGITIMATE CRITERIA
AND QUALITY OF WORK

BIVARIATE RELATIONSHIPS	WHITES				BLACKS			
	β	η	η^2	$F(\eta^2)$	β	η	η^2	$F(\eta^2)$
R's Technical Skills	.06	.24	.06	16.21***	.06	.16	.02	1.68
R's Supervisory Leadership	.26	.26	.07	19.00***	.20	.20	.04	3.36**
Critical Skills	.10	.11	.01	2.53	.16	.13	.02	1.68
Education	.10	.13	.02	8.46***	.13	.12	.01	1.41
Time in Civilian Jobs	.05	.06	.00	0.0	.09	.08	.01	.84

MULTIVARIATE RELATIONSHIPS	WHITES	BLACKS
R (unadjusted)	.3116	.2943
R^2 (unadjusted)	.0936	.0866
R (adjusted)	.2774	.1853
R^2 (adjusted)	.0770	.0343
F (R^2 adjusted)	26.31***	3.74*
N	1,273	426

*p<.05
**p<.01
***p<.001

Legitimate criteria explained approximately 3.5% of the total variance in each reward for Blacks ($p<.05$) and 7% of the variance in quality of work for Whites ($p<.001$). The (White) adjusted R^2 for promotion rate was .0000 and non-significant.

The percentage of variance explained differed by race. Legitimate criteria explained more variance in quality of work for Whites than for Blacks. The reverse was true for predictors of promotion rate: Legitimate criteria explained more variance in promotion rate for Blacks than for Whites.

These findings revealed racial inequalities in the importance of legitimate criteria for rewards received. The form of these inequalities was revealed by the nature (e.g., shape, direction) of the relationships for Blacks versus Whites. Figure 5 portrays the bivariate correlations (eta's) between legitimate criteria and promotion rate.[30] Several points are noteworthy:

- Education: Whites with college educations had faster promotion rates than Whites with less education. For Blacks, however, higher levels of education were associated with slower promotion rates.[31] (See Figure 5d.)
- Whites with low-scores on technical and critical skills measures had faster promotion rates than comparable Blacks. (See Figures 5a and 5c.)

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[30] In viewing Figure 5 the fact that only the eta for education and promotion rate was statistically significant for either racial group should be kept in mind.

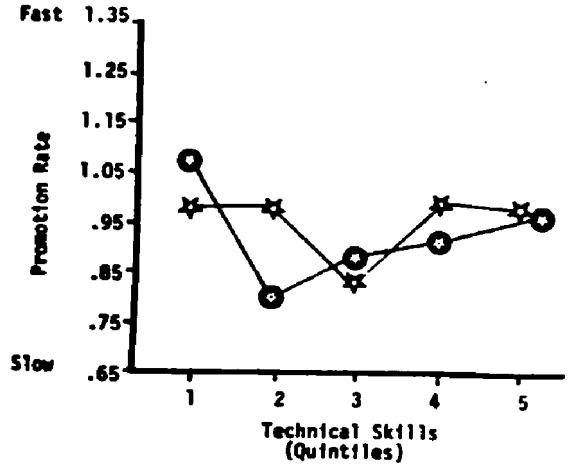
[31] This racial difference was not due to higher numbers of educated Blacks than educated Whites deciding to leave the Army (as measured by re-enlistment intentions).

FIGURE 5

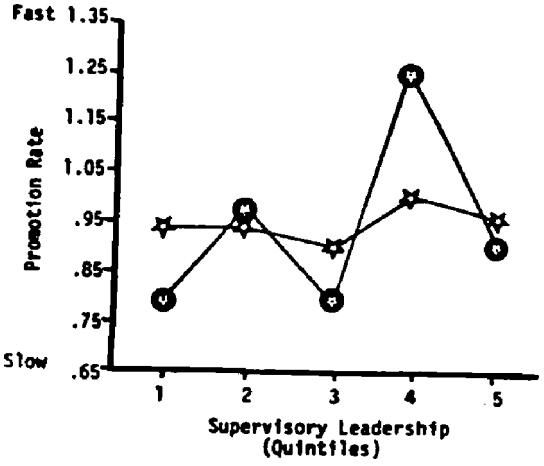
BIVARIATE RELATIONSHIPS BETWEEN LEGITIMATE CRITERIA AND PROMOTION RATE*

Key ☆ Whites
● Blacks

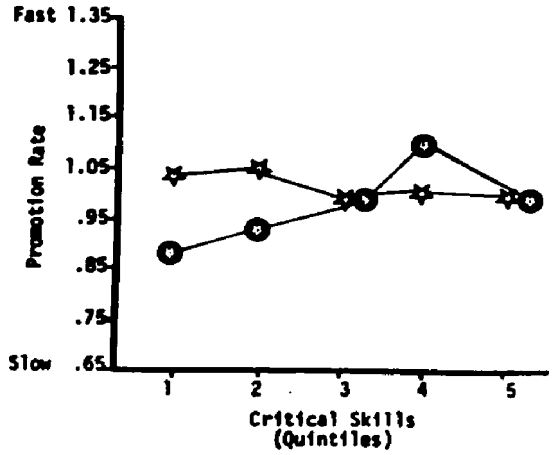
5a: Technical Skills and Promotion Rate**



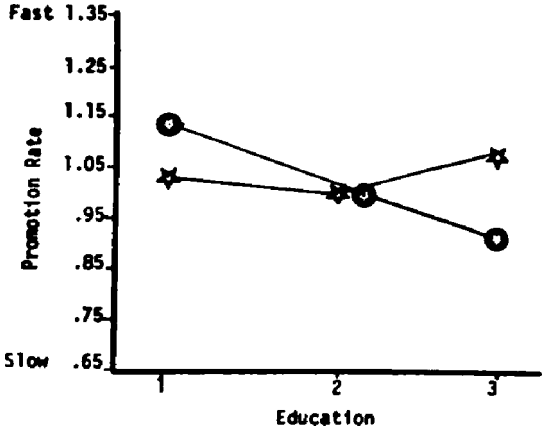
5b: Sup. Leadership and Promotion Rate**



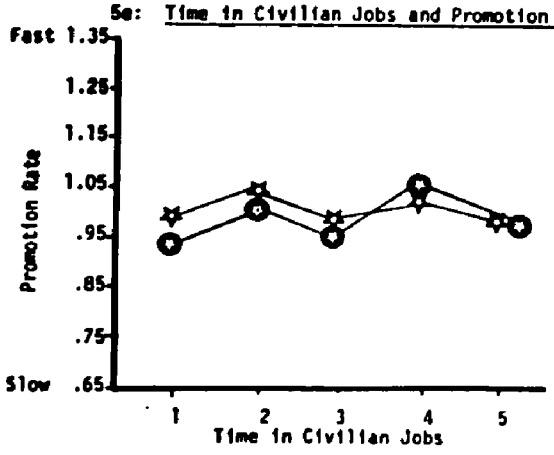
5c: Critical Skills and Promotion Rate



5d: Education and Promotion Rate



5e: Time in Civilian Jobs and Promotion Rate



* Includes enlisted men with paygrades E3 to E9 only.

** Includes supervisory personnel only.

- Blacks with low supervisory leadership scores had slower promotion rates than comparable Whites but Blacks with moderately high leadership scores had the fastest promotion rates. (See Figure 5b.)

Thus, in terms of promotion rates the racial inequalities were worse for certain subgroups. Blacks with college educations but with less expensive Army training and low technical and leadership skills were most discriminated against. Blacks with good leadership scores (i.e., those in the 4th quintile) were favored.

Figure 6 portrays the bivariate relationships between legitimate criteria and quality of work. The graphs show that Blacks often reported higher quality of work than Whites regardless of their qualifications.

Illegitimate Criteria and Rewards Received

The multivariate relationships between illegitimate criteria and rewards are shown in Tables 24 and 25. For these analyses, the residual scores from the Stage 1 predictors were used as the dependent variables.

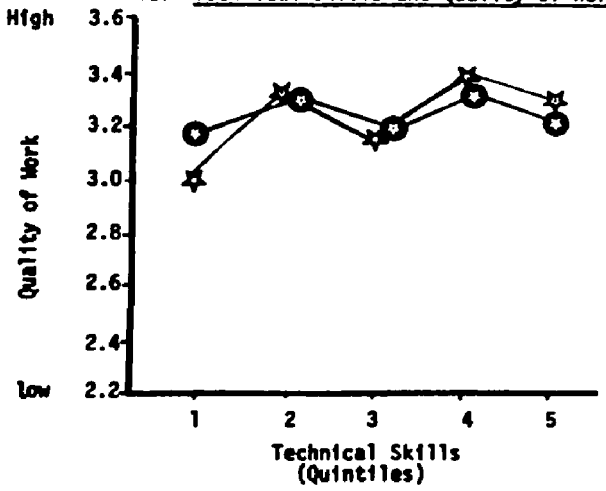
Illegitimate criteria explained 1.66% of the variance in promotion rate ($p<.01$) and 2% of the variance in quality of work ($p<.001$) for Whites. Illegitimate criteria explained over 2% of the variance in quality of work for Blacks ($p<.05$). The (Black) adjusted R^2 for promotion rate was .0058 and non-significant.

FIGURE 6

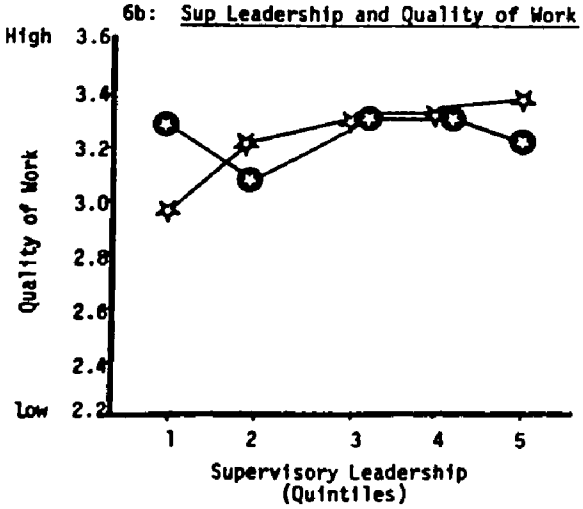
BIVARIATE RELATIONSHIPS BETWEEN LEGITIMATE CRITERIA AND QUALITY OF WORK

Key ☆ Whites
● Blacks

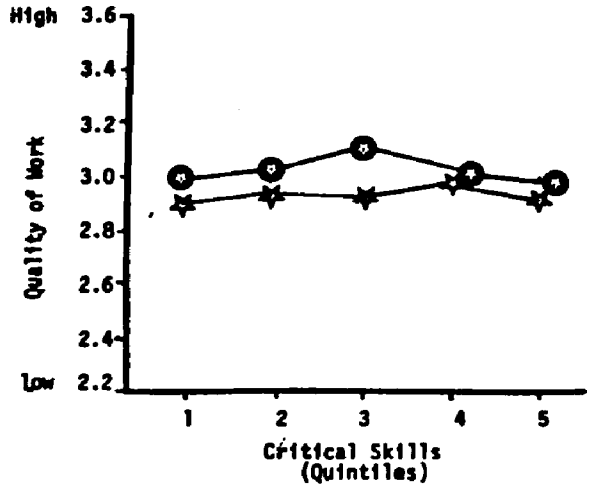
6a: Technical Skills and Quality of Work



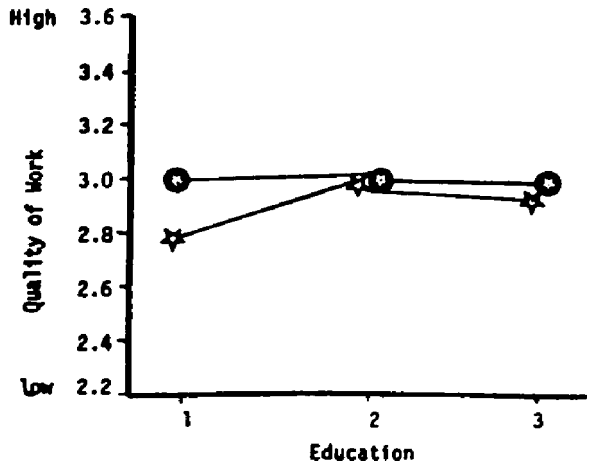
6b: Sup Leadership and Quality of Work



6c: Critical Skills and Quality of Work



6d: Education and Quality of Work



6e: Time in Civilian Jobs and Quality of Work

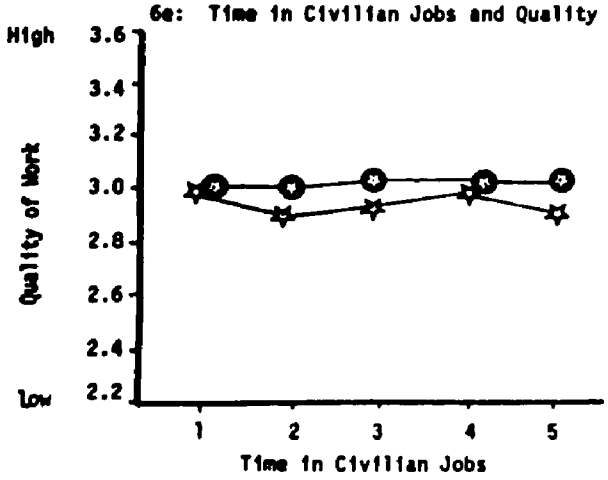


TABLE 24

RELATIONSHIPS BETWEEN ILLEGITIMATE CRITERIA AND PROMOTION RATE[1]

(Residual Scores from Stage 1 Predictors Used as Dependent Variables)

	Whites				BLACKS			
BIVARIATE RELATIONSHIPS	β	η	η^2	$F(\eta^2)$	β	η	η^2	$F(\eta^2)$
Community of Origin	.07	.09	.01	2.81*	.11	.09	.01	.91
Region of Origin	.03	.03	.00	0.0	.12	.10	.01	1.21
Socio-Economic Status	.14	.15	.02	4.48**	.12	.12	.01	.72
Race of Supervisor	.03	.04	.00	0.0	.11	.08	.01	1.21
Majority Race of Work Group	.05	.05	.00	0.0	.12	.08	.01	1.21
MULTIVARIATE RELATIONSHIPS	WHITES				BLACKS			
R (unadjusted)	.1797				.2339			
R^2 (unadjusted)	.0323				.0547			
R (adjusted)	.1287				.0764			
R^2 (adjusted)	.0166				.0058			
F (R^2 adjusted)	4.72**				.52			
*=p<.05 N	1,128				367			
**=p<.01								

[1]Includes enlisted men with paygrades E3 through E9 only.

TABLE 25

RELATIONSHIPS BETWEEN ILLEGITIMATE CRITERIA
AND QUALITY OF WORK

(Residual Scores From Stage 1 Predictors
Used as Dependent Variables)

	WHITES				BLACKS			
BIVARIATE RELATIONSHIPS	β	η	η^2	$F(\eta^2)$	β	η	η^2	$F(\eta^2)$
Community of Origin	.05	.03	.00	0.0	.06	.10	.01	1.05
Region of Origin	.07	.08	.01	4.23**	.10	.11	.01	1.41
Socio-Economic Status	.09	.09	.01	2.53*	.16	.18	.03	2.52*
Race of Supervisor	.06	.08	.01	4.23**	.10	.11	.01	1.41
Majority Race of Work Group	.14	.14	.01	4.23**	.11	.11	.01	1.41
MULTIVARIATE RELATIONSHIPS	WHITES				BLACKS			
R (unadjusted)	.1952				.2565			
R^2 (unadjusted)	.0381				.0658			
R (adjusted)	.1557				.1563			
R^2 (adjusted)	.0242				.0244			
F (R^2 adjusted)	7.86***				2.63*			
N	1,273				426			

*p<.05
**p<.01
***p<.001

There were no substantial racial differences in predictions of quality of work. Turning to promotion rate, however, illegitimate criteria were better predictors for Whites than for Blacks.

The bivariate relationships between illegitimate criteria and promotion rate are shown in Figure 7. The racial inequalities took a variety of forms:

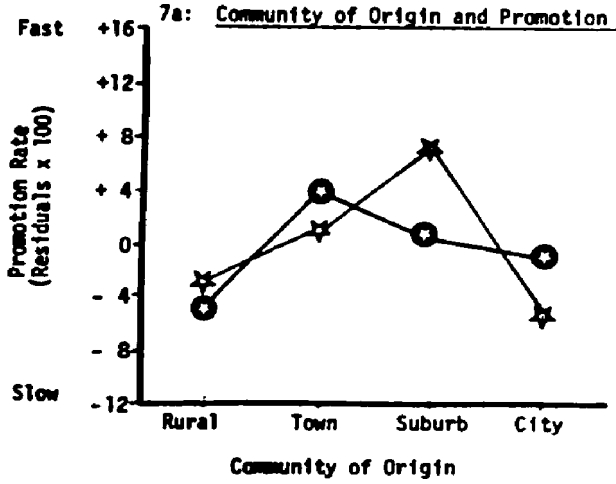
- Socio-economic status (SES) was directly related to promotion rate for Whites -- higher SES meant faster promotion rates. Blacks with lower status had slightly faster promotion rates than comparable Whites. Blacks with higher statuses, however, had slow promotion rates (see Figure 7c).
- Community of origin: Whites from the suburbs had faster promotion rates than any other subgroup of Whites or Blacks (see Figure 7a).
- Region of origin: Blacks from southern states or non-U.S. areas and Whites from anywhere but these regions had the fastest promotion rates. Race and region interacted in affecting promotion rate (see Figure 7b).
- Racial Composition: For Blacks, faster promotion rates were associated with having a White supervisor and Black coworkers. Whites with the fastest rates were in work groups with supervisors and coworkers of "Other" races (see Figures 7d and 7e).

FIGURE 7

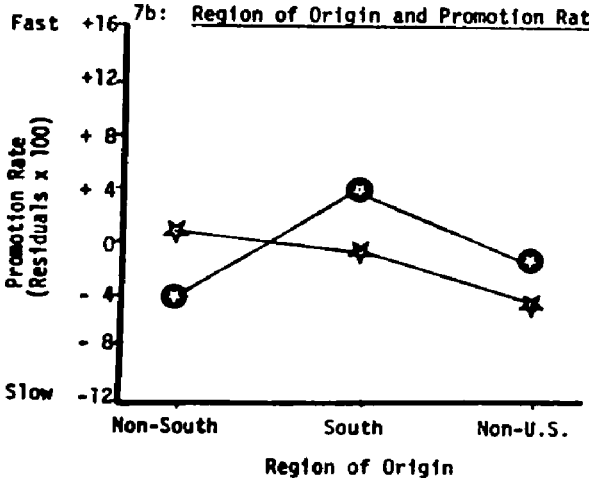
BIVARIATE RELATIONSHIPS BETWEEN ILLEGITIMATE CRITERIA AND PROMOTION RATE*

Key ☆ Whites
● Blacks

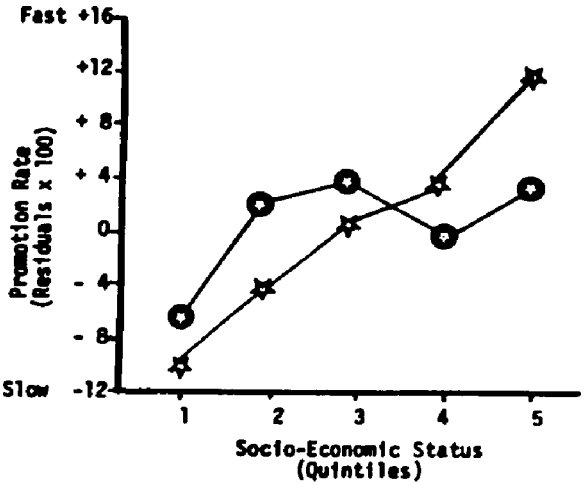
7a: Community of Origin and Promotion Rate



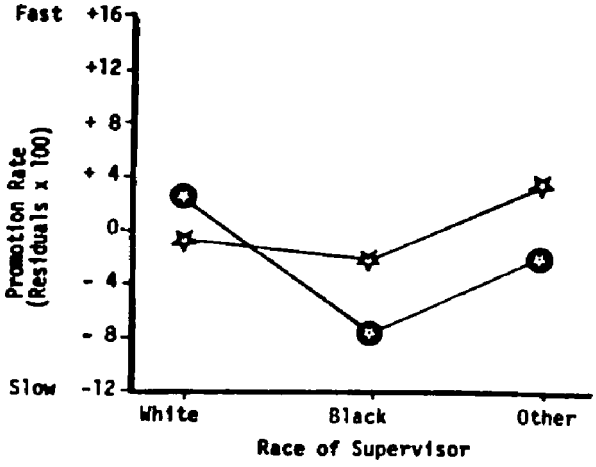
7b: Region of Origin and Promotion Rate



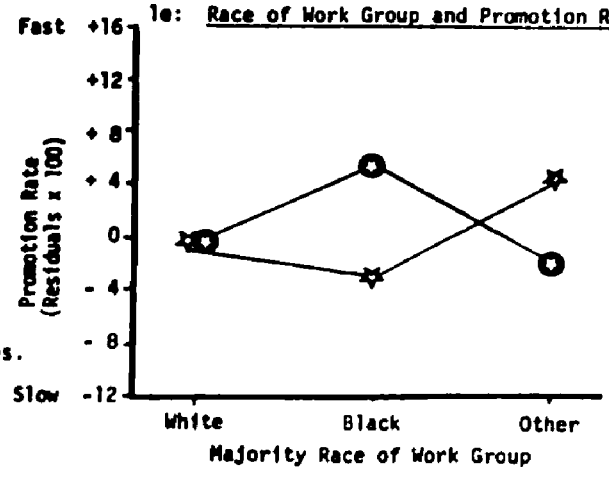
7c: Socio-Economic Status and Promotion Rate



7d: Race of Sup and Promotion Rate



7e: Race of Work Group and Promotion Rate



* Residuals from Stage 1 analyses were used as dependent variables.

Figure 8 portrays the relationships between illegitimate criteria and quality of work.

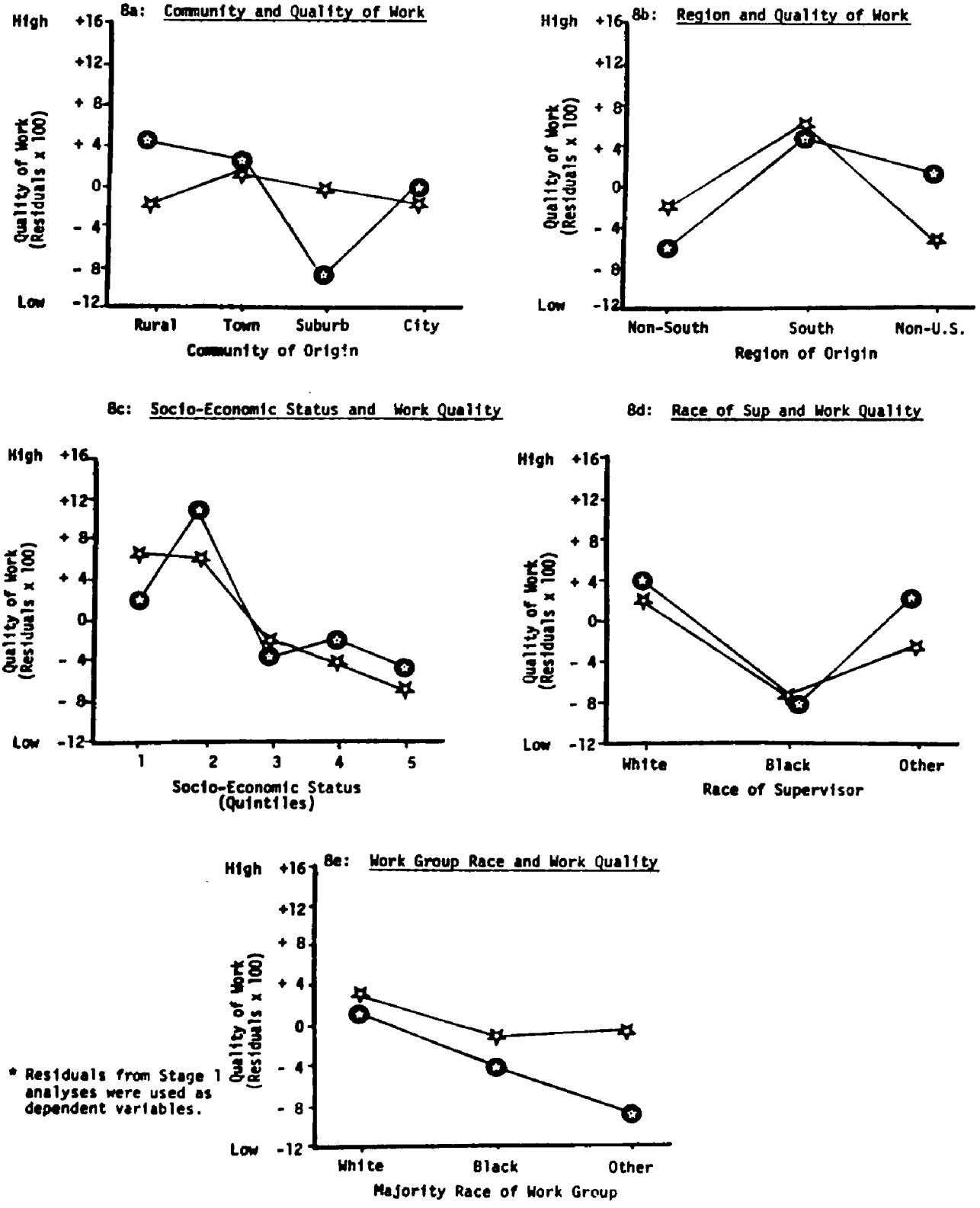
All of the illegitimate criteria save community of origin were significantly related to quality of work for Whites. Only SES was significantly related for Blacks. The relationships were basically the same in "shape" for both races. The highest quality of work for Blacks and Whites was associated with coming from the South, and having a low SES (see Figures 8b and 8c). In terms of what is usually considered to be characteristic of rich versus deprived social backgrounds, then, those reporting the highest quality of work came from relatively deprived backgrounds. In terms of the effects of local surroundings on quality of work, those not having a Black supervisor and those in work groups where the majority of their co-workers are White, reported higher quality of work.

