ETHNIC-RADICAL ATTITUDES IMAGES, AND BEHAVIOR BY VERBAL ASSOCIATIONS

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The investigations focused on two main subject areas. The first series of experiments explored the validity of verbal association based inferences as an attitude measure and predictor of behavior. When compared with paper-and-pencil methods, the association based attitude index (EDI) showed high positive correlation as a group measure and medium high correlation as an individual measure. None of the attitude measures--association based EDI (indirect method), attitude questionnaire (direct), or "bogus pipeline" (indirect)--provided for prediction of volunteering

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behavior in a real life situation involving strong demand characteristics and situational constraints. Participatory and volunteering behavior explored by a questionnaire in three contexts suggested varying relationships with attitude measures producing correlations ranging from .0 to .8. This broad variation in predictive power is an apparent function of the varying demand and constraint characteristics of the situation. When attitude data were used in combination with association based priority data which show the relative importance of an attitudinal issue, the accuracy of predictions generally increased.

A second series of experiments explored the interrelationship of affective-evaluative components and perceptual-cognitive components as inferred from verbal association data. Racial images and the perception of the social environment were studied comparing the evaluations and perceptions by Black and White subjects. Parallel to attitudinal profiles, image profiles were constructed which map the groups' relationship to their social environment in several relevant dimensions.

In general the value of the association data lies in their unique potential to provide valid attitudinal and perceptual data simultaneously with spontaneity and in true reflection of their actual saliences.

ETHNIC-RACIAL ATTITUDES, IMAGES, AND BEHAVIOR BY VERBAL ASSOCIATIONS

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I. INTRODUCTION

The investigations described in this report aim at the development and testing of a technique for assessing attitudes, perceptions, and beliefs on an inferential basis. The method, Associative Group Analysis (AGA), relies on the analysis of verbal associations produced by representative sample groups. Its applicability in the field of interpersonal and race relations follows from its unstructured, non-directive, inferential nature. Instead of focusing on what appears to be important to the investigator, the free verbal association technique has a distinct potential to reveal salient concerns and characteristics of a particular selected group—social, occupational, ethnic-racial, etc.

The present investigations focus specifically on the potential of the verbal association based approach to provide empirical data on psychocultural characteristics—attitudes and perceptions—with direct relevance to interpersonal and race relations.

In contemporary social tensions and conflicts, the role of psychocultural factors has gained increasing recognition. In our pluralistic society, peace and progress are clearly a function of mutual understanding between the mainstream and social groups—ethnic, cultural, and racial—in marginal or minority positions. In technical terms, such an understanding requires up-to-date knowledge of certain psychological characteristics—meanings, attitudes, and beliefs—especially those

The authors wish to express their gratitude to Dr. Robert Williams, Chairman of the Department of Psychology, D.C. Teachers College, and to Dr. Harold Sigall, Professor of Psychology, University of Maryland, for their valuable help and contribution. Dr. Williams' participation was particularly valuable in the conceptualization and execution of the interracial comparative part of the study. Dr. Sigall, through his direct involvement and the help of his research assistants and his instrument, made it possible to include the Bogus Pipeline paradigm into this study.

directly involved in relations between different groups of people. Such knowledge is desirable for more than one reason.

First, these differences are frequently more serious sources of conflict than differences in concrete, material factors.

Second, reduction and management of conflict require effective communication, behavior adaptation, and adequate institutional measures. Moreover, to be effective these measures must be carefully adjusted to the actual psychological characteristics of the groups involved.

Third, psychological factors contributing to the group conflict are frequently overlooked; and in other cases, the available knowledge is biased by misconceptions and stereotypes. Timely, reliable information is not readily available because of the evasive, intangible nature of the subject matter—perceptions, meanings, beliefs, and frames of reference.

The need for mutual understanding in a pluralistic society is especially great. Strangely enough, there is a frequent overemphasis on differences coupled with a lack of willingness or capability to see the world from the angle of a person with a different socioeconomic position or ethnic-racial background.