In summary, quality of work was predicted by illegitimate criteria equally well for Blacks and Whites. Illegitimate criteria were stronger predictors of promotion rate for Whites than for Blacks. At least one subgroup of each race was placed at a disadvantage in terms of the promotion rates associated with various categories of the predictors. Thus, treatment discrimination operated against subgroups of both Blacks and Whites.

FIGURE 8

BIVARIATE RELATIONSHIPS BETWEEN ILLEGITIMATE CRITERIA AND QUALITY OF WORK*

Key ☆ Whites ★ Blacks



* Residuals from Stage 1 analyses were used as dependent variables.

Work-Setting Characteristics and Rewards Received

Tables 26 and 27 summarize the MCA's assessing the predictive strength of work-setting characteristics. The significance of the relationships were evaluated using the adjusted R^2's obtained when all four work-setting characteristics were entered as predictors.[32]

As Table 26 indicates, work-setting characteristics explained approximately 1% of the total variance in promotion rate for Whites ($p<.05$). The adjusted R^2 for Blacks was 0.0 and non-significant.

Table 27 shows that work-setting characteristics explained over 60% of the total variance in quality of work for both Blacks and Whites. Work-setting characteristics were stronger predictors of quality of work for both races than either legitimate or illegitimate criteria.

The bivariate relationships are portrayed in Figures 9 and 10 and show that:

- The shapes of the relationships were often different for the two races. They tended to be more "jagged" or curvilinear for Blacks than Whites.
  High levels of role interdependence, socialization, and accommodation were associated with slower promotion rates for both races (see Figures 9b to 9d).

[32]For these analyses, the scores on the work-setting characteristics were divided into quintiles.

TABLE 26

RELATIONSHIPS BETWEEN WORK-SETTING CHARACTERISTICS AND PROMOTION RATE[1]

BIVARIATE RELATIONSHIPS	WHITES				BLACKS			
	β	η	η^2	$F(\eta^2)^2$	β	η	η^2	$F(\eta^2)^2$
Technological Sophistication	.05	.04	.00	0.00	.06	.06	.00	0.00
Role Interdependence	.06	.09	.01	2.84*	.07	.08	.01	.91
Socialization Mechanisms	.09	.13	.02	5.78**	.08	.09	.01	.91
Accommodation Mechanisms	.08	.12	.01	2.84*	.08	.10	.01	.91

MULTIVARIATE RELATIONSHIPS	WHITES	BLACKS
R (unadjusted)	.1706	.1539
R^2 (unadjusted)	.0291	.0237
R (adjusted)	.1073	.0000
R^2 (adjusted)	.0115	.0000
F (R^2 adjusted)[3]	3.27*	0.00
*p<.05 N	1,128	367
**p<.01		

[1]Includes enlisted men with paygrades E3 through E9 only.

[2]The significance of η^2 was determined using the ratio: $F = \left(\frac{\eta^2}{1-\eta^2}\right)\left(\frac{N-C}{C-1}\right)$ where N equals the number of cases in the sample and C equals the number of categories of the predictor being tested. The significance of F was evaluated using C-1 and N-C degrees of freedom (McNemar, 1969).

[3]The significance of R^2 (adjusted) was determined using the ratio: $F = \left(\frac{R^2}{1-R^2}\right)\left(\frac{N-P}{P-1}\right)$ where N equals the number of cases in the sample and P equals the number of predictors in the set under consideration. The significance of F was evaluated using P-1 and N-P degrees of freedom (McNemar, 1969).

TABLE 27

RELATIONSHIPS BETWEEN WORK-SETTING CHARACTERISTICS AND QUALITY OF WORK

BIVARIATE RELATIONSHIPS	WHITES				BLACKS			
	β	η	η^2	$F(\eta^2)$	β	η	η^2	$F(\eta^2)$
Technological Sophistication	.07	.18	.03	9.80***	.08	.16	.02	2.15
Role Interdependence	.04	.21	.04	13.21***	.04	.20	.04	4.39**
Socialization Mechanisms	.49	.71	.50	317.00***	.55	.73	.53	118.69***
Accommodation Mechanisms	.38	.65	.42	229.55***	.34	.62	.38	64.51***

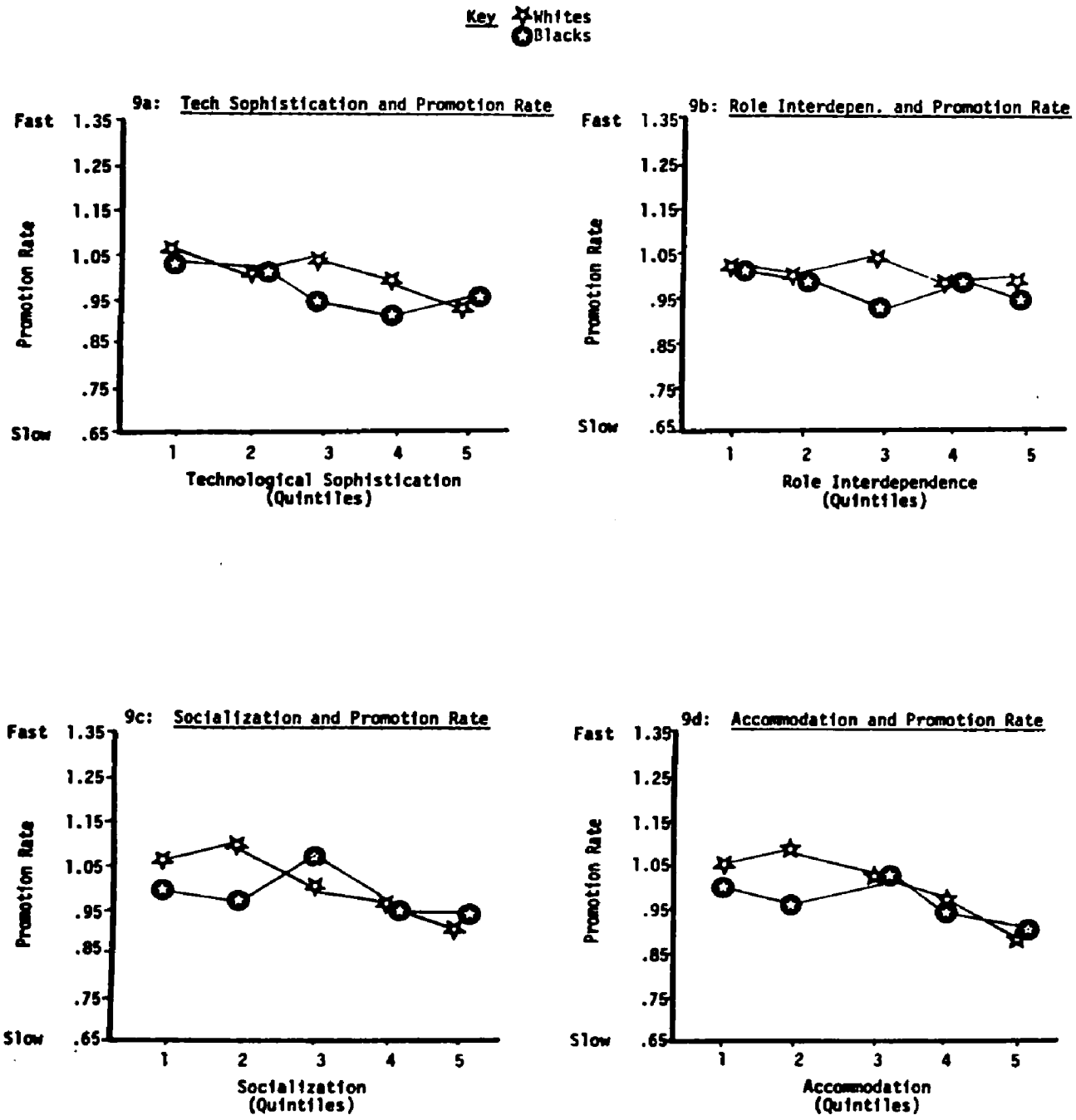
MULTIVARIATE RELATIONSHIPS	WHITES	BLACKS
R (unadjusted)	.7810	.7933
R^2 (unadjusted)	.6100	.6294
R (adjusted)	.7770	.7817
R^2 (adjusted)	.6038	.6111
F (R^2 adjusted)	483.10***	165.39***
N	1,273	426

**p<.01

***p<.001

FIGURE 9

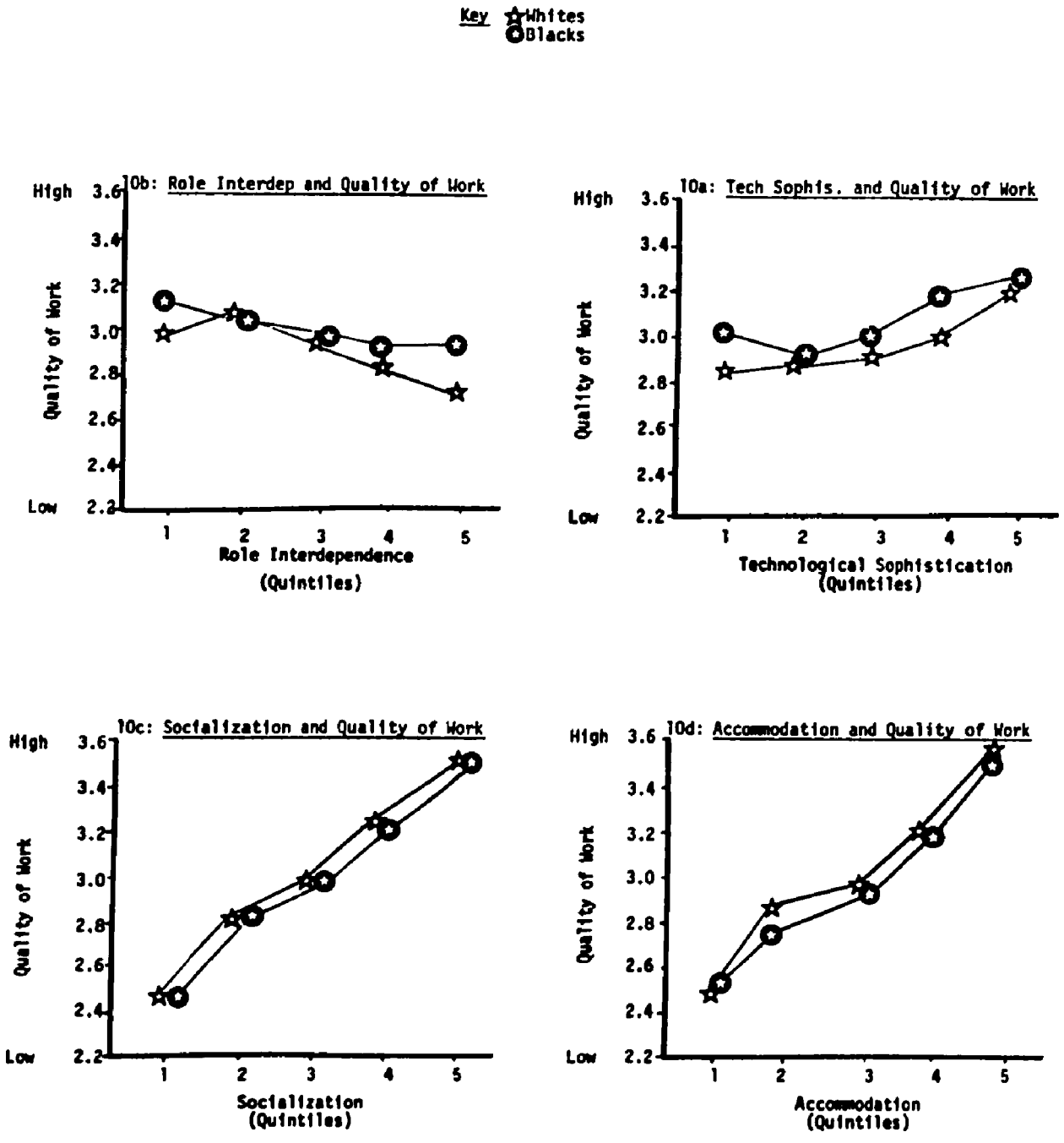
BIVARIATE RELATIONSHIPS BETWEEN WORK-SETTING CHARACTERISTICS AND PROMOTION RATE*



* Includes enlisted men with paygrades E3 to E9 only.

FIGURE 10

BIVARIATE RELATIONSHIPS BETWEEN WORK-SETTING CHARACTERISTICS AND QUALITY OF WORK



- Socialization and accommodation mechanisms were very strongly related to quality of work for both Blacks and Whites (Median Eta = .71; $p<.001$). The stronger these mechanisms, the higher the quality of work (see Figures 10c and 10d). These positive relationships stand in contrast with the negative (albeit weaker) relationships of these mechanisms with promotion rate.
- Higher levels of role interdependence were associated with higher quality of work for both races (see Figure 10b).
- Higher levels of technological sophistication were associated with lower quality of work for both races (see Figure 10a).

The conditions associated with faster promotion rates were in many cases, the reverse of the conditions associated with higher quality of work. This tradeoff operated for both races. The negative relationship between technological sophistication and quality of work contrasts with Taylor's (1971) findings in civilian work-settings. Drexler's (1973) findings in Navy work settings were similar to ours in the Army, however. Thus, technological sophistication may have different effects on quality of work in the military than in civilian organizations.

It is also possible however, that the negative relationship found in military between technological sophistication and quality of work was due to the technology measure used. The same measure was used in the present study and in Drexler's (1973) Navy study, while a more elaborate albeit similar one was used with Taylor's (1971) civilian

population. It should be also recalled that the index used in the present study had an alpha of -.05. Since the individual items were not very closely interrelated, it was possible that they related differently to quality of work.

This was not the case, however. The three individual items were all negatively (and weakly) related to quality of work (r for input item = -.14; r for throughput item = -.01; r for feedback item = -.11). Thus, while the validity of the individual items might be questioned, the low alpha for the technological sophistication index did not confound its relationship to quality of work.

THE MODERATING EFFECTS OF WORK-SETTING CHARACTERISTICS

The next analyses assessed the moderating effects of two formal and two informal work-setting characteristics on the relationships between criteria and rewards. The four work-setting characteristics were technological sophistication, role interdependence, socialization mechanisms, and accommodation mechanisms. The first two were considered formal characteristics and the latter two informal.

The analysis procedures used to test these moderating effects were described in Chapter IV. Briefly, sets of MCA's were to be computed by race for each combination of the two dependent variables, the two sets of predictors, and the four moderators. Thus, a total of (2 x 2 x 4) 16 analysis sets for each racial group -- or 32 analysis

sets in all -- would have been required to fully test the hypothesis.[33]

It was decided to begin by performing only a sample of the analyses. Ten out of the 32 possible analysis sets were randomly chosen and the relevant MCA's performed for these ten sets.[34] The results for the ten sets are presented in Tables 28 to 37. To summarize:

- The relationships between criteria (legitimate and illegitimate) and promotion rate was not significantly moderated by any of the four work-setting characteristics (using changes in adjusted R^2's as the criterion).

The addition of the interaction or pattern variables to the predictor-plus-moderator MCA's added explanatory power in terms of increases in the unadjusted R^2's in three out of the four test runs. These increases ranged from 1.29% to 11.18% (see Tables 28 to 31). The comparable changes in <u>adjusted</u> R^2's, however, were 0% and -.12%. Thus, the shrinkage due to the large number of predictors and predictor categories necessary to test the interaction effect wiped out any statistically reliable results.

---

[33]Each analysis set included three MCA's -- one for the predictors alone, one for the predictors plus one work-setting characteristic, and one for the predictors plus one work-setting characteristic plus the relevant pattern variables. For the purposes of these MCA sets, the scores on the legitimate predictors, SES, and the four work-setting characteristics were divided into thirds, rather than using the former quintile-classifications. This collapsing was done in order to reduce the number of total categories entered into the MCA's (i.e., to reduce the shrinkage due to the increase in degrees of freedom).

[34]The phrase "randomly chosen" may be taken quite literally since each of the 32 "possible combinations" was assigned a number and ten "combinations" were then selected using a random numbers table.

TABLE 28

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER*

DEPENDENT VARIABLE:	PREDICTOR SET:	MODERATOR:
Promotion Rate	Legitimate Criteria	Technological Sophistication

WHITES N=1128	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 (unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Legitimate Criteria + Technological Sophis. + Interaction	.0000 (.0265)	0.0		
LEGITIMATE CRITERIA + Technological Sophis.	.0000 (.0136)	0.0	$\Delta R^2_{adj.}$ = .0000	0.0
LEGITIMATE CRITERIA	.0002 (.0126)	.06	$\Delta R^2_{adj.}$ = -.0002	.22

*The significance of the marginal utility of a set of predictors was determined from the significance of a difference in R^2's. F was found using the ratio:

$$\frac{(R^2_{all} - R^2_{all-x})/(P_{all} - P_{all-x})}{(1 - R^2_{all})/(N - P_{all} - 1)}$$

where R^2_{all} equals the R^2 for all available predictors; R^2_{all-x} equals the R^2 for all but those predictors whose marginal utility is being tested; P_{all} equals the number of available predictors; and P_{all-x} equals the number of predictors remaining when those in question are excluded. The significance of this F was evaluated using $(P_{all} - P_{all-x})$ and $(N - P_{all} - 1)$ degrees of freedom (Kerlinger & Pedhazur, 1973).

TABLE 29

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Promotion Rate	Legitimate Criteria	Accommodation

BLACKS N= 367	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 (unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Legitimate Criteria + Accommodation + Interaction	.0295 (.1939)	1.08		
LEGITIMATE CRITERIA + Accommodation	.0374 (.0821)	2.81*	$\Delta R^2_{adj.}$ =-.0079	.58
LEGITIMATE CRITERIA	.0417 (.0784)	3.94**	$\Delta R^2_{adj.}$ =-.0043	1.61

*p<.05
**p<.01

TABLE 30

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Promotion Rate	Illegitimate Criteria	Technological Sophistication

BLACKS N= 367	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 (unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Illegitimate Criteria + Technological Sophistication + Interaction	.0000 (.0000)	0.0		
ILLEGITIMATE CRITERIA + Technological Sophistication	.0012 (.0529)	0.09	$\Delta R^2_{adj.}$ =-.0012	.09
ILLEGITIMATE CRITERIA	.0050 (.0484)	.45	$\Delta R^2_{adj.}$ =-.0038	1.37

TABLE 31

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Promotion Rate	Illegitimate Criteria	Socialization

BLACKS N= 367	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 (unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Illegitimate Criteria + Socialization + Interaction	.0000 (.1626)	0.0		
ILLEGITIMATE CRITERIA + Socialization	.0013 (.0532)	.09	$\Delta R^2_{adj.}$ =-.0013	.09
ILLEGITIMATE CRITERIA	.0050 (.0484)	.45	$\Delta R^2_{adj.}$ =-.0037	1.33

TABLE 32

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Quality of Work	Legitimate Criteria	Role Interdependence

WHITES N=1273	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 (unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Legitimate Criteria + Role Interdependence + Interaction	.0688 (.1142)	9.32***		
LEGITIMATE CRITERIA + Role Interdependence	.0820 (.0942)	22.63***	$\Delta R^2_{adj.}$ =-.0132	3.58**
LEGITIMATE CRITERIA	.0661 (.0763)	22.44***	$\Delta R^2_{adj.}$ = .0159	21.93***

**p<.01
***p<.001

TABLE 33

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Quality of Work	Legitimate Criteria	Accommodation

WHITES N=1273	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted (R^2 unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Legitimate Criteria + Accommodation + Interaction	.3468 (.3786)	67.00***		
LEGITIMATE CRITERIA + Accommodation	.3654 (.3739)	145.91***	$\Delta R^2_{adj.}$ = -.0186	7.18***
LEGITIMATE CRITERIA	.0661 (.0763)	22.44***	$\Delta R^2_{adj.}$ = .2993	397.59***

***p<.001

TABLE 34

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Quality of Work	Legitimate Criteria	Accommodation

BLACKS N= 426	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted (R^2 unadjusted)	F	ΔR^2 For Two Predictor Sets	F.
ALL PREDICTORS Legitimate Criteria + Accommodation + Interaction	.2913 (.3947)	17.06***		
LEGITIMATE CRITERIA + Accommodation	.3363 (.3628)	42.56***	$\Delta R^2_{adj.}$ = -.0450	5.26***
LEGITIMATE CRITERIA	.0276 (.0596)	2.99*	$\Delta R^2_{adj.}$ = .3087	194.89***

*p<.05 ***p<.001

TABLE 35

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Quality of Work	Illegitimate Criteria	Technological Sophistication

WHITES N=1273	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 unadjusted	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Illegitimate Criteria + Technological Sophistication + Interaction	.0288 (.0800)	3.74***		
ILLEGITIMATE CRITERIA + Technological Sophistication	.0451 (.0593)	11.97***	$\Delta R^2_{adj.}$=-.0163	4.23***
ILLEGITIMATE CRITERIA	.0254 (.0377)	8.26***	$\Delta R^2_{adj.}$= .0197	26.02***

***p<.001

TABLE 36

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Quality of Work	Illegitimate Criteria	Technological Sophistication

BLACKS N= 426	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 (unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Illegitimate Criteria + Technological Sophistication + Interaction	.0000 (.1423)	0.0		
ILLEGITIMATE CRITERIA + Technological Sophistication	.0419 (.0847)	3.67**	$\Delta R^2_{adj.}$=-.0419	3.47**
ILLEGITIMATE CRITERIA	.0229 (.0597)	2.47*	$\Delta R^2_{adj.}$= .0190	8.31***

**p<.01
***p<.001

TABLE 37

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE	PREDICTOR SET	MODERATOR
Quality of Work	Illegitimate Criteria	Socialization

WHITES N=1273	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted R^2 (unadjusted)	F	ΔR^2 For Two Predictor Sets	F
ALL PREDICTORS Illegitimate Criteria + Socialization + Interaction	.3787 (.4114)	76.92***		
ILLEGITIMATE CRITERIA + Socialization	.3997 (.4087)	168.72***	$\Delta R^2_{adj.}$ =-.0210	8.52***
ILLEGITIMATE CRITERIA	.0254 (.0377)	8.26***	$\Delta R^2_{adj.}$ = .3743	789.38***

***p<.01

- The relationship between criteria and quality of work was not significantly moderated by any of the four work-setting characteristics (using changes in adjusted R^2's and the criterion).

When quality of work was the dependent variable, the addition of the interaction variables to the predictor-plus-moderator MCA's added some explanatory power in terms of increases in the unadjusted R^2's in all six test runs. These increases ranged from .27% to 5.76% (see Tables 32 to 37). The changes in the adjusted R^2's however, reversed this pattern -- these changes ranged from -1.32% to -4.5%. That is, the addition of the interaction variables reduced the adjusted R^2's. In this case, the shrinkage more than wiped out any positive effects of adding the interaction variables. The decreases in the adjusted R^2's due to adding the interaction variables were all significant beyond the .01 level.

Thus, the work-setting characteristics investigated did not affect reward allocation practices and did not regulate race discrimination.

SUMMARY AND ADDITIONAL ANALYSES

Table 38 lists the percentage of variance explained in promotion rate and quality of work by each predictor set. Appropriate comparisons of these statistics summarize many of the study's findings:

(1) Legitimate criteria explained between zero and 7.7 percent of the variance in rewards received. This indicates that rewards were not allocated solely on the basis of individual merit.

TABLE 38

SUMMARY OF RESULTS:

PERCENTAGE OF VARIANCE EXPLAINED IN REWARDS RECEIVED

PREDICTOR SET	Percentage Variance Explained			
	WHITES		BLACKS	
	Promotion Rate	Quality of Work	Promotion Rate	Quality of Work
INDIVIDUAL CHARACTERISTICS	1.66	10.12	3.83	5.87
*Legitimate Criteria**	*0.00*	*7.70*	*3.25*	*3.43*
*Illegitimate Criteria**	*1.66*	*2.42*	*0.58*	*2.44*
WORK-SETTING CHARACTERISTICS	1.15	60.38	0.00	61.11
*Formal Properties***	*0.50*	*3.50*	*0.50*	*3.00*
*Informal Properties***	*1.50*	*46.00*	*1.00*	*45.50*

*These percentages are adjusted R^2's.

**These percentages are mean eta-squares since separate MCA's were not done for formal vs. informal work-setting characteristics.

(2) Promotion rate was predicted better by individual than by work-setting characteristics indicating that this reward was allocated selectively to individuals. Promotion rate was not explained well by any of the predictor sets, however.

(3) Quality of work was predicted far better by work-setting characteristics than by individual characteristics, indicating that quality of work was contingent on membership, not performance.

(4) The predictor sets varied in strength for Blacks and Whites indicating the existence of racial inequalities.

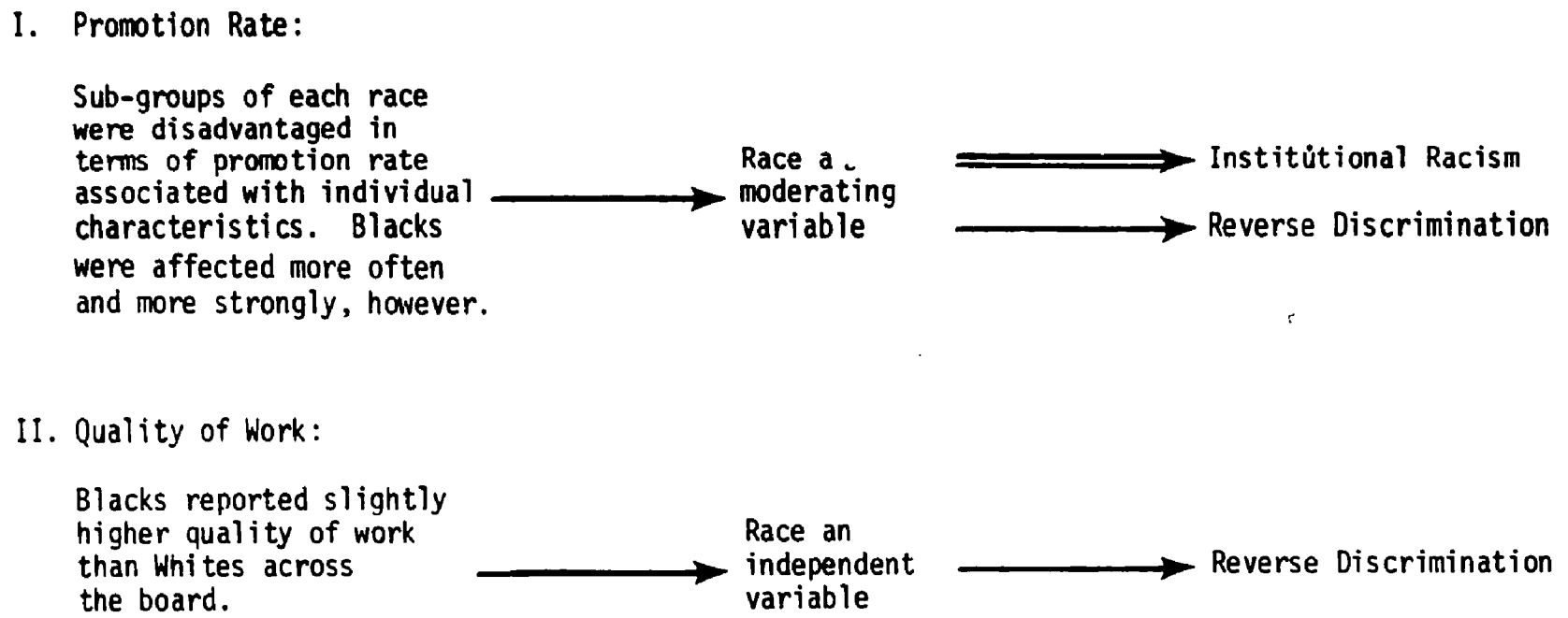
The fact that the predictor strength varied by reward indicated that multiple reward systems operated for both races. The racial differences in predictor strength as well as differences in the shape of the bivariate relationships revealed racial inequalities in reward allocation.

Did these racial inequalities operate against Blacks or Whites? The shapes of the bivariate relationships between predictors and rewards indicate that both Institutional Racism and Reverse Discrimination were operating. The form of these racial inequalities are summarized in Figure 11.

Did work-setting characteristics affect the reward systems operating? No. The relationships between criteria and rewards were not moderated by the informal or formal characteristics measured in this study. Thus, Cutright's (1968) hypothesis regarding the existences of a technological imperative was not supported. Blumer's (1965)

Figure 11

Summary of Racial Inequalities
In Reward Allocation



notion that race prejudice and discrimination undermine rational forces toward equality is more consistent with the findings.

Additional Analyses

The analyses have shown that inequalities exist in the Army and that these inequalities take the form of both Institutional Racism and Reverse Discrimination. Yet several questions remain unanswered: Are Blacks or Whites more discriminated against? What is the magnitude of discrimination against each race? How many individuals are subjected to extreme inequality in rewards received?

The magnitude of racial inequalities. Two analyses were performed to assess the magnitude of racial inequality. First, mean promotion rates and quality of work were compared at each value of the predictor variables. The number of times inequalities favored each race were tallied. Sign tests were used to evaluate the statistical significance of racial differences in these tallies.

Table 39 summarizes the findings. Inequalities in promotion rates operated more often against Blacks than against Whites ($p<.01$). The reverse was true for quality of work: Inequalities operated in favor of Blacks ($p<.05$).

The second analysis examined the size of racial inequalities. The number and percentage of personnel experiencing statistically significant levels ($p<.05$) of discrimination were identified using the following procedure:

TABLE 39

RACIAL INEQUALITIES IN PROMOTION RATES AND QUALITY OF WORK

	Frequency of Inequalities*		
DEPENDENT VARIABLE	Black $\bar{x}$ < White $\bar{x}$	White $\bar{x}$ < Black $\bar{x}$	Tied Score
Promotion Rate f	38	18	4
Quality of Work f	22	36	3

	SIGN TESTS		
	(With Correction for Continuity)**	Significance Level	Interpretation
Promotion Rate	2.54	p<.01	Institutional Racism
Quality of Work	1.71	p<.05	Reverse Discrimination

*In this analysis racial inequality was said to exist whenever there were racial differences in mean promotion rates or work quality for a given predictor value.

**$Z = [\chi = .5(1/2)(N)] / \underline{1}/2\sqrt{N}$

(1) At each scale point on each predictor variable, the score [χ] falling 1.64 standard deviations below the dependent variable mean for the higher-scoring racial group was identified.

(2) The number of personnel in the lower-scoring racial group who had scores lower than χ were counted as experiencing statistically significant levels of discrimination.

(3) The percentage of each racial subgroup (e.g., educated Blacks) significantly discriminated against was calculated.

Table 40 summarizes this analysis. It shows that the actual number of Blacks with significantly lower promotion rates than higher-scoring Whites was small. Greater numbers of Whites reported significantly lower quality of work than did their Black counterparts. According to the operational definitions of racial inequalities set forth in Chapter III, the magnitude of reverse discrimination in quality of work was greater than the Institutional Racism affecting promotion rates.

Thus, Institutional Racism affected promotion rates frequently and consistently but the resulting racial inequalities were not extreme. More Whites experienced significantly lower quality of work than comparable Blacks. Race affected perceived quality of work across all subgroups of individual characteristics whereas race interacted with other individual characteristics in affecting promotion rate.

Why wasn't promotion rate predicted better? A remaining concern was the small amount of variance in promotion rate explained by the predictors. One contributing factor could have been the omission of individual characteristics commonly used to predict economic rewards.

TABLE 40

NUMBER AND PERCENTAGE OF BLACKS AND WHITES
EXPERIENCING SIGNIFICANT RACIAL DISCRIMINATION

FOR

PROMOTION RATE*

PREDICTOR		BLACKS					WHITES				
		1	2	3	4	5	1	2	3	4	5
Education	n			1			3				
	%			1%			2%				
Technical Skills	n		1								
	%		7%								
Critical Skills	n		3								
	%		3%								
SEC	n						5	6			
	%						2%	3%			
Majority Race of Work Group	n							1			
	%							1%			
Race of Supervisor	n	7									
	%	3%									
Communication	n				1						
	%				1%						
Region	n	2		5							
	%	1.5%		22%							

*Percentage of Subgroup

TABLE 40 (Continued)

PREDICTOR		BLACKS 1	2	3	4	5	WHITES 1	2	3	4	5
Technological Sophistication	n				2						
	%				5%						
Socialization	n		1								
	%		2%								
Accommodation	n		2								
	%		4%								

FOR QUALITY OF WORK

PREDICTOR		BLACKS 1	2	3	4	5	WHITES 1	2	3	4	5
Education	n						28	59	22		
	%						15%	4%	6%		
Time in Civilian Jobs	n						12	6	19	47	25
	%						9%	5%	8%	10%	8%
Technical Skills	n				1	1	9				
	%				5%	9%	20%				
Supervisory Skills	n					3	7				
	%					20%	16%				
Critical Skills	n						17	10	47		19
	%						5%	5%	16%		9%

TABLE 40 (Continued)

PREDICTOR		BLACKS 1	2	3	4	5	WHITES 1	2	3	4	5
Majority Race of Work Group	n							14	9		
	%							12%	11%		
Race of Supervisor	n						56		11		
	%						6%		8%		
Communication	n			3			39			9	
	%			5%			9%			8%	
Region	n	7	11						3		
	%	5%	5%						4%		
Technological Sophistication	n						31	6	25	40	
	%						13%	2%	7%	28%	
Role Interdependence	n						26			12	9
	%						6%			5%	6%
Accommodation	n		3			8	32				
	%		5%			9%	9%				

Tenure is a variable often used as a measure of training and work experience. Tenure could not be used as a predictor in this study however, because it was used as the divisor in the calculation of promotion rate. Thus, it would automatically bear a strong, negative relationship to promotion rate.

In order to explore the importance of tenure for advancement in the Army, an alternative reward -- present rank in the organization -- was introduced as a dependent variable.

Figure 12 portrays the bivariate relationship between tenure and present rank for Blacks and Whites. It shows that as organizational rank increases, so does tenure. The relationship was fairly linear for both races.

Table 41 shows the results of MCA's and F-tests used to test the marginal predictive power of tenure over the other legitimate criteria. The MCA's were performed first on the total sample. The amount of variance explained (i.e., adjusted R^2) increased by over 44 percent when tenure was added as a predictor. This increase was highly significant ($p<.01$) and indicated that tenure was a very important factor affecting enlisted men's rank. When tenure and other legitimate criteria were entered as predictors they explained over 70 percent of the total variance in present rank.

The predictors explained approximately one percent more of the variance for Whites (73%) than for Blacks (72%). Thus, the existence of significant racial inequalities cut across rewards and predictors.

Figure 12

Tenure By Present Rank
For Blacks and Whites

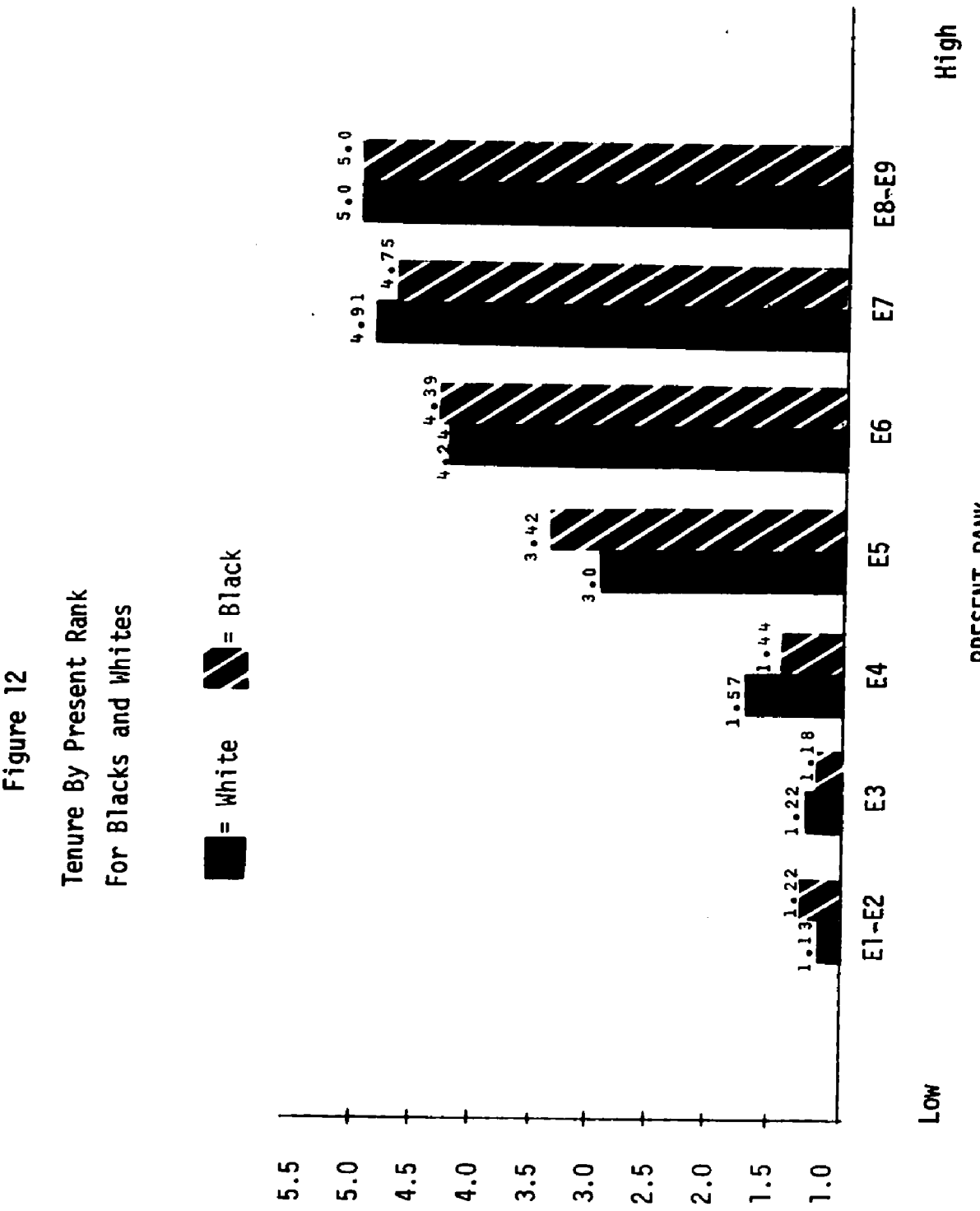


TABLE 41

RELATIONSHIPS INDICATING MARGINAL PREDICTIVE POWER

DEPENDENT VARIABLE:	PREDICTOR SET:	MARGINAL PREDICTOR:
Present Rank	Legitimate Criteria	Tenure

TOTAL SAMPLE (N=1706)	Simple Multivariate Relationships		Marginal Utility	
	R^2 adjusted	F	ΔR^2 for Two Predictor Sets	F
LEGITIMATE CRITERIA + Tenure	.7213	261.28**		
LEGITIMATE CRITERIA	.2794	62.61**	.4419	440.79**

**=p<.01

VI.

DISCUSSION

This chapter contains four sections. The first reviews and interprets the major findings of the study. The present findings in Army work-settings are compared to findings in civilian and Navy work-settings.

The second section examines the rationality of race discrimination in reward systems. Possible motivations for and consequences of discriminatory practices are presented. The conclusion is that race discrimination is essentially an irrational practice. The irrationality of race discrimination is important because it has implications for which change strategies will be most successful in reducing racial inequalities in organizational treatment.

The third section identifies four change strategies and moves toward evaluating their relative effectiveness in modifying discriminatory reward systems. The strategies differ in their target and method of change. The need for an empirical analysis of the costs and benefits of each strategy is made apparent.

Finally, some directions for future research are offered. The need for more theory and precise methodology is emphasized.

SUMMARY OF THE FINDINGS

The research questions presented in Chapter III defined racial inequalities based on patterns of reward allocation for Blacks and Whites. The potential effects of formal and informal work-setting properties on racial inequalities were also addressed. Figure 13 summarizes the empirical answers to these research questions for enlisted Army men. The findings are shown in bold type; the unsupported alternatives appear in light italics.

Nature of Reward Systems in the Army

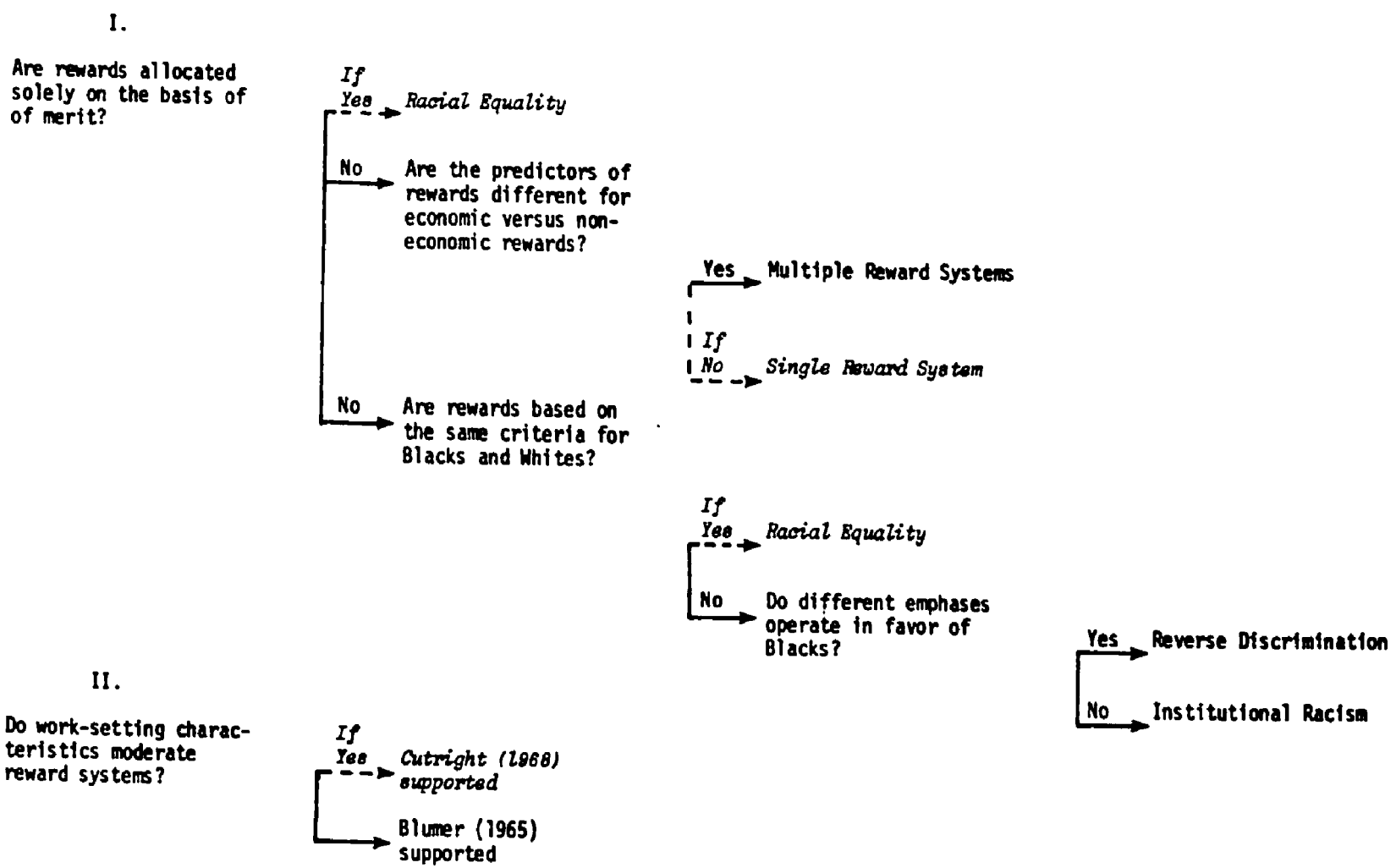
As was stated earlier, organizations often implement multiple reward systems in order to encompass a variety of motivational bases. It was predicted that the Army would also utilize this strategy. More specifically, quality of work was hypothesized to be contingent on membership in the organization and thus more dependent on the work setting than individual differences. Promotion rate was hypothesized to be a performance-contingent reward and more dependent on individual characteristics than the work setting.

The findings supported these hypotheses. Quality of work was predicted best by the socialization and accommodation mechanisms operating in work settings. More specifically, quality of work varied according to the strength of goal emphasis provided by co-workers and supervisors and the participation in decision-making afforded personnel by their superiors.

Socialization and accommodation explained over 70 percent of the variance in quality of work for Black and White enlisted men. Thus, good quality of work was available to those men fortunate enough to

Figure 13

SUMMARY OF MAJOR RESULTS



work in the "right" work settings with the "right" peers and supervisors. This pattern of reward allocation is most congruent with a protege reward system -- that is, a system where rewards are determined by informal work-setting characteristics.

Promotion rate was predicted best by individual characteristics, although the strongest predictors varied by race.

Education, critical skills, technical and supervisory skills were the best predictors of promotion rates for Blacks. Greater merit (i.e., more education and skills) did not necessarily mean faster advancement, however. In fact, educated Blacks had slower promotion rates than uneducated Blacks. This reward system seemed to penalize the most qualified Blacks and favor the less qualified.

Merit was unrelated to promotion rates for Whites. Instead, social background characteristics made the difference -- especially socio-economic status (SES). High SES Whites advanced much faster than low SES Whites and faster than Blacks from any socio-economic background. This system rewards a homogeneous set of White people from specific social backgrounds and such a system can be termed elitist.

Why Wasn't Promotion Rate Predicted Better?

Promotion rate measured upward mobility within an organization. Upward mobility is an important aspect of organizational treatment. Yet it has seldom been studied.

The predictors often explained significant portions of variance in promotion rate. The total amount of variance explained in this reward however was quite small -- a maximum of 3.83 percent (see

Table 38).

The fact that promotion rate was not predicted well by the original predictor sets meant that we had not explained the basis for allocating that reward. The failure to discover its allocation parameters motivates consideration of possible weaknesses in the measures or theory.

One possible reason for the small portion of variance explained in promotion rate rests in the measure itself. It was a gross estimate of advancement rate based on Army-wide averages of the time it takes to reach a given rank and an individual's tenure rounded to the nearest whole year. While it can be assumed that most enlistees advance upward one rank at a time, the promotion rate measure did not distinguish this advancement pattern from other patterns -- less frequent, large movements upward, for example.

The promotion rate measure was global in other respects, too. Presumably, a change in Army rank corresponded to a significant vertical movement in job status. Yet many smaller but important job changes might differentiate the respondents' advancement patterns. Sometimes early horizontal job movements set the stage for later vertical mobility (e.g., Martin & Strauss, 1956). This study's promotion rate measure was sensitive only to vertical changes in rank.

A second possible reason for the weak explanation of promotion rate stems from the predictors used in this study. As stated earlier, tenure -- while often used in labor-economic studies as a surrogate measure of skills acquired on the job -- could not be used as a predictor of promotion rate here because it was used in the calculation of promotion rate. It was possible to test its importance using

another dependent variable, however. When tenure was added to the original predictor set, it explained over 40 percent marginal variance in a person's present rank.[35] Thus, an individual's tenure is an important asset in the Army even though in this sample it had more weight for Whites than Blacks.

The Importance of Tenure

The importance of tenure for advancement in the Army could have two meanings. First, it could reflect a high value placed on loyalty to the organization. This meaning implies that enlisted men who stay in the Army long enough will advance. Tenure is viewed not as a measure of skill but as a reflection of affect toward the Army.

On the other hand, tenure could reflect on-the-job training and experience acquired by enlisted men which make them valuable assets to the Army. If this is the case, the Army could be viewed as a sponsoring organization. This implies that the Army takes in personnel and provides the training they need in order to get ahead. In this kind of system enlisted men are sponsored and helped along by the organization rather than screened in or out according to their initial skill levels.

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[35] The fact that the original predictor set explained over 25 percent of the variance in present rank versus three percent in promotion rate could be due to the weaknesses in the promotion rate measure already discussed.

Either explanation for the importance of tenure makes the enlisted ranks of the Army an attractive option for the less skilled and less educated. It may have less appeal for highly qualified individuals however, since initial merit seems to play so small a part in advancement.[36]

Tradeoffs Among Rewards

Two rewards -- one economic and one non-economic -- were considered in this study. Theoretically, it would be possible for individuals to receive both rewards. That is, enlistees in favorable work settings could also be those who advanced most rapidly. This could happen if rewards were allocated independently of each other or distributed so as to compliment one another. Yet there were some indications that an either/or situation existed.

The conditions associated with higher quality of work were often those associated with slower promotion rates. For example, socialization, accommodation, and role interdependence were positively related to quality of work but negatively (though weakly) related to promotion rate. This suggests the possibility that conditions providing more of one reward restricted availability of the other. In economic terms the two rewards would be termed "substitutable" (Samuelson, 1961).

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[36] It should be noted that the sample for the present study included enlisted men only. Officers were excluded. Different criteria might be used for advancement of officers.

Treating economic and non-economic rewards as substitutable commodities conflicts with earlier evidence of the use of multiple reward systems. Perhaps enlisted men (or their superiors) must choose which reward system will be applied. This would in effect be a uni-faceted reward strategy and would activate only the motivational bases associated with that strategy. While this might simplify day-to-day operations, such a strategy would be less effective than a multi-faceted one in the long run.

Army Reward Systems and Race Discrimination

A primary objective of this study was to provide a methodology for identifying the form and magnitude of racial inequalities. The methodology developed examined racial differences in the strength, shape, and direction of relationships of individual and work-setting characteristics to rewards received.

Two forms of racial inequality were defined: Institutional Racism and Reverse Discrimination. Both forms of inequality were found among enlisted Army men. Several subgroups of Blacks had slower promotion rates than their White counterparts. The magnitude of discrimination against Blacks was not great. That is, few Blacks had drastically slower advancement rates than they merited. The direction of inequality in promotion rate consistently operated against Blacks however, and this constitutes Institutional Racism.

At the same time Blacks reported higher quality of work than Whites across most predictor subgroups. This racial difference was greater in magnitude than that for promotion rate. Anywhere from 3 to 59 Whites in a given subgroup reported significantly lower

quality of work than their Black counterparts. According to the operational definitions advanced in Chapter III, this result constitutes Reverse Discrimination.[37]

Comparisons with Navy and Civilian Settings.

Previous studies on military and civilian sectors of the work force provide useful points of reference for the present findings. The similarities across sectors support the generalizability of the findings while the differences highlight important parameters for understanding race discrimination.

Economic Rewards. The most obvious similarity across settings is that Blacks receive fewer economic rewards than Whites. Pecorella (1975) found that Black enlisted men in the Navy had slower promotion rates than White enlistees and that these racial differences persisted after controlling for education and age. Numerous labor economic studies cited in Chapter II have found the same inequalities in a variety of civilian organizations.

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[37] Comparing objective and perceived treatment (i.e., promotion rate and quality of work) may be confounding these results. Race operated as an independent variable in affecting quality of work while it moderated the relationships for promotion rate. This could indicate elevated work quality ratings of Blacks (or depressed ratings of Whites) rather than real differences in quality of work. However, the data for testing this possibility were not available.

The fact that qualifications have been found to carry different weights for Blacks and Whites in civilian work settings is also congruent with the present results. Duncan (1968) found racial differences in the importance of education, Groves (1975) in tenure, and the present study in both.