The task of assessing a group's frame of reference and its system of dominant beliefs is complex and poses an array of difficult research requirements. Understanding a particular group of people requires more than to know who likes whom, and who does not. It requires that we know what matters to them and why. It requires that we know how people view the world, what is particularly important to them, what images, attitudes, and beliefs control their thought processes and behavior. To improve our understanding of and interaction with particular groups outside the mainstream of society, empirical data are needed on those critical

psychological variables which truly convey their frame of reference. Research aimed at the assessment of a group's frame of reference should pursue the group's natural concerns and interests rather than the priorities of the investigator. As previous findings indicate, the response distributions produced by continued association tasks provide a particularly rich data source for such empirical assessment.

Working through the analysis of word associations, the Associative Group Analysis method has several important characteristics. The continued association task is easy to administer, and it is relatively economical, especially when taking into account the wide range of inferences that are possible from a single testing.

Second, the unobtrusive, inferential nature of the verbal association method has certain practical implications. The fundamentally unstructured and non-reactive approach is likely to minimize undesirable effects of acquiescence, social desirability, and other biases characteristic of conventional survey methods that rely on direct questioning. It therefore extends the scope of research by opening a variety of subjective and emotion-laden issues to objective inquiry. The group administration of the association tasks and the impersonal, collective, and anonymous nature of the participation allow for candidness and spontaneity—characteristics especially appealing at the present time when leading experts on attitude and opinion research are expressing considerable concern with the biases and limitations of research methods that rely on "frontal approaches," or direct questioning.

Finally, the associative approach offers from a single testing data on a variety of important psychological variables—attitudes, perceptions, meanings, and beliefs. When integrated, these diverse categories of information have an impressive potential

to reveal a group's frame of reference, its system of beliefs, by its natural priorities and dimensions. Certain categories of the association based information have already been validated, while others call for additional testing.

This new approach to the study of group frames of reference has stimulated considerable theoretical as well as applied research interest. The investigations reported here represent part of a series of related studies whose purpose is the refinement and validation of the continued verbal association technique. The studies were organized to obtain empirical clarification which bears on the major problem areas directly related to the use of the AGA method.

The first study in this series tested the relationship of the verbal association based information on meaning against comparable data obtained by other established methods of meaning measurement, such as the semantic differential and similarity judgment tasks. The results have shown that the association based inferences on psychological meaning were in fundamental agreement with a group of five independent measures used as validation criteria. These investigations have been reported in a previous technical report (Szalay and Bryson, 1972).

The present investigations included testing verbal associations in the assessment of attitudes and perceptions. This task involved comparisons of association-based data with (a) widely used attitude and opinion measures relying on direct "frontal" approaches, (b) indirect attitude measures aiming at "true feelings" and "gut" reactions, and (c) behavior predictors obtained from other attitude measures. The second part of the study compared Black, White, and Spanish American groups in respect to their images, perceptions, and attitudes.

II. BACKGROUND

The study of attitudes is frequently referred to as the key to understanding human behavior. This crucial role explains the great theoretical as well as practical importance attached to attitudes, the extensive research interest in attitude formation and attitude change, and the growing role of opinion polls in assessing sociopolitical conditions.

In the latest edition of the Handbook of Social Psychology (Vol. III), McGuire (1969) offers a timely summary of contemporary attitude research and gives an inclusive and elaborate review of the main theoretical positions.

In respect to what attitudes refer to as human reactions, McGuire speaks of three main components: cognitive or perceptual, affective-emotional, and behavioral. Nonetheless, the definitions of attitudes as reported by McGuire and many others like Nelson (1939), Campbell (1947), and DeFleur and Westie (1963) leave little doubt that affects and evaluations constitute the commonly agreed upon core of attitudes. And while this impression may occasionally be clouded by the wording of certain definitions, in the actual assessment of attitudes, the results in practically all instances boil down to scores and signs expressing direction and intensity of affects and evaluations. This is particularly apparent in the case of physiological measures (Cook and Selltiz, 1964; Hess, 1965), generalized attitude scales (Remmers, 1934) as well as the classical scaling procedures (Guttman, 1944; Lazarsfeld, 1950), etc. Findings based on factor

analysis and multidimensional scaling are more differentiated but still the direction and intensity of affects and evaluations generally remain in the center of interest.