Discrimination against Blacks in the Army is particularly striking however, because the promotion rates of Blacks and Whites differed while their qualifications were very similar. There were no significant racial differences in education, technical skills, or supervisory leadership. Blacks received less expensive formal Army training. However, they had acquired more tenure than Whites. Thus, even when group distributions were considered Blacks were as qualified as Whites. The standard argument that most Blacks are less skilled than most Whites was not applicable in the Army sample.

This racial similarity in skill levels has not been true in Navy and civilian settings. Blacks are usually less educated and have less tenure than Whites (e.g., Pecorella, 1975; Quinn, et al., 1973). This may mean that educated Blacks have less access to civilian and Navy work settings than to Army settings. The Army does in fact have the greatest proportion of Blacks in its enlisted and officer ranks. Thus inspite of the Army's sponsorship of the less skilled, this military branch may offer the best option for educated Blacks at the present time.

Non-Economic Rewards. While the distribution of non-economic rewards has seldom been investigated in civilian sectors, the findings in military settings have been consistent: Blacks report higher quality of work than Whites. The ratings of Blacks are elevated across most educational, social background, and situational subgroups.

The sources of racial differences in perceived quality of work merit investigation. In the explanation of this difference lies a clearer understanding of the psychological world views -- or more precisely, "work" views -- of Blacks and Whites. Why do Blacks report higher quality of work than Whites? The fact that Blacks report higher quality of work than Whites may reflect the relative positions of reference groups salient for each racial group. Blacks may feel that the military provides them with better work conditions than Blacks have in other organizations while Whites feel that civilian organizations would provide Whites with more opportunities than the military does. This sounds like a combination of the "sweet tarts" and "sour grapes" phenomena. If "objective" ratings of work quality were gathered, one could test the extent to which such perceptual distortions operate.

The Negligible Role of Merit

One of the most clear-cut findings of the study was that the Army cannot be considered a pure meritocracy. There were elements of situational constraints, sponsorship, elitism, and racial inequalities but only weak signs that initial qualifications led to rapid advancement or desirable work conditions.

The Army is not unique in this respect, however. Several studies summarized in Chapter II also revealed the substantial portions of

variance in reward allocation unexplained by an individual's merit. The disturbing part of this disregard of merit is that it appears so irrational. Shouldn't organizational leaders want to have the best qualified individuals performing the work?

RACE DISCRIMINATION AND RATIONALITY

Economists traditionally argued that race discrimination could not exist in the marketplace because it would violate principles of rational decision-making. Conclusive evidence that racial inequalities exist and that these inequalities are not explained by individual differences in productive capacity has motivated labor economists to develop explanatory concepts more congruent with actual practices.

Employer's Taste for Discrimination

Arrow (1973) suggested that employers differ in their "taste for discrimination" and that their taste for discrimination is affected by the belief that White workers expect compensation for working with Blacks. The net result of hiring Blacks would be additional cost to the employer. Some of this cost would probably affect Black employees in the form of lower pay or fewer promotions.

The belief that compensation will be required rests on the assumption that work morale suffers when work forces are integrated. This assumption is often contradicted by actual experience, however (Richmond, 1964 and Wright, 1968, as cited in Watson, 1973). In addition, recent research on the social distance preferred by Whites found inter-racial contact at work to be relatively acceptable to Whites (e.g., Campbell, 1971). These findings question the rationality of "taste for discrimination" as a determinant of reward allocation.

Internal Labor Markets

Doeringer and Piore (1971) introduced the concept of the internal labor market to explain why intra-organizational reward allocation practices deviate from rational economic principles. They defined the internal labor market as:

> ...an administrative unit, such as a manufacturing plant, within which pricing and allocation of labor is governed by a set of administrative rules and procedures. (p. 1)

Internal labor markets are generated by three factors: skill specificity, on-the-job training, and custom. Custom is the most relevant to race discrimination. Doeringer and Piore defined custom as an unwritten set of rules based on precedent.

Custom is an important aspect of internal labor markets because it imparts a rigidity to the rules. That is, tradition breeds more tradition. Doeringer and Piore found this to be particularly true where wage relationships and internal reward allocation procedures were concerned.

The internal labor market and its ancillary concepts are useful analytic tools because they point out the complex force fields affecting reward allocation practices. In Doeringer and Piore's words,

> The structure of the internal labor market is influenced by management's interest in internal allocation as a means of promoting efficiency by reducing training and turnover costs. The structure most efficient in these terms, however, is compromised by the work force's interest in the internal labor market as a means of enhancing job security and advancement. Further distortions are introduced by the rigidities of custom which inhibit the response of the allocative

> structure to changes in the interests of labor and management. (p. 57)

Thus, two forces toward irrational decision-making have emerged:

- vested interests of employees which conflict with organizational efficiency
- customs preserving the status quo and resisting change.

Admittedly, rationality is being defined here as efficiency in organizational functioning.[38] There are values attached to this stance. Alternatively one might espouse elitism (for Whites) as a desired outcome. In this case race discrimination would be rational -- that is, it would be an efficient means for achieving a desired end. Or would it?

Rationality implies a consideration of the consequences associated with alternate paths of action (Simon, 1957). Few would deny that race discrimination carries negative consequences:

(1) Those discriminated against are treated unjustly and this presents a social problem.

(2) The organization, especially when labor markets are tight, sacrifice efficiency in task accomplishment.

(3) The organization must develop structures, rationalizations, etc., for maintaining its distorted reward system. This increases defensiveness and rigidity and decreases responsiveness to intra- and extra-organizational changes.

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[38]This study emphasizes the Army's role as a production-oriented organization. To the extent that the Army values its "sponsorship" role, efficiency may be valued less as an organizational end result than the goal of building a force of equally qualified enlistees. This egalitarian approach de-emphasizes merit but still should -- logically -- value racial equality.

(4) Those discriminated against may become disaffected and less committed to organizational (or societal) goals.

(5) Racial conflict becomes more likely.

Do the costs outweight the benefits?

(1) Favoritism for the elite group.

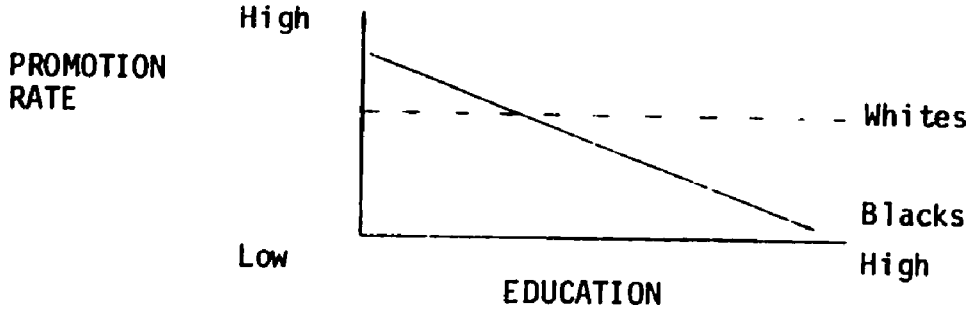
(2) Maintaining custom and avoiding the risks and discomforts of change.

In the present investigator's view, race discrimination reflects man's capacity to behave irrationally.

IMPLICATIONS OF NON-RATIONAL REWARD SYSTEMS FOR CHANGE

A reward system is non-rational when the criteria for reward allocation are unrelated or contrary to effective goal accomplishment. Institutional Racism and Reverse Discrimination are both examples of non-rational reward systems.

This study showed that non-rational reward systems can operate against both Blacks and Whites within the same organization. The relationship between education and promotion rate was a prime example. Figure 13 portrays this relationship for Blacks and Whites in simplified form.



As the figure shows, uneducated Whites and educated Blacks were penalized by racial inequalities in reward allocation. The reward systems for both races were non-rational: Better qualifications (i.e., education) were unrelated to advancement for Whites and negatively correlated for Blacks.

Preceding discussions have shown Institutional Racism to be embedded in organizational practices, structures, and norms. On a more micro level the discriminatory behaviors and attitudes of individuals (especially decision-makers) and the normative pressures on them to behave in accordance with precedent perpetuate racial inequalities. Where should a program to reduce racial inequalities start? Two questions need answers:

(1) What should one change?

(2) How should one change it?

Possible Change Strategies

There are two possible targets for change -- the person or the situation (e.g., see Simpson & Yinger, 1973). When the target is the person, the goal is to modify the person's attitudes, behaviors, information, or skills. Situational changes can focus upon the physical or social-psychological, the formal or informal properties of the organization.

There are also two possible modes of change -- direct or indirect impingement. When one impinges on a target directly, the method of change matches the target. Providing clarifying information to dispel stereotypes is one example of a direct mode. Another is correcting

inequalities in racial distributions on jobs by changing the distributions.

An indirect method impinges on a target by changing something which will eventually affect the real target. Thus, if one wanted to reduce racial stereotypes, one could change the racial composition of work groups in order to encourage positive inter-racial contact. This contact would probably cause attitude change, hopefully in the desired direction.

The classification by target and mode of change identifies four generic change strategies: One of two modes can be applied to one of two targets. Examples of the resulting strategies are provided in Table 42.

Evaluation of Change Strategies

An evaluation of change strategies should monitor the difficulty of implementing the strategy, the likelihood of its success, the likely magnitude of its impact, and its possible damaging side effects.

For example, a program to lessen race discrimination is less likely to succeed when it requires a great deal of rationality on the part of those being changed (or those affected by the change). Racial practices can be too closely tied to self-interest and precedent to foster rational behavior.

A fait accompli approach does not require rationality nor even consent. It has a direct and potentially sizable impact. Yet the coerciveness of this approach could motivate its sabotage.

TABLE 42

EXAMPLES OF FOUR CHANGE STRATEGIES

		TARGET OF CHANGE	
		Person	Situation
MODE OF CHANGE	Direct Impingement	Consciousness raising designed to clarify racial values, myths, and realities.	Affirmative Action Programs
	Indirect Impingement[38]	General personal and interpersonal training in interracial groups.	Improving organizational conditions so as to increase reward opportunities for both Blacks and Whites.

[38]Of course, obvious indirect strategies would be to change situations in order to affect people and to change people in order to improve situations.

In Table 43 the four generic change strategies are rated along several dimensions relevant to their overall effectiveness. The implication (positive or negative) of each rating is also provided. These ratings are subjective and arbitrary since no empirical work in this area seems available.

Nevertheless, the table helps to emphasize the importance of weighing the benefits of speedily eliminating racial inequalities (and the racial conflict due to these inequalities) against the costs of resistance (and conflict) resulting from the changes. The best strategy would be the one providing the greatest gain with the fewest costs.

The question marks associated with the impacts of the four strategies evaluated in Table 50 make even a crude cost-benefit analysis impossible. Yet with the right evaluation research one could assess the relative payoffs of each strategy under various conditions. Similar analyses to those economists apply in estimating tradeoffs in commodities might even be applied (Samuelson, 1961).

TABLE 43

EVALUATION OF CHANGE STRATEGIES

EVALUATION DIMENSION	CHANGE STRATEGY (TARGET-MODE)							
	Person-Direct		Person-Indirect		Situation-Direct		Situation-Indirect	
	Rating	Implication	Rating	Implication	Rating	Implication	Rating	Implication
Rationality Required	High	–	Low	+	Low	+	High	–
Coerciveness	High	–	Low	+	High	–	Low	+
Resistance	High	–	Low	+	High	–	Low	+
Immediacy of Impact	High	+	Low	–	High	+	Low	–
Magnitude of Impact	?	?	?	?	?	?	?	?
Duration of Impact	?	?	?	?	?	?	?	?

DIRECTIONS FOR FUTURE RESEARCH

This study had some important strengths. It measured several aspects of individual and work-setting characteristics clearly delineating the meaning of each as a determinant of organizational reward allocation. The study examined actual practices rather than espoused practices or descriptions of the practices people believe to be operating. It provided a concise operational definition of race discrimination which revealed the direction, magnitude, and frequency of racial inequalities. These qualities could aid future research.

Several areas are ripe for research, however. Methodologies which assess the costs and gains of discrimination (financial and psychological) with regard to accomplishing various goals and the overall payoffs of various change strategies should be devised and tested.

Explorations of new content issues are also merited: What job chains are Blacks and Whites given access to and how do their career patterns differ? What are the determinants of these job chains? This line of inquiry would utilize the analytic tools of White (1970), Stewman (1975), and Doeringer and Piore (1971).

Another content issue would be the "feelings" aspect of the race problem. The effects of various reference groups and past experience and the salience of current personal and work-setting factors need to be assessed. Pettigrew's (1967) theory of social comparison and evaluation would provide a useful starting point for this psychological approach.

Finally, future studies of the race problem should be theoretically based. They should add to our knowledge about not only the race problem but also about organizational functioning in general.

APPENDIX A

ARMY QUESTIONNAIRE

ISR

INSTITUTE FOR SOCIAL RESEARCH/THE UNIVERSITY OF MICHIGAN/ANN ARBOR, MICHIGAN 48106

As you know, the military services have been placed on an all-volunteer (no draft) basis. This means that the armed forces must provide work settings and conditions comparable to those expected and experienced in civilian life.

This questionnaire is part of a study sponsored by the Army in which we are attempting to learn more about the ways that the armed forces may have to change to fit in with the views and values of Americans.

This questionnaire includes items about your present job in the Army. (The same questions have also been asked of civilian respondents, so you will notice that instead of saying "this battalion", the questions will often say "this organization.") Other questions ask your attitudes and opinions in a number of areas. (These questions have also been worded in a way that makes them suitable for civilians as well as Army personnel.)

If this study is to be helpful, it is important that you answer each question as thoughtfully and frankly as possible. This is not a test: there are no right or wrong answers.

The completed questionnaires are processed by automated equipment which summarizes the answers in statistical form. Your own individual answers will remain strictly confidential, since they will be combined with those of many other persons in reports which are prepared.

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FOR THE BEHAVIORAL AND SOCIAL SCIENCES
OFFICE OF THE DEPUTY CHIEF OF STAFF FOR PERSONNEL
DEPARTMENT OF THE ARMY

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INSTRUCTIONS

1. Most questions can be answered by filling in one of the answer spaces. If you do not find the exact answer that fits your case, use the one that is closest to it.

2. Please answer all questions in order.

3. Remember, the value of the study depends upon your being straightforward in answering this questionnaire. You will not be identified with your answers.

4. Please use a soft pencil (No. 2 is ideal), and observe carefully these important requirements:

   – Make heavy black marks that fill the circles.
   – Erase cleanly any answer you wish to change.
   – Make no stray marks of any kind.

5. This questionnaire is designed for automatic scanning of your responses. Questions are answered by marking the appropriate answer spaces (circles) as illustrated in this example:

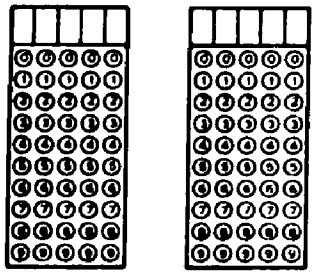
Ballpoint pen
Fountain pen
Black lead pencil
Other

Q. Which is the only marking instrument that will be read properly?

① ② ● ④

ANSWER

6. One of the major purposes of this research is to compare and contrast work experiences and organizational practices in the military services with those in civilian life. In the next section, questions about "the organization" refer to your present battalion or equivalent unit; the questions about "your supervisor" refer to the person to whom you report directly, and the questions about "your work group" refer to all those persons who report to the same supervisor.



PART A

(BEFORE BEGINNING BE SURE YOU HAVE READ THE INSTRUCTIONS ON THE OPPOSITE PAGE)

These first questions are about your present job and the organization in which you presently work.

NOTE: Read these answer categories over carefully. Then answer each of the following questions by blackening in the numbered circle under the answer you want to give.

	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
1. To what extent is this organization generally quick to use improved work methods?	①	②	③	④	⑤
2. To what extent does this organization have a real interest in the welfare and happiness of those who work here?	①	②	③	④	⑤
3. How much does this organization try to improve working conditions?	①	②	③	④	⑤
4. To what extent are work activities sensibly organized in this organization?	①	②	③	④	⑤
5. How adequate for your needs is the amount of information you get about what is going on in other departments or units?	①	②	③	④	⑤
6. How receptive are those above you to your ideas and suggestions?	①	②	③	④	⑤
7. To what extent are you told what you need to know to do your job in the best possible way?	①	②	③	④	⑤
8. To what extent are the equipment and resources you have to do your work with adequate, efficient, and well-maintained?	①	②	③	④	⑤

9. How are differences and disagreements between units or departments handled in this organization?

① Disagreements are almost always avoided, denied, or suppressed.

② Disagreements are often avoided, denied, or suppressed.

③ Sometimes disagreements are accepted and worked through; sometimes they are avoided or suppressed.

④ Disagreements are usually accepted as necessary and desirable and worked through.

⑤ Disagreements are almost always accepted as necessary and desirable and worked through.

	Very dissatisfied	Somewhat dissatisfied	Neither satisfied nor dissatisfied	Fairly satisfied	Very satisfied
10. All in all, how satisfied are you with the persons in your work group?	①	②	③	④	⑤
11. All in all, how satisfied are you with your supervisor?	①	②	③	④	⑤
12. All in all, how satisfied are you with your job?	①	②	③	④	⑤
13. All in all, how satisfied are you with this organization, compared to most others?	①	②	③	④	⑤
14. Considering your skills and the effort you put into the work, how satisfied are you with your pay?	①	②	③	④	⑤
15. How satisfied do you feel with the progress you have made in this organization up to now?	①	②	③	④	⑤
16. How satisfied do you feel with your chance for getting ahead in this organization in the future?	①	②	③	④	⑤

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17. Why do people work hard in this organization?

① Just to keep their jobs and avoid being chewed out

② To keep their jobs and to make money

③ To keep their jobs, make money, and to seek promotions

④ To keep their jobs, make money, seek promotions, and for the satisfaction of a job well done

⑤ To keep their jobs, make money, seek promotions, do a satisfying job, and because other people in their work group expect it

To a very little extent
To a little extent
To some extent
To a great extent
To a very great extent

18. To what extent do you enjoy performing the actual day-to-day activities that make up your job? ① ② ③ ④ ⑤

19. To what extent are there things about working here (people, policies, or conditions) that encourage you to work hard? ① ② ③ ④ ⑤

Little or no influence
Some
Quite a bit
A great deal
To a very great extent

20. In general, how much say or influence do you have on what goes on in your work group? ① ② ③ ④ ⑤

Little or no influence
Some
Quite a bit
A great deal
To a very great extent

IN GENERAL, HOW MUCH SAY OR INFLUENCE DOES EACH OF THE FOLLOWING GROUPS OF PEOPLE HAVE ON WHAT GOES ON IN YOUR UNIT?

21. Lowest-level supervisors (supervisors of non-supervisory personnel) ① ② ③ ④ ⑤

22. Non-supervisory personnel ① ② ③ ④ ⑤

23. How are goals set in this organization?

① Goals are announced with no opportunity to raise questions or give comments

② Goals are announced and explained, and an opportunity is then given to ask questions

③ Goals are drawn up, but are discussed with subordinates and sometimes modified before being issued

④ Specific alternative goals are drawn up by supervisors, and subordinates are asked to discuss them and indicate the one they think is best

⑤ Problems are presented to those persons who are involved, and the goals felt to be best are then set by the subordinates and the supervisor jointly, by group participation and discussion

To a very little extent
To a little extent
To some extent
To a great extent
To a very great extent

24. In this organization to what extent are decisions made at those levels where the most adequate and accurate information is available? ① ② ③ ④ ⑤

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To a very little extent | To a little extent | To some extent | To a great extent | To a very great extent

25. When decisions are being made, to what extent are the persons affected asked for their ideas? ① ② ③ ④ ⑤

26. People at all levels of an organization usually have know-how that could be of use to decision-makers. To what extent is information widely shared in this organization so that those who make decisions have access to all available know-how? ① ② ③ ④ ⑤

NOTE: IN QUESTIONS 27 THROUGH 55, SUPERVISOR MEANS THE PERSON TO WHOM YOU REPORT DIRECTLY.

27. When your supervisor has problems related to the work, to what extent does he use group meetings to talk things over with his subordinates and get their ideas? ① ② ③ ④ ⑤

28. To what extent does your supervisor handle well the technical side of his job -- for example, general expertness, knowledge of job, technical skills needed in his profession or trade? ① ② ③ ④ ⑤

FOR THE FOLLOWING SET OF ITEMS: PLEASE READ EACH QUESTION AND THEN ANSWER HOW IT IS NOW, AND HOW YOU'D LIKE IT TO BE.

How friendly and easy to approach is your supervisor?

29. This is how it is now: ① ② ③ ④ ⑤

30. This is how I'd like it to be: ① ② ③ ④ ⑤

When you talk with your supervisor, to what extent does he pay attention to what you're saying?

31. This is how it is now: ① ② ③ ④ ⑤

32. This is how I'd like it to be: ① ② ③ ④ ⑤

To a very little extent | To a little extent | To some extent | To a great extent | To a very great extent

To what extent is your supervisor willing to listen to your problems?

33. This is how it is now: ① ② ③ ④ ⑤

34. This is how I'd like it to be: ① ② ③ ④ ⑤

How much does your supervisor encourage people to give their best effort?

35. This is how it is now: ① ② ③ ④ ⑤

36. This is how I'd like it to be: ① ② ③ ④ ⑤

To what extent does your supervisor maintain high standards of performance?

37. This is how it is now: ① ② ③ ④ ⑤

38. This is how I'd like it to be: ① ② ③ ④ ⑤

To what extent does your supervisor show you how to improve your performance?

39. This is how it is now: ① ② ③ ④ ⑤

40. This is how I'd like it to be: ① ② ③ ④ ⑤

To what extent does your supervisor provide you the help you need so that you can schedule work ahead of time?

41. This is how it is now: ① ② ③ ④ ⑤

42. This is how I'd like it to be: ① ② ③ ④ ⑤

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To a very little extent | To a little extent | To some extent | To a great extent | To a very great extent

To what extent does your supervisor offer new ideas for solving job-related problems?

43. This is how it is now: ① ② ③ ④ ⑤

44. This is how I'd like it to be: ① ② ③ ④ ⑤

To what extent does your supervisor encourage the persons who work for him to work as a team?

45. This is how it is now: ① ② ③ ④ ⑤

46. This is how I'd like it to be: ① ② ③ ④ ⑤

To what extent does your supervisor encourage people who work for him to exchange opinions and ideas?

47. This is how it is now: ① ② ③ ④ ⑤

48. This is how I'd like it to be: ① ② ③ ④ ⑤

HOW MUCH DOES YOUR IMMEDIATE SUPERVISOR NEED EACH OF THE FOLLOWING TO BE A BETTER MANAGER?

49. More information about how his people see and feel about things: ① ② ③ ④ ⑤

50. More information about principles of good management: ① ② ③ ④ ⑤

51. A change in the kinds of things he personally feels are important: ① ② ③ ④ ⑤

52. Greater ability in handling the administrative side of his job: ① ② ③ ④ ⑤

To a very little extent | To a little extent | To some extent | To a great extent | To a very great extent

53. Practice in making use of information he already has about how his people feel, how to be a good manager, etc. ① ② ③ ④ ⑤

54. A situation that lets him do what he already knows how to do and wants to do: ① ② ③ ④ ⑤

55. More interest in and concern for the people who work for him: ① ② ③ ④ ⑤

IN THE QUESTIONS BELOW, WORK GROUP MEANS ALL THOSE PERSONS WHO REPORT DIRECTLY TO THE SAME SUPERVISOR.

How friendly and easy to approach are the persons in your work group?

56. This is how it is now: ① ② ③ ④ ⑤

57. This is how I'd like it to be: ① ② ③ ④ ⑤

When you talk with persons in your work group, to what extent do they pay attention to what you're saying?

58. This is how it is now: ① ② ③ ④ ⑤

59. This is how I'd like it to be: ① ② ③ ④ ⑤

To what extent are persons in your work group willing to listen to your problems?

60. This is how it is now: ① ② ③ ④ ⑤

61. This is how I'd like it to be: ① ② ③ ④ ⑤

How much do persons in your work group encourage each other to give their best effort?

62. This is how it is now: ① ② ③ ④ ⑤

63. This is how I'd like it to be: ① ② ③ ④ ⑤

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	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
To what extent do persons in your work group maintain high standards of performance?					
64. This is how it is now:	①	②	③	④	⑤
65. This is how I'd like it to be:	①	②	③	④	⑤
To what extent do persons in your work group help you find ways to do a better job?					
66. This is how it is now	①	②	③	④	⑤
67. This is how I'd like it to be	①	②	③	④	⑤
To what extent do persons in your work group provide the help you need so that you can plan, organize, and schedule work ahead of time?					
68. This is how it is now:	①	②	③	④	⑤
69. This is how I'd like it to be:	①	②	③	④	⑤
To what extent do persons in your work group offer each other new ideas for solving job-related problems?					
70. This is how it is now:	①	②	③	④	⑤
71. This is how I'd like it to be:	①	②	③	④	⑤
How much do persons in your work group encourage each other to work as a team?					
72. This is how it is now:	①	②	③	④	⑤
73. This is how I'd like it to be:	①	②	③	④	⑤
How much do persons in your work group emphasize a team goal?					
74. This is how it is now:	①	②	③	④	⑤
75. This is how I'd like it to be	①	②	③	④	⑤

	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
To what extent do persons in your work group exchange opinions and ideas?					
76. This is how it is now:	①	②	③	④	⑤
77. This is how I'd like it to be:	①	②	③	④	⑤
78. To what extent does your work group plan together and coordinate its efforts?	①	②	③	④	⑤
79. To what extent does your work group make good decisions and solve problems well?	①	②	③	④	⑤
80. To what extent do persons in your work group know what their jobs are and know how to do them well?	①	②	③	④	⑤
81. To what extent is information about important events and situations shared within your work group?	①	②	③	④	⑤
82. To what extent does your work group really want to meet its objectives successfully?	①	②	③	④	⑤
83. To what extent is your work group able to respond to unusual work demands placed on it?	①	②	③	④	⑤
84. To what extent do you have confidence and trust in the persons in your work group?	①	②	③	④	⑤

85. On the basis of your experience and information, how would you rate your work group on effectiveness? How well does it do in fulfilling its mission or achieving its goals in comparison with other work groups in this organization?

① The work group does a rather poor job

② Fair

③ Good

④ Very good

⑤ The work group does an excellent job

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How true is each of the following statements about THE JOB YOU HAVE NOW?	Very Untrue	Fairly Untrue	Fairly True	Very True
86. There's no one to boss me on the work.	①	②	③	④
87. It is steady, no chance of being laid off.	①	②	③	④
88. I can learn new things, learn new skills.	①	②	③	④
89. I don't have to work too hard.	①	②	③	④
90. It is a clean job, where I don't get dirty.	①	②	③	④
91. It has good chances for getting ahead.	①	②	③	④
92. I don't have to take a lot of responsibility.	①	②	③	④
93. It leaves me a lot of free time to do what I want to do.	①	②	③	④
94. The pay is good.	①	②	③	④
95. It is a job that my friends think a lot of - has class.	①	②	③	④
96. It uses my skills and abilities - lets me do the things I can do best.	①	②	③	④
97. There are nice friendly people to work with.	①	②	③	④
98. It doesn't make me learn a lot of new things.	①	②	③	④
99. It allows me to stay in one place so I can establish roots in a community.	①	②	③	④
100. It gives me a chance to serve my country well.	①	②	③	④
101. It gives me a chance to make the world a better place.	①	②	③	④
102. The fringe benefits (medical care, retirement plan, etc.) are good	①	②	③	④
103. I can control my personal life.	①	②	③	④

	Very Untrue	Fairly Untrue	Fairly True	Very True
104. I don't get endlessly referred from person to person when I need help.	①	②	③	④
105. I don't have to go through a lot of "red tape" to get things done.	①	②	③	④
106. I don't get hemmed in by longstanding rules and regulations that no one seems to be able to explain.	①	②	③	④

	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
107. On the job, to what extent do you feel pressure from your supervisor for better performance, over and above what you yourself think is reasonable?	①	②	③	④	⑤
108. To what extent is your job a one-person job; you have little need to check or work with others?	①	②	③	④	⑤
109. To what extent do you have to work closely with others in order to do a good job?	①	②	③	④	⑤
110. To what extent is the organization you work for effective in getting you to meet its needs and contribute to its effectiveness?	①	②	③	④	⑤
111. To what extent does the organization you work for do a good job of meeting your needs as an individual?	①	②	③	④	⑤
112. To what extent does your present job provide an opportunity to work for competent, fair supervisors?	①	②	③	④	⑤
113. To what extent does your present job provide an opportunity to be evaluated fairly in proportion to what you contribute?	①	②	③	④	⑤
114. To what extent do you feel in any way discriminated against in your job because of your race or national origin?	①	②	③	④	⑤

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116. Nearly all jobs involve using some kind of tool or machine. In your job, what is the most complex type of tool or machine you use every day?

① simple devices (pencils, letter opener, wiping cloth)
② hand tools (manual typewriter, wrenches, wheelbarrow)
③ small power-driven machines (electric drill, electric typewriter, generator); simple electronic (radar, communications) equipment at the company level
④ power-driven equipment (car or truck, tank, airplane, copy machine, hoist); complex electronic (radar, communications) equipment at the battalion level.
⑤ automated equipment (largely computer-directed)

117. Are the objects or materials you work on in your job the same or different?

① There is no variation.
② There is only slight variation.
③ Some of the objects are similar and some are unique.
④ Many objects are unique.
⑤ Almost all objects are unique.

118. In your job, how much time usually passes between your performance of an average unit of work and the time you find out how well you did?

① a few seconds or less
② a few minutes
③ less than an hour
④ less than a day
⑤ longer than a day

119. What race is your immediate supervisor?

① White
② Black
③ Mexican-American/Chicano
④ Puerto Rican
⑤ Other

119. What race are the majority of the members of your work group (those individuals who report to the same supervisor you do)?

① White
② Black
③ Mexican-American/Chicano
④ Puerto Rican
⑤ Other

120. What other race (if any) is most heavily represented in your work group?

① White
② Black
③ Mexican-American/Chicano
④ Puerto Rican
⑤ Other
⑥ None

PART B

These questions ask about the kind of job and supervisor you would consider most ideal. Please answer them in terms of the kind of JOB YOU WOULD LIKE TO HAVE.

In thinking about the kind of JOB YOU WOULD LIKE TO HAVE (whether or not you have it now), how important are each of the following?	Very Unimportant	Fairly Unimportant	Fairly Important	Very Important
1. A job where there's no one to boss me on the work	①	②	③	④
2. A job that is steady; no chance of being laid off	①	②	③	④
3. A job where I can learn new things, learn new skills	①	②	③	④
4. A job where I don't have to work too hard	①	②	③	④
5. A clean job, where I don't get dirty	①	②	③	④
6. A job with good chances for getting ahead	①	②	③	④
7. A job where I don't have to take a lot of responsibility	①	②	③	④
8. A job that leaves me a lot of free time to do what I want to	①	②	③	④

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	Very Unimportant	Fairly Unimportant	Fairly Important	Very Important
9. A job where the pay is good	①	②	③	④
10. A job that my friends think a lot of - has class	①	②	③	④
11. A job that uses my skills and abilities - lets me do the things I can do best	①	②	③	④
12. A job that has nice friendly people to work with	①	②	③	④
13. A job that doesn't make me learn a lot of new things	①	②	③	④
14. A job that allows me to establish roots in a community and not have to move from place to place	①	②	③	④
15. A job that gives me a chance to serve my country well	①	②	③	④
16. A job that gives me a chance to make the world a better place	①	②	③	④
17. A job where the fringe benefits (medical care, retirement plan, etc.) are good	①	②	③	④
18. A job where I can control my personal life	①	②	③	④
19. A job where I don't get endlessly referred from person to person when I need help	①	②	③	④
20. A job where I don't have to go through a lot of "red tape" to get things done	①	②	③	④
21. A job where I am not hemmed in by long-standing rules and regulations that no one seems to be able to explain	①	②	③	④

How much do you agree with the following statements about the way supervisors should treat the people who work under them?	Strongly disagree	Slightly disagree	Neither agree nor disagree	Slightly agree	Strongly agree
22. A supervisor should help others to express their own individuality.	①	②	③	④	⑤
23. A good supervisor must pay as much direct attention to keeping people working together well as he does to seeing that the task gets done.	①	②	③	④	⑤
24. Supervisors should rely more on mutual confidence and good relationships with people rather than the exercise of authority to get things done.	①	②	③	④	⑤
25. In work relationships, emotions and feelings should be expressed and worked out.	①	②	③	④	⑤
26. It is essential for the good supervisor to be sensitive to the feelings of others.	①	②	③	④	⑤
27. A clear-cut hierarchy of authority and responsibility is essential in a work organization.	①	②	③	④	⑤
28. Being firm with subordinates is the best way to insure that they will do a good job.	①	②	③	④	⑤
29. Subordinates prefer to be told what to do rather than making their own decisions in their work.	①	②	③	④	⑤
30. A supervisor must keep a close check on his subordinates to see that they are doing a good job.	①	②	③	④	⑤
31. The most effective way to get people motivated and committed to a job is to instruct, direct and use appropriate rewards and penalties.	①	②	③	④	⑤
32. Although a supervisor can be democratic with his subordinates, he must still structure their work for them.	①	②	③	④	⑤

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PART C

These next questions ask for your opinions about the military services in the United States. Some questions ask about the way you think things actually are, and others ask about the way you would like things to be.

To what extent do you think the following opportunities are available to people who work in the military services?	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
1. A chance to get ahead	①	②	③	④	⑤
2. A chance to get more education	①	②	③	④	⑤
3. A chance to advance to a more responsible position	①	②	③	④	⑤
4. A chance to have a personally more fulfilling job	①	②	③	④	⑤
5. A chance to get their ideas heard	①	②	③	④	⑤
6. To what extent is it likely that a person in the military can get things changed and set right if he is being treated unjustly by a superior?	①	②	③	④	⑤
7. To what extent do you think there is any discrimination against women who are in the armed services?	①	②	③	④	⑤
8. To what extent do you think there is any discrimination against black people who are in the armed services?	①	②	③	④	⑤

9. Do you personally feel that you would receive more just and fair treatment as a civilian or as a member of the military service?

① Much more fair in the military service

② More fair in the military service

③ About the same

④ More fair as a civilian

⑤ Much more fair as a civilian

⑥ Question not appropriate for me

10. If you had a son in his late teens or early twenties who decided to enter the military service, how would you feel about his decision?

① Strongly positive

② Mostly positive

③ Mostly negative

④ Strongly negative

	Agree	Agree Mostly	Disagree Mostly	Disagree
11. The United States should provide high enough salaries and benefits so that it can man its armed forces with volunteers.	①	②	③	④
12. Most of our servicemen should be "citizen soldiers" - men who spend just three or four years in the military and then return to civilian life.	①	②	③	④
13. Our military service should be staffed mostly with "career men" who spend twenty or more years in the service.	①	②	③	④
14. Only those who agree with our military policy should be allowed to serve in the armed forces.	①	②	③	④
15. There ought to be a wide range of different political viewpoints among those in the military service.	①	②	③	④

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16. In some countries the military forces have taken over and thrown out the civilian government. Do you think there is any chance that this could happen in the United States?

① It probably will happen in the U. S.

② It is certainly possible, but not very likely.

③ It is nearly impossible.

④ It could never happen in the U. S.

	To a very little extent	To a little extent	To some extent	To a great extent	To a very great extent
17. To what extent do you think our armed forces are capable of meeting all of our present military needs?	①	②	③	④	⑤
18. To what extent do you think the military makes efficient use of the money in its budget?	①	②	③	④	⑤
19. To what extent do you think our military leaders are smart people who know what they are doing?	①	②	③	④	⑤
20. To what extent would it be possible to improve the caliber of our officer ranks?	①	②	③	④	⑤
21. To what extent do we fall short of the military preparedness we need in today's world?	①	②	③	④	⑤
22. To what extent is there waste in the way our military services are run at present?	①	②	③	④	⑤
23. To what extent do you think military officers try to do as good a job as they can?	①	②	③	④	⑤
24. To what extent do you think you can trust our military leadership to do what is right?	①	②	③	④	⑤

25. All things considered, do you think the armed services presently have too much or too little influence on the way this country is run?

① Far too much

② Too much

③ About right

④ Too little

⑤ Far too little

26. Do you think the U. S. spends too much or too little on the armed services?

① Far too much

② Too much

③ About right

④ Too little

⑤ Far too little

27. Overall, how do you feel about the role of the military services in our society during the time since World War II - has it been mostly positive or mostly negative?

① Strongly Positive

② Mostly Positive

③ Mostly Negative

④ Strongly Negative

The next questions ask your opinion about the influence that military leaders and civilian leaders (such as the President or Congress) have over certain decisions affecting national security.

	Civilians much more	Civilians somewhat more	About equal influence	Military somewhat more	Military much more
Who has most influence over whether to involve U. S. servicemen in foreign conflicts?					
28. This is how I think it is now.	①	②	③	④	⑤
29. This is how I'd like it to be.	①	②	③	④	⑤

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	Civilians much more	Civilians somewhat more	About equal influence	Military somewhat more	Military much more
Who has most influence over what tactics to use on the battlefield?					
30. This is how I think it is now	①	②	③	④	⑤
31. This is how I'd like it to be:	①	②	③	④	⑤
Who has most influence over which new weapon systems to develop?					
32. This is how I think it is now:	①	②	③	④	⑤
33. This is how I'd like it to be:	①	②	③	④	⑤
Who has most influence over levels of pay and fringe benefits in the armed services?					
34. This is how I think it is now:	①	②	③	④	⑤
35. This is how I'd like it to be:	①	②	③	④	⑤
Who has most influence over whether to use nuclear weapons?					
36. This is how I think it is now:	①	②	③	④	⑤
37. This is how I'd like it to be:	①	②	③	④	⑤

	Agree	Agree Mostly	Disagree Mostly	Disagree
38. The U. S. should begin a gradual program of disarming whether other countries do or not.	①	②	③	④
39. There may be times when the U. S. should go to war to protect the rights of other countries.	①	②	③	④
40. The U. S. should be willing to go to war to protect its own economic interests.	①	②	③	④
41. The only good reason for the U. S. to go to war is to defend against an attack on our own country.	①	②	③	④
42. The U. S. does not need to have greater military power than the Soviet Union.	①	②	③	④
43. The U. S. ought to have much more military power than any other nation in the world.	①	②	③	④
44. Our present foreign policy is based on our own narrow economic and power interests.	①	②	③	④
45. Fighting the war in Vietnam was damaging to our national honor or pride.	①	②	③	④
46. Fighting the war in Vietnam was not really in the national interest.	①	②	③	④
47. Fighting the war in Vietnam was important to fight the spread of Communism.	①	②	③	④
48. Fighting the war in Vietnam brought us closer to world war.	①	②	③	④
49. Fighting the war in Vietnam was important to protect friendly countries.	①	②	③	④
50. Fighting the war in Vietnam was important to show other nations that we keep our promises.	①	②	③	④
51. Going to Canada to avoid fighting in Vietnam was wrong, and those who did so should be punished.	①	②	③	④
52. The men who went to Canada rather than fight in Vietnam were doing what they felt was right. They should be allowed to return to the U. S. without being punished.	①	②	③	④
53. Servicemen should obey orders without question.	①	②	③	④

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54. Suppose a group of soldiers in Vietnam had been ordered by their superior officers to shoot all inhabitants of a village suspected of aiding the enemy, including old men, women and children? In your opinion, what should soldiers do in such a situation?

①Follow orders and shoot

②Refuse to shoot them

③Don't know

55. What do you think most people actually would do if they were in this situation?

①Follow orders and shoot

②Refuse to shoot them

③Don't know

56. What do you think you would do in this situation?

①Follow orders and shoot

②Refuse to shoot them

③Don't know

57. How many tours did you serve in Vietnam?

①None (Skip Question 58)

②One full or partial tour.

③Two tours (or extended first tour)

④More than two tours.

58. What kind of experiences did you have in Vietnam?

①No unit I was in was ever under fire.

②At least one unit was under fire but had no casualties.

③At least one unit was under fire, had casualties, but I was not wounded.

④I was wounded in Vietnam.

PART D

These final few questions ask for some background information about yourself. The information is important for research purposes. Your answers to all questions will be kept strictly confidential.

1. Present Age _____ Write in

2. Sex: ①Male ②Female

3. Race:

①White ④Puerto Rican
②Black ⑤Other
③Mexican-American/Chicano

4. Marital Status:

①Single ③Divorced-Separated
②Married ④Widowed

5. How much schooling have you had?

①Completed grade school or less
②Some high school
③Completed high school
④Some college
⑤Completed college
⑥Some graduate school

6. How much schooling has your father had?

①Completed grade school or less
②Some high school
③Completed high school
④Some college
⑤Completed college
⑥Some graduate school

7. How much schooling has your mother had?

①Completed grade school or less
②Some high school
③Completed high school
④Some college
⑤Completed college
⑥Some graduate school

8. While you were growing up - say until you were eighteen - what kind of community did you live in for the most part?

①Rural area or farm
②Town or small city
③Suburban area near a large city
④Large city

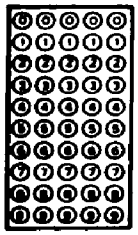
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9. While you were growing up, what region of the country did you primarily live in?

① New England
② East
③ South
④ Midwest
⑤ West
⑥ None of the above

10. Your supervisor's number:

_____



11. How long have you been assigned to your present unit?

① less than 1 month
② between 1 and 6 months
③ between 6 months and 1 year
④ between 1 and 2 years
⑤ between 2 and 5 years
⑥ more than 5 years

12. How long have you been assigned to your present work group?

① less than 1 month
② between 1 and 6 months
③ between 6 months and 1 year
④ between 1 and 2 years
⑤ between 2 and 5 years
⑥ more than 5 years

13. How did you first enter active service?

① Enlisted or accepted a commission because I really wanted to be in the Army.
② Enlisted or accepted a commission to avoid being drafted.
③ I was drafted.
④ Other

Indicate how important items 14 through 20 were in your decision to enlist or accept a commission in the Army.

	Extremely important	Important	Somewhat important	Not very important	Of no importance
14. Job opportunities looked better than in civilian life.	①	②	③	④	⑤
15. For travel, adventure, new experiences.	①	②	③	④	⑤
16. Opportunity for advanced education or technical training.	①	②	③	④	⑤
17. Wanted to fulfill my military obligation at a time and in the service of my choice rather than being drafted.	①	②	③	④	⑤
18. Wanted to serve my country.	①	②	③	④	⑤
19. To continue a family tradition of military service.	①	②	③	④	⑤
20. For a secure job with promotions and favorable retirement benefits.	①	②	③	④	⑤

21. What is your present military status?

① Enlisted
② Warrant Officer
③ Reserve Officer
④ Regular Officer
⑤ Other

22. What is your present enlistment or obligation status?

① Initial enlistment
② Extension of initial enlistment
③ Second enlistment
④ Extension of second enlistment
⑤ Third or later enlistment
⑥ Officer: obligated first term
⑦ Officer: career

23. How much time do you have left in your present enlistment or obligation?

① less than 6 months
② between 6 months and 1 year
③ between 1 year and 2 years
④ more than 2 years

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24. What do you plan to do when you complete this enlistment?

① Re-enlist and make the Army a career
② Re-enlist or extend but undecided about making the Army a career
③ Re-enlist or extend but do not intend to make the Army a career
④ Return to civilian life
⑤ Retire

25. How many years of active duty have you served? (Round to the nearest year) _____

26. Write in your present pay grade: _____

27. Write in your primary MOS: _____

28. Are you presently working in the above MOS?

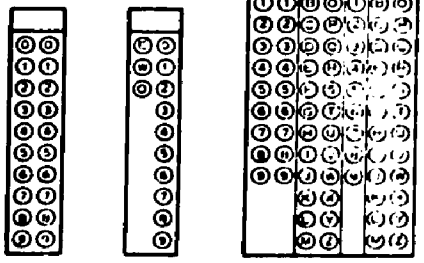
①Yes ②No

29. Would you say your feelings about having been in the military are--

① Strongly positive
② Mostly positive
③ Mostly negative
④ Strongly negative

30. Think of the three adults who are your best friends. Do not include your parents, spouse, brothers, or sisters. How many of these people are in the military or are dependents of military personnel?

⓪ None ② Two
① One ③ Three



31. How long have you worked in full-time civilian jobs?

① none
② up to 6 months
③ between 6 months and 1 year
④ between 1 and 3 years
⑤ more than 3 years

	Barracks	BEQ or BOQ	Family on-post	Military off-post	Civilian off-post
32. In which kind of housing do you live now?	①	②	③	④	⑤
33. In which kind of housing have you lived the most while in the Army?	①	②	③	④	⑤
34. In which kind of housing would you prefer to live while in the Army?	①	②	③	④	⑤

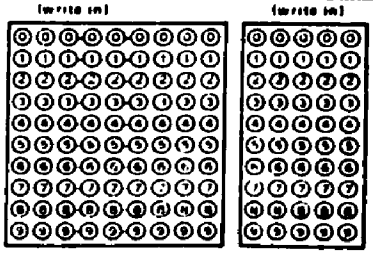
	Very poor	Poor	Fair	Good	Very good
35. How good is your present housing?	①	②	③	④	⑤
36. How good has most of your housing been while in the Army?	①	②	③	④	⑤
37. Thinking of your future housing in the Army, how good do you expect it to be?	①	②	③	④	⑤

38. What is your Social Security number? (optional)

(write in) _____

39. What is your own supervisory number?

(write in) _____



APPENDIX B

FREQUENCY AND PERCENTAGE DISTRIBUTIONS, CHI SQUARES, AND MEASURES OF ASSOCIATION FOR ALL PAIRS OF PREDICTORS BY RACE[1]

[1]The presence of small cell N's (N<5) may make the meaning of test statistics questionable. Small cell N's occur quite often when the Supervisory Leadership and Technical Skills measures are used. In these cases, only percentage and frequency distributions should be attended to.

TABLE B-1

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND SUPERVISORY LEADERSHIP

WHITES

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Supervisory Leadership	1	26 57.8%	10 22.2%	5 11.1%	3 6.7%	1 2.2%
	2	13 33.3%	14 35.9%	9 23.1%	2 5.1%	1 2.6%
	3	3 7.9%	11 28.9%	15 39.5%	5 13.2%	4 10.5%
	4	1 2.3%	4 9.3%	6 14.0%	18 41.9%	14 32.6%
	5	0 0.0%	0 0.0%	4 11.4%	10 28.6%	21 60.0%

Tests of independence statistic significance DF=16 N=200

Maximum Likelihood 150.61 .001 Cramer's PHI= .42

Chi Square 142.88 .001 Contingency Coefficient=.64

BLACKS

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Supervisory Leadership	1	10 55.6%	4 22.2%	2 11.1%	1 5.6%	1 5.6%
	2	7 50.0%	3 21.4%	3 21.4%	1 7.1%	0 0.0%
	3	1 5.6%	7 38.9%	8 44.4%	2 11.1%	0
	4	2 12.5%	1 6.3%	3 18.8%	10 62.5%	0
	5	0	0	0	5 33.3%	10 66.7%

Tests of independence statistic significance DF=16 N=81

Maximum likelihood 86.689 .001 Cramer's PHI= .53

Chi Square 90.187 .001 Contingency Coefficient=.72

TABLE B-2

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND CRITICAL SKILLS

WHITES

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Critical Skills	1	6 13.3%	10 22.2%	10 22.2%	6 13.3%	13 28.9%
	2	8 32.0%	6 24.0%	4 16.0%	5 20.0%	2 8.0%
	3	11 20.8%	10 18.9%	8 15.1%	11 20.8%	13 24.5%
	4	10 27.8%	8 22.2%	7 19.4%	9 25.0%	2 5.6%
	5	8 21.1%	4 10.5%	10 26.3%	7 18.4%	9 23.7%

Tests of independence statistic significance DF=16 N=197

Maximum likelihood	18.963	.27	Cramer's PHI= .1465
Chi Square	16.918	.39	Contingency Coefficient=.2812

BLACKS

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Critical Skills	1	2 11.1%	3 16.7%	4 22.2%	4 22.2%	5 27.8%
	2	6 46.2%	1 7.7%	2 15.4%	2 15.4%	2 15.4%
	3	4 36.4%	2 18.2%	2 18.2%	2 18.2%	1 9.1%
	4	3 20.0%	4 26.7%	2 13.3%	5 33.3%	1 6.7%
	5	5 22.7%	4 18.2%	6 27.3%	5 22.7%	2 9.1%

Tests of independence statistic significance DF=16 N=79

Maximum likelihood	11.345	.79	Cramer's PHI= .19
Chi Square	11.722	.76	Contingency Coefficient=.36

TABLE B-3

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND EDUCATION

WHITES

TECHNICAL SKILLS

	Scale	1	2	3	4	5
Education	1	1 16.7%	4 66.7%	1 16.7%	0	0
	2	25 19.7%	22 17.3%	32 25.2%	25 19.7%	23 18.1%
	3	16 24.2%	13 19.7%	6 9.1%	13 19.7%	18 27.3%

Tests of independence statistic significance DF=8 N=199

Maximum likelihood 18.005 .02 Cramer's PHI= .21

Chi Square 17.605 .02 Contingency Coefficient=.28

BLACKS

TECHNICAL SKILLS

	Scale	1	2	3	4	5
Education	1	0 0.0%	1 20.0%	1 20.0%	3 60.0%	0 0.0%
	2	13 27.7%	13 27.7%	10 21.3%	6 12.8%	5 10.6%
	3	7 24.1%	1 3.4%	5 17.2%	10 34.5%	6 20.7%

Tests of independence statistic significance DF=8 N=81

Maximum likelihood 18.660 .02 Cramer's PHI= .31

Chi Square 15.935 .04 Contingency Coefficient=.40

TABLE B-4

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND TIME IN CIVILIAN JOBS

WHITES

Time In Civilian Jobs	TECHNICAL SKILLS Scale 1	2	3	4	5
1	5 25.0%	6 30.0%	1 5.0%	5 25.0%	3 15.0%
2	3 15.8%	4 21.1%	4 21.1%	3 15.8%	5 26.3%
3	11 28.2%	6 15.4%	10 25.6%	4 10.3%	8 20.5%
4	13 19.4%	16 23.9%	10 14.9%	14 20.9%	14 20.9%
5	11 20.8%	7 13.2%	13 24.5%	12 22.6%	10 18.9%

Tests of independence statistic significance DF=16 N=198

Maximum likelihood 13.187 .66 Cramer's PHI= .12

Chi Square 12.146 .73 Contingency Coefficient=.24

BLACKS

Time in Civilian Jobs	TECHNICAL SKILLS Scale 1	2	3	4	5
1	3 16.7%	5 27.8%	5 27.8%	2 11.1%	3 16.7%
2	5 38.5%	0	2 15.4%	4 30.8%	2 15.4%
3	1 11.1%	4 44.4%	1 11.1%	2 22.2%	1 11.1%
4	5 25.0%	4 20.0%	5 25.0%	4 20.0%	2 10.0%
5	5 25.0%	2 10.0%	3 15.0%	7 35.0%	3 15.0%

Tests of independence statistic significance DF=16 N=80

Maximum likelihood 15.851 .46 Cramer's PHI=

Chi Square 14.040 .59 Contingency Coefficient=.3864

TABLE B-5

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND CRITICAL SKILLS

WHITES

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Critical Skills	1	4 8.9%	12 26.7%	7 15.6%	12 26.7%	10 22.2%
	2	10 40.0%	5 20.0%	4 16.0%	5 20.0%	1 4.0%
	3	11 20.8%	9 17.0%	14 26.4%	9 17.0%	10 18.9%
	4	11 30.6%	5 13.9%	7 19.4%	11 30.6%	2 5.6%
	5	9 23.7%	7 18.4%	5 13.2%	6 15.8%	11 28.9%

Tests of independence statistic significance DF=16 N=197

Maximum likelihood	26.747	.04	Cramer's PHI= .18
Chi Square	24.851	.07	Contingency Coefficient=.33

BLACKS

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Critical Skills	1	3 16.7%	2 11.1%	3 16.7%	4 22.2%	6 33.3%
	2	3 23.1%	3 23.1%	3 23.1%	1 7.7%	3 23.1%
	3	2 18.2%	1 9.1%	4 36.4%	2 18.2%	2 18.2%
	4	2 13.3%	1 6.7%	4 26.7%	6 40.0%	2 13.3%
	5	7 31.8%	6 27.3%	4 18.2%	3 13.6%	2 9.1%

Tests of independence statistic significance DF=16 N=79

Maximum likelihood	14.251	.58	Cramer's PHI= .21
Chi Square	14.660	.55	Contingency Coefficient=.40

TABLE B-6

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND EDUCATION

WHITES

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Education	1	4 66.7%	2 33.3%	0 0.0%	0 0.0%	0 0.0%
	2	27 21.3%	25 19.7%	27 21.3%	29 22.8%	19 15.0%
	3	14 21.2%	11 16.7%	11 16.7%	14 21.2%	16 24.2%

Tests of independence statistic significance DF=8 N=199

Maximum likelihood	13.892	.08	Cramer's PHI= .18
Chi Square	12.440	.13	Contingency Coefficient=.24

BLACKS

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Education	1	1 20.0%	1 20.0%	1 20.0%	2 40.0%	0
	2	8 17.0%	13 27.7%	13 27.7%	7 14.9%	6 12.8%
	3	9 31.0%	0	4 13.8%	7 24.1%	9 31.0%

Tests of independence statistic significance DF=8 N=81

Maximum likelihood	22.223	.001	Cramer's PHI= .33
Chi Square	17.222	.03	Contingency Coefficient=.42

TABLE B-7

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND TIME IN CIVILIAN JOBS

WHITES

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Time in Civilian Jobs	1	5 25.0%	3 15.0%	5 25.0%	4 20.0%	3 15.0%
	2	4 21.1%	5 26.3%	4 21.1%	4 21.1%	2 10.5%
	3	12 30.8%	5 12.8%	8 20.5%	7 17.9%	7 17.9%
	4	13 19.4%	17 25.4%	9 13.4%	18 26.9%	10 14.9%
	5	10 18.9%	9 17.0%	12 22.6%	10 18.9%	12 22.6%

Tests of independence statistic significance DF=16 N=198

Maximum likelihood 9.6106 .89 Cramer's PHI= .11

Chi Square 9.6357 .88 Contingency Coefficient=.21

BLACKS

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Time in Civilian Jobs	1	5 27.8%	2 11.1%	4 22.2%	4 22.2%	3 16.7%
	2	3 23.1%	3 23.1%	0	4 30.8%	3 23.1%
	3	1 11.1%	4 44.4%	2 22.2%	1 11.1%	1 11.1%
	4	4 20.0%	2 10.0%	9 45.0%	2 10.0%	3 15.0%
	5	4 20.0%	3 15.0%	3 15.0%	5 25.0%	5 25.0%

Tests of independence statistic significance DF=16 N=80

Maximum likelihood 18.540 .29 Cramer's PHI= .23

Chi Square 17.293 .37 Contingency Coefficient=.42

TABLE B-8

BIVARIATE RELATIONSHIP BETWEEN
R's CRITICAL SKILLS AND EDUCATION

WHITES

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Education	1	53 29.4%	22 12.2%	39 21.7%	33 18.3%	33 18.3%
	2	144 21.5%	119 17.7%	156 23.2%	116 17.3%	136 20.3%
	3	112 29.0%	69 17.9%	99 25.6%	57 14.8%	49 12.7%

Tests of independence statistic significance DF=8 N=1237

Maximum likelihood 21.092 .01 Cramer's PHI= .09

Chi Square 20.401 .01 Contingency Coefficient=.13

BLACKS

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Education	1	8 14.5%	6 10.9%	9 16.4%	16 29.1%	16 29.1%
	2	57 23.3%	32 13.1%	55 22.4%	55 22.4%	46 18.8%
	3	39 34.2%	16 14.0%	21 18.4%	27 23.7%	11 9.6%

Tests of independence statistic significance DF=8 N=414

Maximum likelihood 17.396 .03 Cramer's PHI .14

Chi Square 17.198 .03 Contingency Coefficient=.20

TABLE B-9

BIVARIATE RELATIONSHIP BETWEEN
R's CRITICAL SKILLS AND TIME IN CIVILIAN JOBS

WHITES

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Time in Civilian Jobs	1	37 29.4%	20 15.9%	24 19.0%	24 19.0%	21 16.7%
	2	33 28.0%	24 20.3%	22 18.6%	16 13.6%	23 19.5%
	3	53 23.7%	38 17.0%	55 24.6%	35 15.6%	43 19.2%
	4	98 22.1%	84 18.9%	118 26.6%	77 17.3%	67 15.1%
	5	91 28.0%	44 13.5%	75 23.1%	53 16.3%	62 19.1%

Tests of independence statistic significance DF=16 N=1237

Maximum likelihood 16.681 .41 Cramer's PHI= .06

Chi Square 16.407 .42 Contingency Coefficient=.11

BLACKS

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Time in Civilian Jobs	1	11 18.0%	6 9.8%	15 24.6%	15 24.6%	14 23.0%
	2	12 27.9%	6 14.0%	7 16.3%	11 25.6%	7 16.3%
	3	25 39.1%	4 6.3%	11 17.2%	13 20.3%	11 17.2%
	4	32 22.1%	26 17.9%	33 22.8%	30 20.7%	24 16.6%
	5	22 24.2%	11 12.1%	17 18.7%	25 27.5%	16 17.6%

Tests of independence statistic significance DF=16 N=404

Maximum likelihood 16.346 .43 Cramer's PHI= .10

Chi Square 16.611 .41 Contingency Coefficient=.20

TABLE B-10

BIVARIATE RELATIONSHIP BETWEEN
R's EDUCATION AND TIME IN CIVILIAN JOBS

WHITES

		EDUCATION		
	Scale	1	2	3
Time in Civilian Jobs	1	16 12.5%	70 54.7%	42 32.8%
	2	19 15.6%	68 55.7%	35 28.7%
	3	31 13.5%	139 60.7%	59 25.8%
	4	68 15.1%	234 52.0%	148 32.9%
	5	50 15.5%	167 51.7%	106 32.8%

Tests of independence statistic significance DF=8 N=1252

Maximum likelihood 6.7999 .56 Cramer's PHI= .05

Chi Square 6.7079 .57 Contingency Coefficient=.07

BLACKS

		EDUCATION		
	Scale	1	2	3
	1	5 7.8%	41 64.1%	18 28.1%
	2	9 20.0%	25 55.6%	11 24.4%
	3	13 19.1%	40 58.8%	15 22.1%
	4	18 12.2%	85 57.8%	44 29.9%
	5	13 14.3%	56 61.5%	22 24.2%

Tests of independence statistic significance DF=8 N=415

Maximum likelihood 6.5584 .58 Cramer's PHI= .09

Chi Square 6.4756 .59 Contingency Coefficient=.12

TABLE 8-11

BIVARIATE RELATIONSHIP BETWEEN
COMMUNITY OF ORIGIN AND REGION OF ORIGIN

WHITES

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
Region of Origin	1 (Non-South)	258 31.0%	316 37.9%	167 20.0%	92 11.0%
	2 (South)	124 43.4%	101 35.3%	49 17.1%	12 4.2%
	3 (Non U.S.)	20 26.7%	29 38.7%	19 25.3%	7 9.3%

Tests of independence statistic significance DF=6 N=1194

Maximum likelihood 25.584 .001 Cramer's PHI= .10

Chi Square 24.252 .001 Contingency Coefficient=.14

BLACKS

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
Region of Origin	1 (Non-South)	15 9.9%	33 21.9%	27 17.9%	76 50.3%
	2 (South)	61 30.0%	93 45.8%	24 11.8%	25 12.3%
	3 (Non-U.S.)	3 10.0%	16 53.5%	2 6.7%	9 30.0%

Tests of independence statistic significance DF=6 N=384

Maximum likelihood 84.833 .001 Cramer's PHI= .32

Chi Square 81.803 .001 Contingency Coefficient=.41

TABLE B-12

BIVARIATE RELATIONSHIP BETWEEN
COMMUNITY OF ORIGIN AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
SEC	1	116 50.9%	73 32.0%	24 10.5%	15 6.6%
	2	103 42.4%	91 37.4%	30 12.3%	19 7.8%
	3	150 31.3%	186 38.8%	103 31.5%	41 8.5%
	4	15 14.7%	39 38.2%	29 28.4%	19 18.6%
	5	33 18.9%	63 36.0%	56 32.0%	23 13.1%

Tests of independence statistic significance DF=12 N=1228

Maximum likelihood 100.33 .001 Cramer's PHI= .16

Chi Square 99.374 .001 Contingency Coefficient=.27

BLACKS

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
SEC	1	43 37.7%	40 35.1%	10 8.8%	21 18.4%
	2	24 22.6%	45 42.5%	13 12.3%	24 22.6%
	3	13 9.9%	55 42.0%	20 15.3%	43 32.8%
	4	1 4.3%	8 34.8%	6 26.1%	8 34.8%
	5	2 5.3%	11 28.9%	9 23.7%	16 42.1%

Tests of independence statistic significance DF=12 N=412

Maximum likelihood 50.943 .001 Cramer's PHI= .20

Chi Square 50.456 .001 Contingency Coefficient=.33

TABLE B-13

BIVARIATE RELATIONSHIP BETWEEN
COMMUNITY OF ORIGIN AND RACE OF SUPERVISOR

WHITES

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
Race of Supervisor	1 (White)	278 32.5%	322 37.6%	80 21.0%	76 8.9%
	2 (Black)	96 36.4%	104 39.4%	41 15.5%	23 8.7%
	3 (Other)	49 36.6%	44 32.8%	24 17.9%	17 12.7%

Tests of independence statistic significance DF=6 N=1254

Maximum likelihood 7.5241 .27 Cramer's PHI= .05

Chi Square 7.5405 .27 Contingency Coefficient=.07

BLACKS

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
Race of Supervisor	1 (White)	52 20.7%	98 39.0%	26 10.4%	75 29.9%
	2 (Black)	25 18.8%	46 34.6%	25 18.8%	37 27.8%
	3 (Other)	7 20.0%	14 40.0%	6 17.1%	8 22.9%

Tests of independence statistic significance DF=6 N=419

Maximum likelihood 6.0544 .41 Cramer's PHI= .08

Chi Square 6.1480 .40 Contingency Coefficient=.12

TABLE B-14

BIVARIATE RELATIONSHIP BETWEEN
COMMUNITY OF ORIGIN AND MAJORITY RACE OF WORK GROUP

WHITES

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
Race of Work Group	1 (White)	363 34.3%	387 36.5%	215 20.3%	94 8.9%
	2 (Black)	35 31.5%	50 45.0%	14 12.6%	12 10.8%
	3 (Other)	29 37.2%	26 33.3%	15 19.2%	8 10.3%

Tests of independence statistic significance DF=6 N-1248

Maximum likelihood	6.5398	.36	Cramer's PHI= .05
Chi Square	6.2795	.39	Contingency Coefficient=.07

BLACKS

		COMMUNITY OF ORIGIN			
	Scale	1	2	3	4
Race of Work Group	1 (White)	65 21.7%	114 38.1%	36 12.0%	84 28.1%
	2 (Black)	18 20.7%	30 34.5%	16 18.4%	23 26.4%
	3 (Other)	4 12.5%	12 37.5%	6 18.8%	10 31.3%

Tests of independence statistic significance DF=6 N=418

Maximum likelihood	4.2148	.64	Cramer's PHI= .07
Chi Square	4.1763	.65	Contingency Coefficient=.09

TABLE B-15

BIVARIATE RELATIONSHIP BETWEEN
REGION OF ORIGIN AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

		REGION OF ORIGIN		
		1	2	3
	Scale	(Non-South)	(South)	(Non U.S.)
SEC	1	128 60.7%	71 33.6%	12 5.7%
	2	143 61.6%	77 33.2%	12 5.2%
	3	342 73.9%	91 19.7%	30 6.5%
	4	74 75.5%	12 12.2%	12 12.2%
	5	129 77.7%	29 17.5%	8 4.8%

Tests of independence statistic significance		DF=8	N=1170
Maximum likelihood	42.066 .001	Cramer's PHI=	.13
Chi Square	43.115 .001	Contingency Coefficient=	.18

BLACKS

		REGION OF ORIGIN		
		1	2	3
	Scale	(Non-South)	(South)	(Non U.S.)
SEC	1	40 36.7%	62 56.9%	7 6.4%
	2	27 28.7%	60 63.8%	7 7.4%
	3	55 46.2%	56 47.1%	8 6.7%
	4	9 50.0%	6 33.3%	3 16.7%
	5	15 45.5%	15 45.5%	3 9.1%

Tests of independence statistic significance		DF=8	N=373
Maximum likelihood	12.130 .14	Cramer's PHI=	.12
Chi Square	12.375 .13	Contingency Coefficient=	.17

TABLE B-16

BIVARIATE RELATIONSHIP BETWEEN
REGION OF ORIGIN AND RACE OF SUPERVISOR

WHITES

		REGION OF ORIGIN		
	Scale	1 (Non-South)	2 (South)	3 (Non U.S.)
Race of Supervisor	1 (White)	562 69.4%	198 24.4%	50 6.2%
	2 (Black)	175 67.8%	60 23.3%	23 8.9%
	3 (Other)	94 74.6%	28 22.2%	4 3.2%

Tests of independence	statistic	significance	DF=4	N=1194
Maximum likelihood	5.7103	.22	Cramer's PHI=	.04
Chi Square	5.4894	.24	Contingency Coefficient=	.06

BLACKS

		REGION OF ORIGIN		
	Scale	1 (Non-South)	2 (South)	3 (Non U.S.)
Race of Supervisor	1 (White)	86 38.6%	121 54.3%	16 7.2%
	2 (Black)	53 43.1%	58 47.2%	12 9.8%
	3 (Other)	9 29.0%	20 64.5%	2 6.5%

Tests of independence	statistic	significance	DF=4	N=377
Maximum likelihood	3.7316	.44	Cramer's PHI=	.07
Chi Square	3.7118	.44	Contingency Coefficient=	.09

TABLE B-17

BIVARIATE RELATIONSHIP BETWEEN
REGION OF ORIGIN AND MAJORITY RACE OF WORK GROUP

WHITES

		REGION OF ORIGIN		
	Scale	1 (Non-South)	2 (South)	3 (Non U.S.)
Race of Work Group	1 (White)	708 70.4%	237 23.6%	60 6.0%
	2 (Black)	69 63.3%	31 28.4%	9 8.3%
	3 (Other)	54 71.1%	14 18.4%	8 10.5%

Tests of independence statistics significance DF=4 N=1190

Maximum likelihood	5.2173	.26	Cramer's PHI= .04
Chi Square	5.5279	.23	Contingency Coefficient=.06

BLACKS

		REGION OF ORIGIN		
	Scale	1 (Non-South)	2 (South)	3 (Non U.S.)
Race of Work Group	1 (White)	112 41.2%	141 51.8%	19 7.0%
	2 (Black)	24 32.4%	42 56.8%	8 10.8%
	3 (Other)	11 35.5%	17 54.8%	3 9.7%

Tests of independence statistic significance DF=4 N=377

Maximum likelihood	2.701	.60	Cramer's PHI= .06
Chi Square	2.728	.60	Contingency Coefficient=.08

TABLE B-18

BIVARIATE RELATIONSHIP BETWEEN
RACE OF SUPERVISOR AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

RACE OF SUPERVISOR

	Scale	1 (White)	2 (Black)	3 (Other)
SEC	1	148 64.9%	59 25.9%	21 9.2%
	2	181 74.8%	43 17.8%	18 7.4%
	3	324 67.2%	108 22.4%	50 10.4%
	4	63 63.0%	22 22.0%	15 15.0%
	5	114 65.9%	33 19.1%	26 15.0%

Tests of independence statistic significance DF=8 N=1225

Maximum likelihood 14.142 .07 Cramer's PHI= .07

Chi Square 14.455 .07 Contingency Coefficient=.10

BLACKS

RACE OF SUPERVISOR

	Scale	1 (White)	2 (Black)	3 (Other)
SEC	1	80 71.4%	24 21.4%	8 7.1%
	2	62 60.8%	32 31.4%	8 7.8%
	3	70 54.3%	48 37.2%	11 8.5%
	4	12 54.5%	7 31.8%	3 13.6%
	5	19 48.7%	18 46.2%	2 5.1%

Tests of independence statistic significance DF=8 N=404

Maximum likelihood 12.993 .1121 Cramer's PHI=

Chi Square 12.994 .1121 Contingency Coefficient=.1765

TABLE 3-19

BIVARIATE RELATIONSHIP BETWEEN
RACE OF SUPERVISOR AND MAJORITY RACE OF WORK GROUP

WHITES

		RACE OF SUPERVISOR		
	Scale	1 (White)	2 (Black)	3 (Other)
Race of Work Group	1 (White)	754 71.1%	202 19.1%	104 9.8%
	2 (Black)	57 50.4%	43 38.1%	13 11.5%
	3 (Other)	42 53.8%	20 25.6%	16 20.5%

Tests of independence statistic significance DF=4 N=1251

Maximum likelihood	31.270	.001	Cramer's PHI=	.11
Chi Square	35.011	.001	Contingency Coefficient=	.16

BLACKS

		RACE OF SUPERVISOR		
	Scale	1 (White)	22 (Black)	3 (Other)
Race of Work Group	1 (White)	195 65.4%	85 28.5%	18 6.0%
	2 (Black)	33 38.8%	40 47.1%	12 14.1%
	3 (Other)	21 65.6%	7 21.9%	4 12.5%

Tests of independence statistic significance DF=4 N=415

Maximum likelihood	21.896	.001	Cramer's PHI=	.16
Chi Square	22.260	.001	Contingency Coefficient=	.22

TABLE B-20

BIVARIATE RELATIONSHIP BETWEEN
MAJORITY RACE OF WORK GROUP AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

RACE OF WORK GROUP

	Scale	1 (White)	2 (Black)	3 (Other)
SEC	1	192 84.6%	21 9.3%	14 6.2%
	2	202 83.8%	24 10.0%	15 6.2%
	3	410 84.0%	39 8.1%	34 7.0%
	4	83 82.2%	13 12.9%	5 5.0%
	5	145 85.8%	13 7.7%	11 6.5%

Tests of independence statistic significance DF=8 N=1221

Maximum likelihood	3.3538	.91	Cramer's PHI=	.03
Chi Square	3.4992	.89	Contingency Coefficient=	.05

BLACKS

RACE OF WORK GROUP

	Scale	1 (White)	2 (Black)	3 (Other)
SEC	1	84 74.3%	21 18.6%	8 7.1%
	2	76 74.5%	19 18.6%	7 6.9%
	3	93 73.2%	25 19.7%	9 7.1%
	4	15 65.2%	7 30.4%	1 4.3%
	5	22 57.9%	11 28.9%	5 13.2%

Tests of independence statistic significance DF=8 N=403

Maximum likelihood	5.8323	.6660	Cramer's PHI=	.08
Chi Square	6.2833	.6155	Contingency Coefficient=	.1239

TABLE B-21

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND COMMUNITY OF ORIGIN

WHITES

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Community of Origin	1 (Rural)	17 20.5%	18 21.7%	17 20.5%	17 20.5%	14 16.9%
	2 (Town)	19 24.4%	15 19.2%	13 16.7%	13 16.7%	18 23.1%
	3 (Suburb)	5 26.3%	3 15.8%	4 21.1%	5 26.3%	2 10.5%
	4 (City)	2 10.5%	2 10.5%	5 26.3%	3 15.8%	7 36.8%

Tests of independence statistic significance DF=12 N=199

Maximum likelihood	8.749	.72	Cramer's PHI= .12
Chi Square	8.675	.73	Contingency Coefficient=.20

BLACKS

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Community of Origin	1 (Rural)	5 21.7%	6 26.1%	5 21.7%	6 26.1%	1 4.3%
	2 (Town)	8 25.8%	6 19.4%	4 12.9%	8 25.8%	5 16.1%
	3 (Suburb)	3 30.0%	0	4 40.0%	2 20.0%	1 10.0%
	4 (City)	4 26.7%	2 13.3%	2 13.3%	3 20.0%	4 26.7%

Tests of independence statistic significance DF=12 N=79

Maximum likelihood	11.524	.48	Cramer's PHI= .21
Chi Square	10.114	.61	Contingency Coefficient=.34

TABLE B-22

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND REGION OF ORIGIN

WHITES

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Region of Origin	1 (Non-South)	31 24.2%	25 19.5%	22 17.2%	23 18.0%	27 21.1%
	2 (South)	7 12.3%	9 15.8%	15 26.3%	12 21.1%	14 24.6%
	3 (Non U.S.)	2 33.3%	2 33.3%	1 16.7%	1 16.7%	0 0.0%

Tests of independence statistic significance DF=8 N=191

Maximum likelihood	8.908	.35	Cramer's PHI= .14
Chi Square	7.570	.48	Contingency Coefficient=.19

BLACKS

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Region of Origin	1 (Non-South)	5 25.0%	5 25.0%	3 15.0%	3 15.0%	4 20.0%
	2 (South)	12 25.0%	8 16.7%	9 18.8%	14 29.2%	5 10.4%
	3 (Non U.S.)	2 25.0%	1 12.5%	2 25.0%	1 12.5%	2 25.0%

Tests of independence statistic significance DF=8 N=76

Maximum likelihood	4.279	.83	Cramer's PHI= .16
Chi Square	4.269	.83	Contingency Coefficient=.23

TABLE B-23

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
SEC	1	10 19.6%	13 25.5%	8 15.7%	10 19.6%	10 19.6%
	2	8 17.4%	8 17.4%	11 23.9%	11 23.9%	8 17.4%
	3	19 25.3%	13 17.3%	14 18.7%	13 17.3%	16 21.3%
	4	3 25.0%	1 8.3%	0	3 25.0%	5 41.7%
	5	1 9.1%	3 27.3%	4 36.4%	1 9.1%	2 18.2%

Tests of independence statistic significance DF=16 N=195

Maximum likelihood	15.077	.52	Cramer's PHI=
Chi Square	13.338	.65	Contingency Coefficient=.25

BLACKS

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
SEC	1	5 18.5%	7 25.9%	7 25.9%	8 29.6%	0 0.0%
	2	5 27.8%	3 16.7%	3 16.7%	5 27.8%	2 11.1%
	3	6 30.0%	0	3 15.0%	2 10.0%	9 45.0%
	4	1 20.0%	2 40.0%	1 20.0%	1 20.0%	0 0.0%
	5	3 37.5%	1 12.5%	2 25.0%	2 25.0%	0 0.0%

Tests of independence statistic significance DF=16 N=78

Maximum likelihood	33.696	.01	Cramer's PHI= .31
Chi Square	30.029	.02	Contingency Coefficient=.53

TABLE B-24

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND RACE OF SUPERVISOR

WHITES

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	27 19.9%	30 22.1%	26 19.1%	28 20.6%	25 18.4%
	2 (Black)	13 28.9%	7 15.6%	10 22.2%	6 13.3%	9 20.0%
	3 (Other)	3 16.7%	2 11.1%	3 16.7%	4 22.2%	6 33.3%

Tests of independence statistic significance DF=8 N=199

Maximum likelihood	5.891	.66	Cramer's PHI= .12
Chi Square	6.012	.65	Contingency Coefficient=.17

BLACKS

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	10 18.2%	13 23.6%	12 21.8%	13 23.6%	7 12.7%
	2 (Black)	9 45.0%	1 5.0%	3 15.0%	5 25.0%	2 10.0%
	3 (Other)	1 20.0%	1 20.0%	1 20.0%	0	2 40.0%

Tests of independence statistic significance DF=8 N=80

Maximum likelihood	11.884	.16	Cramer's PHI= .27
Chi Square	11.299	.18	Contingency Coefficient=.35

TABLE B-25

BIVARIATE RELATIONSHIP BETWEEN
R's TECHNICAL SKILLS AND MAJORITY RACE OF WORK GROUP

WHITES

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Race of Work Group	1 (White)	36 22.2%	33 20.4%	28 17.3%	33 20.4%	32 19.8%
	2 (Black)	5 20.0%	5 20.0%	3 12.0%	4 16.0%	8 32.0%
	3 (Other)	2 18.2%	1 9.1%	7 63.6%	1 9.1%	0

Tests of independence statistic significance DF=8 N=198

Maximum likelihood	15.951	.04	Cramer's PHI=	.21
Chi Square	17.881	.02	Contingency Coefficient=	.29

BLACKS

		TECHNICAL SKILLS				
	Scale	1	2	3	4	5
Race of Work Group	1 (White)	10 16.7%	13 21.7%	12 20.0%	16 26.7%	9 15.0%
	2 (Black)	9 60.0%	2 13.3%	2 13.3%	1 6.7%	1 6.7%
	3 (Other)	1 16.7%	0	2 33.3%	2 33.3%	1 16.7%

Tests of independence statistic significance DF=8 N=81

Maximum likelihood	14.692	.06	Cramer's PHI=	.30
Chi Square	14.795	.06	Contingency Coefficient=	.39

TABLE B-26

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND COMMUNITY OF ORIGIN

WHITES

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Community of Origin	1 (Rural)	16 19.3%	16 19.3%	14 16.9%	23 27.7%	14 16.9%
	2 (Town)	16 20.5%	15 19.2%	18 23.1%	15 19.2%	14 17.9%
	3 (Suburb)	8 42.1%	4 21.1%	3 15.8%	1 5.3%	3 15.8%
	4 (City)	5 26.3%	3 15.8%	3 15.8%	4 21.1%	4 21.1%

Tests of independence statistic significance DF=12 N=199

Maximum likelihood	9.55	.6549	Cramer's PHI= .12
Chi Square	9.28	.6789	Contingency Coefficient=.21

BLACKS

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Community of Origin	1 (Rural)	4 17.4%	5 21.7%	9 39.1%	3 13.0%	2 8.7%
	2 (Town)	7 22.6%	7 22.6%	5 16.1%	5 16.1%	7 22.6%
	3 (Suburb)	1 10.0%	1 10.0%	2 20.0%	4 40.0%	2 20.0%
	4 (City)	6 40.0%	1 6.7%	1 6.7%	3 20.0%	4 26.7%

Tests of independence statistic significance DF=12 N=79

Maximum likelihood	15.015	.24	Cramer's PHI= .25
Chi Square	15.098	.24	Contingency Coefficient .40

TABLE B-27

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND REGION OF ORIGIN

WHITES

Region of Origin	SUPERVISORY LEADERSHIP Scale 1	2	3	4	5
1 (Non-South)	35 27.3%	22 17.2%	23 18.0%	25 19.5%	23 18.0%
2 (South)	6 10.5%	15 26.3%	11 19.3%	14 24.6%	11 19.3%
3 (Non U.S.)	2 33.3%	1 16.7%	2 33.3%	1 16.7%	0

Tests of independence statistic significance DF=8 N=191

Maximum likelihood	10.982	.20	Cramer's PHI=	.16
Chi Square	9.3598	.31	Contingency Coefficient=	.22

BLACKS

Region of Origin	SUPERVISORY LEADERSHIP Scale 1	2	3	4	5
1 (Non-South)	6 30.0%	5 25.0%	3 15.0%	2 10.0%	4 20.0%
2 (South)	9 18.8%	5 10.4%	14 29.2%	11 22.9%	9 18.8%
3 (Non U.S.)	2 25.0%	2 25.0%	0	2 25.0%	2 25.0%

Tests of independence statistic significance DF=8 N=76

Maximum likelihood	9.7388	.28	Cramer's PHI=	.23
Chi Square	7.9306	.44	Contingency Coefficient=	.31

TABLE B-28

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
SEC	1	10 19.6%	9 17.6%	11 21.6%	13 25.5%	8 15.7%
	2	10 21.7%	8 17.4%	7 15.2%	11 23.9%	10 21.7%
	3	17 22.7%	16 21.3%	14 18.7%	14 18.7%	14 18.7%
	4	3 25.0%	2 16.7%	1 8.3%	5 41.7%	1 8.3%
	5	4 36.4%	2 18.2%	3 27.3%	0 0.0%	2 18.2%

Tests of independence statistic significance DF=16 N=195

Maximum likelihood	11.711	.76	Cramer's PHI .11
Chi Square	9.6056	.89	Contingency Coefficient=.22

BLACKS

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
SEC	1	5 18.5%	6 22.2%	9 33.3%	6 22.2%	1 3.7%
	2	3 16.7%	5 27.8%	3 16.7%	5 27.8%	2 11.1%
	3	4 20.0%	2 10.0%	2 10.0%	2 10.0%	10 50.0%
	4	1 20.0%	1 20.0%	2 40.0%	1 20.0%	0
	5	5 62.5%	0	1 12.5%	1 12.5%	1 12.5%

Tests of independence statistic significance DF=16 N=78

Maximum likelihood	30.130	.02	Cramer's PHI= .32
Chi Square	31.553	.01	Contingency Coefficient=.54

TABLE B-29

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND RACE OF R's SUPERVISOR

WHITES

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	30 22.1%	25 18.4%	29 21.3%	29 21.3%	23 16.9%
	2 (Black)	13 28.9%	11 24.4%	5 11.1%	9 20.0%	7 15.6%
	3 (Other)	2 11.1%	2 11.1%	4 22.2%	5 27.8%	5 27.8%

Tests of independence statistic significance DF=8 N=199

Maximum likelihood	6.9984	.54	Cramer's PHI= .13
Chi Square	6.6945	.57	Contingency Coefficient=.18

BLACKS

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	12 21.8%	7 12.7%	15 27.3%	12 21.8%	9 16.4%
	2 (Black)	4 20.0%	6 30.0%	2 10.0%	4 20.0%	4 20.0%
	3 (Other)	1 20.0%	1 20.0%	1 20.0%	0	2 40.0%

Tests of independence statistic significance DF=8 N=80

Maximum likelihood	7.7805	.45	Cramer's PHI= .21
Chi Square	6.9846	.54	Contingency Coefficient=.28

TABLE B-30

BIVARIATE RELATIONSHIP BETWEEN
R's SUPERVISORY LEADERSHIP AND MAJORITY RACE OF WORK GROUP

WHITES

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Race of Work Group	1 (White)	36 22.2%	33 20.4%	29 17.9%	33 20.4%	31 19.1%
	2 (Black)	7 28.0%	4 16.0%	3 12.0%	8 32.0%	3 12.0%
	3 (Other)	2 18.2%	2 18.2%	4 36.4%	2 18.2%	1 9.1%

Tests of independence statistic significance DF=8 N=198

Maximum likelihood	5.3250	.72	Cramer's PHI= .12
Chi Square	5.7055	.68	Contingency Coefficient=.17

BLACKS

		SUPERVISORY LEADERSHIP				
	Scale	1	2	3	4	5
Race of Work Group	1 (White)	11 18.3%	9 15.0%	14 23.3%	14 23.3%	12 20.0%
	2 (Black)	6 40.0%	5 33.3%	2 13.3%	1 6.7%	1 6.7%
	3 (Other)	1 16.7%	0	2 33.3%	1 16.7%	2 33.3%

Tests of independence statistic significance DF=8 N=81

Maximum likelihood	11.514	.17	Cramer's PHI= .26
Chi Square	10.617	.22	Contingency Coefficient=.34

TABLE B-31

BIVARIATE RELATIONSHIP BETWEEN
R's CRITICAL SKILLS AND COMMUNITY OF ORIGIN

WHITES

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Community of Origin	1 (Rural)	104 24.8%	80 19.1%	94 22.4%	74 17.7%	67 16.0%
	2 (Town)	114 24.7%	78 16.9%	97 21.0%	74 16.0%	99 21.4%
	3 (Suburb)	67 27.7%	35 14.5%	70 28.9%	36 14.9%	34 14.0%
	4 (City)	27 23.5%	16 13.9%	32 27.8%	21 18.3%	19 16.5%

Tests of independence statistic significance DF=12 N=1238

Maximum likelihood 15.803 .20 Cramer's PHI= .07

Chi Square 16.026 .19 Contingency Coefficient=.11

BLACKS

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Community of Origin	1 (Rural)	20 23.5%	14 16.5%	18 21.2%	16 18.8%	17 20.0%
	2 (Town)	43] 27.6%	17 10.9%	23 14.7%	36 23.1%	37 23.7%
	3 (Suburb)	20 34.5%	10 17.2%	12 20.7%	12 20.7%	4 6.9%
	4 (City)	21 18.3%	14 12.2%	33 28.7%	32 27.8%	15 13.0%

Tests of independence statistic significance DF=12 N=414

Maximum likelihood 24.419 .02 Cramer's PHI= .14

Chi Square 23.588 .02 Contingency Coefficient=.23

TABLE B-32

BIVARIATE RELATIONSHIP BETWEEN
R's CRITICAL SKILLS AND REGION OF ORIGIN

WHITES

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Region of Origin	1 (Non-South)	205 24.8%	134 16.2%	212 25.7%	130 15.8%	144 17.5%
	2 (South)	77 27.5%	57 20.4%	46 16.4%	52 18.6%	48 17.1%
	3 (Non U.S.)	17 22.7%	11 14.7%	20 26.7%	11 14.7%	16 21.3%

Tests of independence statistic significance DF=8 N=1180

Maximum likelihood 13.407 .10 Cramer's PHI= .07

Chi Square 12.893 .12 Contingency Coefficient=.10

BLACKS

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Region of Origin	1 (Non-South)	39	17	34	35	22
	2 (South)	50 25.1%	28 14.1%	41 20.6%	45 22.6%	35 17.6%
	3 (Non U.S.)	6 21.4%	3 10.7%	4 14.3%	7 25.0%	8 28.6%

Tests of independence statistic significance DF=8 N=374

Maximum likelihood 4.0838 .85 Cramer's PHI= .08

Chi Square 4.3056 .83 Contingency Coefficient=.11

TABLE B-33

BIVARIATE RELATIONSHIP BETWEEN
R's CRITICAL SKILLS AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
SEC	1	54 24.0%	44 19.6%	43 19.1%	49 21.8%	35 15.6%
	2	57 23.8%	46 19.2%	58 24.3%	34 14.2%	44 18.4%
	3	122 25.8%	70 14.8%	118 24.9%	80 16.9%	83 17.5%
	4	35 35.4%	8 8.1%	25 25.3%	10 10.1%	21 21.2%
	5	38 21.8%	36 20.7%	44 25.3%	26 14.9%	30 17.2%

Tests of independence statistic significance DF=16 N=1210

Maximum likelihood	26.244	.05	Cramer's PHI= .07
Chi Square	25.496	.06	Contingency Coefficient=.14

BLACKS

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
SEC	1	25 22.3%	16 14.3%	19 17.0%	31 27.7%	21 18.8%
	2	25 24.8%	10 9.9%	28 27.7%	19 18.8%	19 18.8%
	3	28 21.9%	21 16.4%	29 22.7%	26 20.3%	24 18.8%
	4	8 34.8%	2 8.7%	4 17.4%	5 21.7%	4 17.4%
	5	12 30.8%	6 15.4%	5 12.8%	12 30.8%	4 10.3%

Tests of independence statistic significance DF=16 N=403

Maximum likelihood	13.953	.60	Cramer's PHI= .09
Chi Square	13.755	.62	Contingency Coefficient=.18

TABLE B-34

BIVARIATE RELATIONSHIP BETWEEN
R's CRITICAL SKILLS AND RACE OF SUPERVISOR

WHITES

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	194 23.1%	142 16.9%	202 24.1%	161 19.2%	140 16.7%
	2 (Black)	80 30.0%	43 16.1%	61 22.8%	21 7.9%	62 23.2%
	3 (Other)	38 28.8%	25 18.9%	31 23.5%	24 18.2%	14 10.6%

Tests of independence statistic significance DF=8 N=1238

Maximum likelihood 32.644 .001 Cramer's PHI= .11

Chi Square 29.809 .001 Contingency Coefficient=.15

BLACKS

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	53 21.8%	31 12.8%	51 21.0%	61 25.1%	47 19.3%
	2 (Black)	36 27.5%	22 16.8%	26 19.8%	25 19.1%	22 16.8%
	3 (Other)	11 32.4%	1 2.9%	8 23.5%	11 32.4%	3 8.8%

Tests of independence statistic significance DF=8 N=408

Maximum likelihood 12.048 .15 Cramer's PHI=

Chi Square 10.642 .22 Contingency Coefficient=.16

TABLE B-35

BIVARIATE RELATIONSHIP BETWEEN
R's CRITICAL SKILLS AND MAJORITY RACE OF WORK GROUPS

WHITES

		CRITICAL SKILLS				
	Scale	1	2	3	4	5
Race of Work Group	1 (White)	259 24.9%	181 17.4%	254 24.4%	176 16.9%	171 16.4%
	2 (Black)	33 29.2%	13 11.5%	20 17.7%	21 18.6%	26 23.0%
	3 (Other)	20 25.3%	15 19.0%	19 24.1%	10 12.7%	15 19.0%

Tests of independence statistic significance DF=8 N=1233

Maximum likelihood	8.9615	.35	Cramer's PHI=	.06
Chi Square	8.7246	.37	Contingency Coefficient=	.08

BLACKS

		CRITICAL SKILLS				
	Scale	1	22	3	4	5
Race of Work Group	1 (White)	60 23.6%	40 13.7%	67 22.9%	61 20.9%	55 18.8%
	2 (Black)	24 28.2%	13 15.3%	8 9.4%	27 31.8%	13 15.3%
	3 (Other)	7 23.3%	2 6.7%	9 30.0%	8 26.7%	4 13.3%

Tests of independence statistic significance DF=8 N=407

Maximum likelihood	14.491	.07	Cramer's PHI=	.13
Chi Square	13.299	.10	Contingency Coefficient=	.18

TABLE 8-36

BIVARIATE RELATIONSHIP BETWEEN
R's EDUCATION AND COMMUNITY OF ORIGIN

WHITES

		EDUCATION		
	Scale	1	2	3
Community of Origin	1 (Rural)	60 14.3%	248 58.9%	113 26.8%
	2 (Town)	69 14.7%	257 54.8%	143 30.5%
	3 (Suburb)	32 13.0%	123 50.0%	91 37.0%
	4 (City)	22 18.6%	52 44.1%	44 37.3%

Tests of independence statistic significance DF=6 N=1254

Maximum likelihood	13.194	.04	Cramer's PHI= .07
Chi Square	13.265	.04	Contingency Coefficient=.10

BLACKS

		EDUCATION		
	Scale	1	2	3
Community of Origin	1 (Rural)	10 11.5%	56 64.4%	21 24.1%
	2 (Town)	22 13.8%	101 63.5%	36 22.6%
	3 (Suburb)	6 10.3%	29 50.0%	23 39.7%
	4 (City)	22 18.0%	65 53.3%	35 28.7%

Tests of independence statistic significance DF=6 N=426

Maximum likelihood	9.3993	.15	Cramer's PHI= .11
Chi Square	9.7522	.13	Contingency Coefficient=.15

TABLE B-37

BIVARIATE RELATIONSHIP BETWEEN
R's EDUCATION AND REGION OF ORIGIN

WHITES

		EDUCATION		
	Scale	1	2	3
Region of Origin	1 (Non-South)	110 13.2%	445 53.5%	276 33.2%
	2 (South)	36 12.6%	171 60.0%	78 27.4%
	3 (Non U.S.)	23 29.5%	32 41.0%	23 29.5%

Tests of independence statistic significance DF=4 N-1194

Maximum likelihood	17.811	.001	Cramer's PHI=
Chi Square	20.652	.001	Contingency Coefficient=.13

BLACKS

		EDUCATION		
	Scale	1	2	3
Region of Origin	1 (Non-South)	24 15.9%	82 54.3%	45 29.8%
	2 (South)	20 9.9%	125 61.6%	58 28.6%
	3 (Non U.S.)	8 26.7%	19 63.3%	3 10.0%

Tests of independence statistic significance DF=4 N=384

Maximum likelihood	11.500	.02	Cramer's PHI= .12
Chi Square	11.064	.03	Contingency Coefficient=.17

TABLE B-38

BIVARIATE RELATIONSHIP BETWEEN
R's EDUCATION AND RACE OF SUPERVISOR

WHITES

		EDUCATION		
	Scale	1	2	3
Race of Supervisor	1 (White)	122 14.3%	467 54.7%	265 31.0%
	2 (Black)	47 17.7%	140 52.8%	78 29.4%
	3 (Other)	16 12.0%	68 51.1%	49 36.8%

Tests of independence statistic significance DF=4 N=1252

Maximum likelihood	4.2427	.37	Cramer's PHI=	.04
Chi Square	4.3511	.36	Contingency Coefficient=	.06

BLACK

		EDUCATION		
	Scale	1	2	3
Race of Supervisor	1 (White)	33 13.2%	157 62.8%	60 24.0%
	2 (Black)	24 17.9%	72 53.7%	38 28.4%
	3 (Other)	2 5.7%	18 51.4%	15 42.9%

Tests of independence statistic significance DF=4 N=419

Maximum likelihood	8.9956	.06	Cramer's PHI=	.10
Chi Square	9.0459	.06	Contingency Coefficient=	.14

TABLE B-39

BIVARIATE RELATIONSHIPS BETWEEN
R's EDUCATION AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

		EDUCATION		
	Scale	1	2	3
SEC	1	43 18.8%	135 59.0%	51 22.3%
	2	44 18.2%	140 57.9%	58 24.0%
	3	60 12.5%	264 55.0%	156 32.5%
	4	17 16.5%	49 47.6%	37 35.9%
	5	12 6.9%	77 44.0%	86 49.1%

Tests of independence statistic significance DF=8 N1229

Maximum likelihood 48.341 .001 Cramer's PHI= .14

Chi Square 48.335 .001 Contingency Coefficient=.19

BLACKS

		EDUCATION		
	Scale	1	2	3
SEC	1	18 15.7%	72 62.6%	25 21.7%
	2	17 16.0%	69 65.1%	20 18.9%
	3	19 14.7%	67 51.9%	43 33.3%
	4	1 4.3%	17 73.9%	5 21.7%
	5	3 7.7%	17 43.6%	19 48.7%

Tests of independence statistic significance DF=8 N=412

Maximum likelihood 20.233 .01 Cramer's PHI= .16

Chi Square 20.319 .01 Contingency Coefficient=.22

TABLE B-40

BIVARIATE RELATIONSHIP BETWEEN
R's EDUCATION AND MAJORITY RACE OF WORK GROUP

WHITES

		EDUCATION		
	Scale	1	2	3
Race of Work Group	1 (White)	150 14.2%	557 52.8%	348 33.0%
	2 (Black)	20 17.9%	68 60.7%	24 21.4%
	3 (Other)	14 17.5%	49 61.3%	17 21.3%

Tests of independence	statistic	significance	DF=4	N=1247
Maximum likelihood	10.982	.03	Cramer's PHI=	.06
Chi Square	10.385	.03	Contingency Coefficient=	.09

BLACKS

		EDUCATION		
	Scale	1	2	3
Race of Work Group	1 (White)	40 13.4%	170 57.0%	88 29.5%
	2 (Black)	14 15.9%	55 62.5%	19 21.6%
	3 (Other)	2 6.3%	23 71.9%	7 21.9%

Tests of independence	statistic	significance	DF=4	N=418
Maximum likelihood	5.1532	.27	Cramer's PHI=	.08
Chi Square	4.8348	.30	Contingency Coefficient=	.11

TABLE B-41

BIVARIATE RELATIONSHIP BETWEEN
TIME IN CIVILIAN JOBS AND COMMUNITY OF ORIGIN

WHITES

Community of Origin	TIME IN CIVILIAN JOBS				
Scale	1	2	3	4	5
1 (Rural)	38 9.0%	38 9.0%	81 19.1%	150 35.4%	117 27.6%
2 (Town)	53 11.4%	50 10.7%	76 16.3%	171 36.7%	116 24.9%
3 (Suburb)	28 11.4%	23 9.3%	51 20.7%	93 37.8%	51 20.7%
4 (City)	10 8.5%	12 10.3%	20 17.1%	34 29.1%	41 35.0%

Tests of independence statistic significance DF=12 N=1253

Maximum likelihood 13.497 .33 Cramer's PHI=

Chi Square 13.570 .33 Contingency Coefficient=.10

BLACKS

Community of Origin	TIME IN CIVILIAN JOBS				
Scale	1	2	3	4	5
1 (Rural)	16 18.8%	9 10.6%	12 14.1%	27 31.8%	21 24.7%
2 (Town)	21 13.5%	17 10.9%	29 18.6%	56 35.9%	33 21.2%
3 (Suburb)	6 10.9%	8 14.5%	9 16.4%	20 36.4%	12 21.8%
4 (City)	20 16.9%	11 9.3%	17 14.4%	45 38.1%	25 21.2%

Tests of independence statistic significance DF=12 N=414

Maximum likelihood 4.8203 .96 Cramer's PHI= .06

Chi Square 4.8519 .96 Contingency Coefficient=.10

TABLE B-42

BIVARIATE RELATIONSHIP BETWEEN
TIME IN CIVILIAN JOBS AND REGION OF ORIGIN

WHITES

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
Region of Origin	1 (Non-South)	91 10.9%	85 10.2%	151 18.1%	315 37.8%	191 22.9%
	2 (South)	21 7.4%	28 9.9%	52 18.3%	96 33.8%	87 30.6%
	3 (Non U.S.)	11 14.1%	5 6.4%	14 17.9%	25 32.1%	23 29.5%

Tests of independence statistic significance DF=8 N=1195

Maximum likelihood	11.874	.15	Cramer's PHI= .07
Chi Square	11.774	.16	Contingency Coefficient=.09

BLACKS

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
Region of Origin	1 (Non-South)	17 11.6%	14 9.5%	27 18.4%	55 37.4%	34 23.1%
	2 (South)	35 17.5%	24 12.0%	29 14.5%	71 35.5%	41 20.5%
	3 (Non U.S.)	4 13.8%	3 10.3%	7 24.1%	8 27.6%	7 24.1%

Tests of independence statistic significance DF=8 N=376

Maximum likelihood	5.2968	.72	Cramer's PHI= .08
Chi Square	5.2992	.72	Contingency Coefficient=.11

TABLE B-43

BIVARIATE RELATIONSHIP BETWEEN
TIME IN CIVILIAN JOBS AND SOCIO-ECONOMIC STATUS (SEC)

WHITES

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
SEC	1	20 8.8%	19 8.3%	34 14.9%	73 32.0%	82 36.0%
	2	27 11.2%	23 9.5%	50 20.7%	86 35.7%	55 22.8%
	3	52 10.8%	45 9.3%	82 17.0%	189 39.1%	115 23.8%
	4	11 11.0%	13 13.0%	19 19.0%	32 32.0%	25 25.0%
	5	17 9.8%	20 11.5%	37 21.3%	60 34.5%	40 23.0%

Tests of independence statistic significance DF=16 N=1226

Maximum likelihood	19.787	.23	Cramer's PHI= .06
Chi Square	20.759	.18	Contingency Coefficient=.12

BLACKS

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
SEC	1	21 18.6%	9 8.0%	15 13.3%	38 33.6%	30 26.5%
	2	15 14.7%	14 13.7%	18 17.6%	40 39.2%	15 14.7%
	3	18 14.1%	14 10.9%	18 14.1%	49 38.3%	29 22.7%
	4	3 13.7%	1 4.5%	5 22.7%	6 27.3%	7 31.8%
	5	3 8.6%	3 8.6%	8 22.9%	13 37.1%	8 22.9%

Tests of independence statistic significance DF=16 N=400

Maximum likelihood	13.202	.65	Cramer's PHI= .08
Chi Square	12.878	.68	Contingency Coefficient=.17

TABLE B-44

BIVARIATE RELATIONSHIP BETWEEN
TIME IN CIVILIAN JOBS AND RACE OF SUPERVISOR

WHITES

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	94 11.0%	69 8.1%	169 19.8%	309 36.3%	211 24.8%
	2 (Black)	20 7.5%	36 13.5%	41 15.4%	99 37.1%	71 26.6%
	3 (Other)	15 11.3%	16 12.0%	18 13.5%	40 30.1%	44 33.1%

Tests of independence statistic significance DF=8 N=1252

Maximum likelihood	17.984	.02	Cramer's PHI= .08
Chi Square	18.090	.02	Contingency Coefficient=.11

BLACK

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
Race of Supervisor	1 (White)	41 16.6%	19 7.7%	39 15.8%	89 36.0%	59 23.9%
	2 (Black)	16 12.5%	17 13.3%	24 18.8%	44 34.4%	27 21.1%
	3 (Other)	7 21.9%	7 21.9%	2 6.3%	11 34.4%	5 15.6%

Tests of independence statistic significance DF=8 N=407

Maximum likelihood	11.831	.15	Cramer's PHI= .12
Chi Square	12.025	.15	Contingency Coefficient=.16

TABLE B-45

BIVARIATE RELATIONSHIP BETWEEN
TIME IN CIVILIAN JOBS AND MAJORITY RACE OF WORK GROUP

WHITES

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
Race of Work Group	1 (White)	106 10.0%	103 9.8%	193 18.3%	385 36.5%	268 25.4%
	2 (Black)	12 10.6%	17 15.0%	26 23.0%	33 29.2%	25 22.1%
	3 (Other)	11 13.8%	3 3.8%	9 11.3%	29 36.3%	28 35.0%

Tests of independence statistic significance DF=8 N=1248

Maximum likelihood	15.986	.04	Cramer's PHI=
Chi Square	15.472	.05	Contingency Coefficient=.11

BLACKS

		TIME IN CIVILIAN JOBS				
	Scale	1	2	3	4	5
Race of Work Group	1 (White)	47 16.0%	27 9.2%	48 16.4%	99 33.8%	72 24.6%
	2 (Black)	10 12.0%	12 14.5%	17 20.5%	30 36.1%	14 16.9%
	3 (Other)	7 23.3%	5 16.7%	1 3.3%	11 36.7%	6 20.0%

Tests of independence statistic significance DF=8 N=406

Maximum likelihood	11.703	.16	Cramer's PHI= .11
Chi Square	10.429	.23	Contingency Coefficient=.15

TABLE B-46

BIVARIATE RELATIONSHIP BETWEEN
TECHNOLOGICAL SOPHISTICATION AND ROLE INTERDEPENDENCE

WHITES

		TECHNOLOGICAL SOPHISTICATION				
	Scale	1	2	3	4	5
Role Interdependence	1	94 23.2%	101 24.9%	122 30.0%	34 8.4%	55 13.5%
	2	36 16.7%	52 24.1%	62 28.7%	29 13.4%	37 17.1%
	3	37 13.9%	79 29.7%	85 32.0%	32 12.0%	33 12.4%
	4	42 19.8%	54 25.5%	55 25.9%	31 14.6%	30 14.2%
	5	25 16.2%	39 25.3%	44 28.6%	15 9.7%	31 20.1%

Tests of independence statistic significance DF=16 N=1254

Maximum Likelihood	23.800	.0940	Cramer's PHI= .0692
Chi Square	23.999	.0895	Contingency Coefficient=.1370

BLACKS

		TECHNOLOGICAL SOPHISTICATION				
	Scale	1	2	3	4	5
Role Interdependence	1	34 19.0%	41 22.9%	62 34.6%	17 9.5%	25 14.0%
	2	13 17.8%	22 30.1%	18 24.7%	7 9.6%	13 17.8%
	3	16 21.6%	22 29.7%	22 29.7%	5 6.8%	9 12.2%
	4	18 35.3%	9 17.6%	12 23.5%	4 7.8%	8 15.7%
	5	2 5.9%	8 23.5%	15 44.1%	6 17.6%	3 8.8%

Tests of independence statistic significance DF=16 N=411

Maximum Likelihood	21.711	.1528	Cramer's PHI= .1151
Chi square	21.774	.1506	Contingency Coefficient=.2243

TABLE B-47

BIVARIATE RELATIONSHIP BETWEEN
TECHNOLOGICAL SOPHISTICATION AND SOCIALIZATION

WHITES

		TECHNOLOGICAL SOPHISTICATION				
	Scale	1	2	3	4	5
Socialization	1	89 22.6%	115 29.3%	128 32.6%	39 9.9%	22 5.6%
	2	47 20.6%	63 27.6%	70 30.7%	20 8.8%	28 12.3%
	3	39 18.8%	54 26.1%	63 30.4%	23 11.1%	28 13.5%
	4	37 16.8%	52 23.6%	56 25.5%	31 14.1%	44 20.0%
	5	24 11.4%	42 19.9%	52 24.6%	28 13.3%	65 30.8%

Tests of independence statistic significance DF=16 N=1259

Maximum Likelihood	87.319	.0000	Cramer's PHI .1323
Chi square	88.085	.0000	Contingency Coefficient=.2557

BLACKS

		TECHNOLOGICAL SOPHISTICATION				
	Scale	1	2	3	4	5
Socialization	1	22 26.5%	24 28.9%	27 32.5%	6 7.2%	4 4.8%
	2	14 20.0%	23 32.9%	19 27.1%	3 4.3%	11 15.7%
	3	13 15.3%	22 25.9%	31 36.5%	8 9.4%	11 12.9%
	4	19 24.1%	16 20.3%	29 36.7%	8 10.1%	7 8.9%
	5	16 16.7%	16 16.7%	24 25.0%	15 15.6%	25 26.0%

Tests of independence statistic significance DF=16 N=413

Maximum Likelihood	35.472	.0034	Cramer's PHI= .1462
Chi square	35.333	.0036	Contingency Coefficient=.2807

TABLE B-48

BIVARIATE RELATIONSHIP BETWEEN
TECHNOLOGICAL SOPHISTICATION AND ACCOMMODATION

WHITES

		TECHNOLOGICAL SOPHISTICATION				
	Scale	1	2	3	4	5
Accommodation	1	77 22.6%	94 27.6%	93 27.4%	38 11.2%	38 11.2%
	2	51 22.1%	65 28.1%	63 27.3%	22 9.5%	30 13.0%
	3	55 18.4%	70 23.4%	98 32.8%	37 12.4%	39 13.0%
	4	31 13.6%	59 25.9%	78 34.2%	26 11.4%	34 14.9%
	5	21 13.2%	38 23.9%	36 22.6%	18 11.3%	46 28.9%

Tests of independence statistic significance DF=16 N=1257

Maximum Likelihood	40.736	.0006	Cramer's PHI= .0941
Chi square	44.516	.0002	Contingency Coefficient=.1849

BLACKS

		TECHNOLOGICAL SOPHISTICATION				
	Scale	1	2	3	4	5
Accommodation	1	7 11.1%	22 34.9%	24 38.1%	3 4.8%	7 11.1%
	2	10 17.5%	16 28.1%	18 31.6%	8 14.0%	5 8.8%
	3	24 24.0%	28 28.0%	29 29.0%	9 9.0%	10 10.0%
	4	20 19.0%	24 22.9%	33 31.4%	11 10.5%	17 16.2%
	5	21 24.1%	12 13.8%	26 29.9%	9 10.3%	19 21.8%

Tests of independence statistic significance DF=16 N=412

Maximum Likelihood	23.543	.1000	Cramer's PHI= .1174
Chi square	22.703	.1219	Contingency Coefficient=.2285

TABLE B-49

BIVARIATE RELATIONSHIP BETWEEN
ROLE INTERDEPENDENCE AND SOCIALIZATION

WHITES

		ROLE INTERDEPENDENCE				
	Scale	1	2	3	4	5
Socialization	1	107 27.0%	53 13.4%	87 22.0%	84 21.2%	65 16.4%
	2	80 35.1%	39 17.1%	50 21.9%	31 13.6%	28 12.3%
	3	75 35.2%	42 19.7%	40 18.8%	38 17.8%	18 8.5%
	4	71 32.0%	40 18.0%	48 21.6%	35 15.8%	28 12.6%
	5	77 36.7%	45 21.4%	42 20.0%	29 13.8%	17 8.1%

Tests of independence	statistic	significance	DF=16	N=1269
Maximum Likelihood	31.700	.0109	Cramer's PHI=	.0785
Chi square	31.304	.0123	Contingency Coefficient=	.1552

BLACKS

		ROLE INTERDEPENDENCE				
	Scale	1	2	3	4	5
Socialization	1	32 37.2%	14 16.3%	16 18.6%	14 16.3%	10 11.6%
	2	29 40.8%	14 19.7%	14 19.7%	9 12.7%	5 7.0%
	3	40 46.0%	14 16.1%	16 18.4%	9 10.3%	8 9.2%
	4	40 48.8%	12 14.6%	17 20.7%	7 8.5%	6 7.3%
	5	45 45.5%	20 20.2%	14 14.1%	14 14.1%	6 6.1%

Tests of independence	statistic	significance	DF=16	N=425
Maximum Likelihood	8.7631	.9228	Cramer's PHI=	.0716
Chi square	8.7095	.9249	Contingency Coefficient=	.1417

TABLE B-50

BIVARIATE RELATIONSHIP BETWEEN
ROLE INTERDEPENDENCE AND ACCOMMODATION

WHITES

		ROLE INTERDEPENDENCE				
	Scale	1	2	3	4	5
Accommodation	1	112 32.7%	41 12.0%	68 19.8%	55 16.0%	67 19.5%
	2	68 29.2%	39 16.7%	45 19.3%	51 21.9%	30 12.9%
	3	94 31.0%	56 18.5%	63 20.8%	55 18.2%	35 11.6%
	4	89 39.0%	45 19.7%	45 19.7%	23 14.5%	16 7.0%
	5	46 28.8%	38 23.8%	46 28.8%	23 14.4%	7 4.4%

Tests of independence statistic significance DF=16 N=1267

Maximum Likelihood	54.780	.0000	Cramer's PHI= .1032
Chi square	54.001	.0000	Contingency Coefficient=.2022

BLACKS

		ROLE INTERDEPENDENCE				
	Scale	1	2	3	4	5
Accommodation	1	24 36.9%	10 15.4%	14 21.5%	9 13.8%	8 12.3%
	2	23 40.4%	10 17.5%	13 22.8%	7 12.3%	4 7.0%
	3	47 45.2%	20 19.2%	17 16.3%	13 12.5%	7 6.7%
	4	47 43.9%	18 16.8%	19 17.8%	13 12.1%	10 9.3%
	5	46 51.1%	16 17.8%	13 14.4%	10 11.1%	5 5.6%

Tests of independence statistic significance DF=16 N=423

Maximum Likelihood	7.0967	.9714	Cramer's PHI= .0654
Chi square	7.2465	.9682	Contingency Coefficient=.1298

TABLE B-51

BIVARIATE RELATIONSHIP BETWEEN
SOCIALIZATION AND ACCOMMODATION

WHITES

		SOCIALIZATION				
	Scale	1	2	3	4	5
Accommodation	1	208 60.6%	58 16.9%	39 11.4%	24 7.0%	14 4.1%
	2	81 34.6%	58 24.8%	34 14.5%	36 15.4%	25 10.7%
	3	73 24.0%	75 24.7%	70 23.0%	46 15.1%	40 13.2%
	4	28 12.2%	34 14.8%	49 21.3%	71 30.9%	48 20.9%
	5	5 3.1%	5 3.1%	20 12.4%	46 28.6%	85 52.8%

Tests of independence statistic significance DF=16 N=1272

Maximum Likelihood	440.80	0.	Cramer's PHI= .2970
Chi square	448.88	0.	Contingency Coefficient=.5107

BLACKS

		SOCIALIZATION				
	Scale	1	2	3	4	5
Accommodation	1	29 43.3%	18 26.9%	10 14.9%	6 9.0%	4 6.0%
	2	23 39.7%	14 24.1%	9 15.5%	9 15.5%	3 5.2%
	3	20 19.2%	22 21.2%	31 29.8%	15 14.4%	16 15.4%
	4	14 12.8%	11 10.1%	23 21.1%	32 29.4%	29 26.6%
	5	2 2.2%	7 7.9%	13 14.6%	21 23.6%	46 51.7%

Tests of independence statistic significance DF=16 N=427

Maximum Likelihood	133.47	0.	Cramer's PHI= .2761
Chi square	130.24	0.	Contingency Coefficient=.4834

REFERENCES

Adams, Arvil, V. Black-white occupational differentials in southern metropolitan employment. Journal of Human Resources, 1972, VII (4), 500-517.

Adorno, T.W., Frenkel-Brunswik, E., Levinson, D.J., & Sanford, R.N. The Authoritarian Personality. New York: Harper, 1950.

Allport, G.W. The Nature of Prejudice. Reading, Mass.: Addison-Wesley Publishing Co. Inc., 1954.

Andrews, F.M., Morgan, J.N., Sonquist, J.A., & Klem, L. Multiple Classification Analysis. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1973 (second edition).

Argyris, C. Integrating the Individual and the Organization. New York: John Wiley & Sons, Inc., 1964.

Arrow, K. The theory of discrimination. In Orley Ashenfelter and Albert Rees, Discrimination in Labor Markets, Princeton University Press, 1973.

Ashenfelter, O. Minority employment Patterns, 1966. Princeton University, Industrial Relations Section, 1968.

Ashenfelter, O. Discrimination and trade unions. In Orley Ashenfelter and Albert Rees (ed), Discrimination in Labor Markets, Princeton University Press, 1973, 88-112.

Barnowe, J. T., Mangione, T.W., & Quinn, R. Quality of employment indicators, occupational classifications, and demographic characteristics as predictors of job satisfaction. In R. P. Quinn and T. W. Mangione, The 1969-70 Survey of Working Conditions, Ann Arbor: Institute for Social Research, University of Michigan, 1973.

Barrett, J.H. Individual Goals and Organization Objectives. Ann Arbor: The Institute for Social Research, University of Michigan, 1970.

Becker, G.S. The Economics of Discrimination. Chicago, Ill.: The University of Chicago Press, 1957.

Blau, P.M., & Schoenherr, R.A. The Structure of Organizations. New York: Basic Books, 1971.

Blinder, A.S. Wage discrimination: Reduced form and structural estimates. The Journal of Human Resources, 1973, VIII (4), 436-455.

Bloom, R. & Barry, J. The determinants of work attitudes among Negroes. Journal of Applied Psychology, 1967, 291-294.

Blumer, H. Industrialization and race relations. In G. Hunter (ed.), Industrialization and Race Relations, Oxford University Press, 1965.

Borus, J.F., Stanton, M.D., Fiman, B.G., & Dowd, A.F. Racial perceptions in the Army: An approach. American Journal of Psychiatry, 1972, 128 (May), 1369-1374.

Bowers, D.G. Navy Manpower: Values, Practices, and Human Resource requirements. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, June, 1975.

Bowman, G. The Image of a Promotable Person in Business Enterprise. Unpublished Dissertation, New York University, 1962.

Bowman, G. What helps or harms promotability. Harvard Business Review, January/February, 1964.

Cammann, C., Quinn, R.P., Beehr, T.A., & Gupta, N. Effectiveness in Work Roles Report 1: Validating Quality of Employment Indicators. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1974.

Campbell, A. White Attitudes Toward Black People. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1971.

Clark, K.B. Dark Getto. Harper & Row, 1965.

Coates, C.H. & Pellegrin, R.J. Executives and supervisors: A situational theory of differential occupational mobility. Social Forces, 1956, 35 (2), 121-126.

Coch, L. & French, J.R.P., Jr. Overcoming resistance to change. Human Relations, 1948, I (4), 512-532.

Cohen, J. Multiple regression as a general data analytic system. Psychological Bulletin, 1968, 70, 426-443.

Corazzini, A.J. Equality of employment opportunity in the federal white-collar civil service. Journal of Human Resources, 1972, VII (4), 424-445.

Cutright, P. Occupational inheritance: A cross-national analysis. American Journal of Sociology, 1968, 73 (4), 400-416.

Dalton, M. Informal factors in career achievement. American Journal of Sociology, 1951, 56, 407-415.

Dalton, M. Men Who Manage. New York: Wiley, 1959.

Davis, L.E. & Taylor, J.C. (eds.) Design of Jobs. Baltimore: Penguin Books, Inc., 1972.

Doeringer, P.B. & Piore, M.J. Internal Labor Markets and Manpower Analysis. Lexington: D.C. Heath, 1971.

Dollard, J., Doob, L., Miller, N.E., Mowrer, D.H., & Sears, R.R. Frustration and Aggression. New Haven: Yale University Press, 1939.

Drexler, J.A., Jr. Technological sophistication and organizational practices. Technical Report to the Office of Naval Research, Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1973.

Duncan, O.D. Discrimination against Negroes. The Annals, 1967, 371, 85-103.

Duncan, O.D. Inheritance of poverty or inheritance of race. In Moynihan, D.P. (ed), On Understanding Poverty. New York: Basic Books, Inc., 1968.

Duncan, O.D. Inequality and opportunity. Population Index, 1969, 35, 361-366.

Fogel, W. The effect of low educational attainment and discrimination on the occupational status of minorities. Conference on Education and Training of Racial Minorities (Madison, Wisconsin), 1967.

Groves, R.M. Intra-employer status mobility: The role of the firms in wage and occupational achievement. Doctoral Dissertation, Ann Arbor, Michigan: University of Michigan, 1975.

Gupta, N. The impact of performance-contingent rewards on job satisfaction: Direct and Indirect Effects. Unpublished Doctoral Dissertation, Ann Arbor, Michigan: University of Michigan, 1975.

Gurin, P. & Katz, D. Motivation and aspiration in the Negro College. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1966.

Gwartney, J.D. Discrimination, achievement, and payoffs of a college degree. The Journal of Human Resources, 1972, VII (1), 60-70.

Hackman, J.R. & Lawler, E.E., III. Employee reactions to job characteristics. Journal of Applied Psychology Monographs, 1971, 55, 259-286.

Hage, J. & Aiken, M. Relationship of centralization to other structural properties. Administrative Science Quarterly, 1967, XII, 72-92.

Hall, R.H. Some organizational considerations in the professional-organizational relationship. Administrative Science Quarterly, 1967, XII, 461-478.

Hanoch, G. An economic analysis of earnings and schooling. Journal of Human Resources, 1967, 2, 310-329.

Hansen, W.L., Weisbrod, Burton A., & Scanlon, W.J. Schooling and earnings of low achievers. American Economic Review, 1970, 60, 409-418.

Harding, J., Proshansky, H., Kutner, B., & Chein, I. Prejudice and ethnic relations. In Lindzey and Aronson (eds.), Handbook of Social Psychology, Reading, Mass.: Addison-Wesley Publishing Co., pp. 1-76.

Hausser, D.L. Static and dynamic determinants of organizational functioning: A model and empirical evaluation. Unpublished Doctoral Dissertation, Ann Arbor, Mich.: University of Michigan, 1975.

Herzberg, F. Work and the Nature of Man. Cleveland: World Publishing Co., 1966.

Hickson, D.J., Pugh, D.S., Pheysey, D.C. Operations technology and organizational structure: An empirical reappraisal. Administrative Science Quarterly, 1969, XIV, 378-397.

Hill, W. H. & Fox, W. M. Black and white marine squad leaders perceptions of racially mixed squads. Academy of Management Journal, 1973, 16 (4), 680-686.

Hunt, J. Intelligence and Experience. Ronald Press, 1951.

Irvine, S. Tests as inadvertent sources of discrimination in personnel decisions. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books, Ltd., 1973.

Irvine, S. Negro performance in interracial situations. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books, Ltd., 1973.

Jenson, A. How much can we boost I.Q. and scholastic achievement? Harvard Educational Review, 1969, 39 (1).

Jones, J.M. Prejudice and Racism. Reading, Mass.: Addison-Wesley Publishing Co., 1972.

Katz, I., et al. Effect upon Negro digit-symbol performance of anticipated comparison with whites and with other Negroes. Journal of Abnormal and Social Psychology, 1964, 69, 77-83.

Katz, I. Alternatives to a personality deficit interpretation of Negro under-achievement. In Watson, P. (ed), Psychology and Race. Baltimore: Penguin Books, Ltd., 1973.

Katz, I. Negro performance in interracial situations. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books, Ltd., 1973.

Katz, I. & Gurin, P. (eds.), Race and the Social Sciences. New York: Basic Books, Inc., 1969.

Killingsworth, C.C. Jobs and income for Negroes. In Katz, I. and Gurin, P. (eds.), Race and the Social Sciences, New York: Basic Books, Inc., 1969, 194-273.

Kirkpatrick, J.J. Occupational aspirations, opportunities, and barriers. In Miller, K.S. and Dreger, R.M. (eds.), Comparative Studies of Blacks and Whites in the United States. New York: Seminar Press, 1973.

Knowles, L.L. & Prewitt, K. (eds.), Institutional Racism in America. Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1969.

Lane, A. Occupational mobility in six cities. American Sociological Review, 1968, XXXIII, 740-749.

Lawler, E.E., III. Motivation in Work Organizations. Monterey, Calif.: Brooks/Cole Publishing Co., 1973.

Levitin, T., Quinn, R.P., & Staines, G.L. Sex discrimination against the American working woman. American Behavioral Scientist, 1971, 15 (2), 1-19.

Likert, R. New Patterns of Management. New York: McGraw-Hill, 1960.

Likert, R. The Human Organization. New York: McGraw-Hill, 1967.

Lipset, S.M. & Zetterberg, H. A theory of social mobility. In Bendix, R and Lipset, S. (eds.), Class, Status, and Power. New York: Free Press, 1966, pp. 561-573.

Lohman, J. D. & Reitzes, D.C. Note on race relations in mass society. American Journal of Sociology, 1952, 58, 240-246.

McGregor, D. The Human Side of Enterprise. New York: McGraw-Hill, 1960.

Marrow, A.J., Bowers, D.G., & Seashore, S.E. Management by Participation. New York: Harper & Row, 1967.

Martin, N.H., & Strauss, A.L. Patterns of mobility within industrial organizations. The Journal of Business, 1956, 29 (2), 101-110.

Merton, R.K. Discrimination and the American creed. In MacIver, R.M. (ed.), Discrimination and National Welfare. New York: Harper & Row, 1949.

Meyer, M.W. Two authority structures of bureaucratic organization. Administrative Science Quarterly, 1968, XIII, 211-228.

Michaelson, L.K. A methodology for the studies of the impact of organizational values, preferences, and practices on the all-volunteer Navy. Technical Report to the Office of Naval Research. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1973.

Miller, S.M. Comparative social mobility. Current Sociology, 1960, IX (1), 1-89.

Mohr, L. Organizational technology and organizational structure. Administrative Science Quarterly, 1971, 16, 444-459.

Moskos, C.C., Jr. The American dilemma in uniform: Race in the armed forces. The Annals, 1973, 406, 94-106.

Mount, R.I. & Bennett, R.E. Economic and social factors in income inequality: Race and sex discrimination and status as elements in wage differentials. American Journal of Economics and Sociology, 1975, 34 (2), 161-174.

Mueller, E. Technological Advance in an Expanding Economy: Its Impact on a Cross-Section of the Labor Force. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1969.

Oaxaca, R. Sex discrimination in wages. In Ashenfelter, O. and Rees, A. (eds.), Discrimination in Labor Markets. Princeton, N.J.: Princeton University Press, 1973.

O'Neill, D.M. The effect of discrimination on earnings: Evidence from military test score results. The Journal of Human Resources, 1970, V (4), 475-486.

Ornstein, M.D. & Rossi, P.H. Going to work: An analysis of the determinants and consequences of entry into the labor force. Report No. 75, Johns Hopkins University, Center for the Study of the Organization of Schools, August 1970, mimeo.

Parker, W.S., Jr. Differences in organizational practices and preferences in the Navy by race. Technical Report to the Office of Naval Research. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1974.

Pecorella, P.A. Predictors of race discrimination in the Navy. Technical Report to the Office of Naval Research. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, February, 1975.

Pettigrew, T.F. A Profile of the Negro American. Van Nostrand, 1964.

Pettigrew, T.F. Social evaluation theory: Convergences and applications. In Levine, D. (ed.), Nebraska Symposium on Motivation. Lincoln: University of Nebraska Press, 1967.

Pettigrew, T.F. The Negro and Education. In Katz, I. and Gurin, P. (eds.), Race and the Social Sciences. New York: Basoc Books, Inc., 1969.

Pettigrew, T. Racially separate or together? Journal of Social Issues, 1969(a), January, 43-69.

Powell, R.M. Elements of executive promotion. California Management Review, 1963, 6, 83-90.

Pugh, D.S., Hickson, D.J., Hinings, C.R., & Turner, C. Dimensions of organizational structure. Administrative Science Quarterly, 1968, XIII, 211-228.

Quinn, R.P. What workers want: General descriptive statistics and demographic correlates. In Survey of Working Conditions, Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1973.

Quinn, R.P. & Mangione, T.W. Survey of Working Conditions. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1973.

Richmond, A.H. Colour Prejudice in Britain. Routledge & Kegan, P., 1954; reprinted, Negro University Press, Westport, 1971.

Richmond, A.H. Race relations and behaviors in reality. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books, Ltd., 1973.

Rosenthal, R. & Jacobson, L. Pygmalian in the Classroom. Holt, Rinehart, & Winston, 1968.

Samuelson, P. Economics. New York: McGraw, 1961.

Sanford, N. The roots of prejudice: Emotional dynamics. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books Ltd., 1973.

Schein, E.H. Management development as a process of influence. Industrial Management Review, 1961, 1, 55-97.

Schein, E.H. Organizational Socialization and the Profession of Management. Cambridge, Mass.: Massachusetts Institute of Technology, 1967.

Siegel, P.M. On the cost of being a Negro. Sociological Inquiry, 1965, XXXV, 41-57.

Simon, H. Administrative Behavior. New York: Macmillan, 1957, second edition.

Simpson, G.E. & Yinger, J.M. Racial and Cultural Minorities: An Analysis of Prejudice and Discrimination. New York: Harper, 1965 (third edition).

Simpson, G.E. & Yinger, J.M. Techniques for reducing prejudice: Changing the situation. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books Ltd., 1973.

Spencer, G. Effects of participation on satisfaction and productivity: A field experiment. Unpublished Doctoral Dissertation. Ann Arbor, Michigan: University of Michigan, 1975.

Spencer, G. A methodology for the studies of the impact of organizational values, preferences, and practices on the United States Army. Technical Report. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1975.

Staines, G., Borixsein, S., & ABradford, A. Alternative methods for measuring sex discrimination in occupational incomes. In Survey of Working Conditions. Ann Arbor, Michigan: Institute for Social Research, University of Michigan, 1973.

Stewman, S. Two markov models of open systems occupational mobility: Underlying conceptualizations and empirical tests. American Sociological Review, 1975, XL, 298-321.

Strauss, R.P. Industrial patterns of male negro employment. Journal of Human Resources, 1972, VII (1), 111-118.

Taylor, J.C. Advanced Technology and Work Group Behavior in a Setting of Planned Social Change: A Replication Study. Ann Arbor, Michigan: Institute for Social Research, 1970.

Taylor, J.C. Technology and Planned Organizational Change. Ann Arbor, Michigan: Institute for Social Research, 1971.

Taylor, J.C. & Bowers, D.G. Survey of Organizations. Ann Arbor, Michigan: Institute for Social Research, 1972.

Thomas, P.J., Thomas, E.D., & Ward, S.W. Perceptions of Discrimination in Non-Judicial Punishment. San Diego, Calif.: Naval Personnel Research and Development Center, NPRDCTR 74-22, June, 1974.

Thompson, J.D. Organizations in Action. New York: McGraw-Hill, 1967.

Triandis, H. Interpersonal attitudes and behavior in race relations. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books Ltd., 1973.

Turner, R.H. Foci of discrimination in the employment of non-whites. American Journal of Sociology, 1952, 58, 247-256.

Vroom, V.H. Work and Motivation. New York: Wiley, 1964.

Vroom, V.H. & Deci, E.L. Introduction: An overview of work motivation. In Vroom & Deci (eds.), Management and Motivations. Baltimore: Penguin Books Ltd., 1970.

Watson, P. Race and intelligence through the looking glass. In Watson, P. (ed.), Psychology and Race. Baltimore: Penguin Books Ltd., 1973.

Weiss, R.D. The effect of education on the earnings of blacks and whites. Review of Economics and Statistics, 1970, 52, 150-159.

Welch, F. Labor market discrimination: An interpretation of income differences in the rural south. Journal of Political Economy, 1967, 75.

White, H.C. Chains of Opportunity. Cambridge, Mass.: Harvard, 1970.

Wirth, L. Contemporary Social Problems. Chicago: University of Chicago Press, 1939.

Woodward, J. Industrial Organization: Theory and Practice. London: Oxford University Press, 1965.

Word, C.O., Zanna, M.P., & Cooper, J. The nonverbal mediation of self-fulfilling prophecies in interracial interaction. Journal of Experimental Social Psychology, 1974, 10, 109-120.

Wright, P.L. The Colored Worker in British Industry. Oxford: Oxford University Press, 1968.