Although few would disagree that attitudes include some type of emotive, affective reaction as a core, there is a much greater diversity of opinions on just what and how much other than evaluations the concept of attitudes includes. The diversity of opinions on this question is probably the single most important source of conflicting conceptualizations among attitude theorists.

ALTERNATIVE TRENDS IN THE CONCEPTUALIZATION OF ATTITUDES

At one end of the continuum are those social psychologists for whom attitudes represent the single most central variable. In this position of hegemony, attitudes are viewed as exerting control over all other variables, processes, and behavior. The more the attitudinal concept becomes central and inclusive, the more it is likely likely to take on a broad conceptualization which goes beyond pure affects and evaluations. For example, Krech and Crutchfield (1962) define attitude as "an enduring organization of motivational, emotional, perceptual and cognitive processes with respect to some aspect of the individual's world."

At the other end of the continuum we find theoretical positions in which attitudes are narrowly focused on affects and evaluations. For example, Chein (1948) defines attitude as a "disposition to evaluate certain objects, actions, and situations in certain ways."

Osgood (1957), Doob (1947), and Rokeach (1968) in their conceptualization of attitudes separate attitudes from cognitive variables. These conceptualizations do

not ignore the importance of cognitive perceptual variables—they do not deny their role in the control of behavior. Rather they view cognitive-perceptual and affective-attitudinal factors in coordinate relationship while subordinating them to higher-order constructs such as meaning, beliefs, values.

Just how much overlap exists and what the relationship may be between attitudes and such other behavioral dispositions as beliefs, opinions, meanings, and values represents a particularly difficult question. Campbell's (1963) discussion of the overlapping nature of the psychological nomenclature on "acquired behavioral dispositions" introduces this problem in broad perspectives. It should be noted, however, that beyond an apparent diversity of concepts and methods there is a general agreement about the necessity of considering both evaluative and cognitive factors in the control and prediction of human behavior.

PERCEPTUAL-COGNITIVE FACTORS IN ATTITUDE RESEARCH

The idea of considering cognitive-perceptual factors in contemporary attitude research has met varying degrees of acceptance.

On one end of the continuum there are the generalized attitude scales focusing exclusively on pure evaluation and measuring direction and intensity, but generally they ignore cognitive perceptual factors as well as the relative salience of attitudinal versus cognitive components. Abelson and Rosenberg (1958), in discussing this trend, state that "Theorists are reluctant even to consider cognitive units of an attitude apart from other cognitive units, preferring to treat cognition as 'structured' into meaningful wholes."

Toward the other end of the continuum we find multidimensional scales, opinion scales, and questionnaires which capture, parallel to the attitudinal information, a considerable amount of perceptual-cognitive information as well. However, attempts to add perceptual information have been made in a more or less ad hoc, artibrary fashion. Thus, the major problem these approaches face is that cognitive dimensions, however salient they may be to the group under study, have no chance to emerge if relevant questions or scales are not included.

The focus of these different instruments varies and the approach adopted by the investigators is likely to influence the outcome. A previous study (Szalay and Bryson, 1972) demonstrated that the results obtained by various scale sets are heavily influenced by prior decisions on the selection of scales. Thus, particularly in research involving subjects of different ethnic-cultural background, it becomes a question of considerable practical consequence as to how to avoid biases by preventing that the scales used reflect the researcher's frame of reference rather than the subjects'.

Generally, while behavior-oriented attitude research has developed an increasing awareness of the need to embrace both evaluative and perceptual components, the lack of a broadly accepted theoretical framework which would provide for integration has become an increasingly sensitive problem. As a result, at a practical level research strategies by which attitudinal and perceptual dimensions may be systematically included as the basic parameters of empirical investigations are also badly needed. Although perceptual-cognitive components are now frequently included in attitude research, their representation is generally ad hoc and subordinate.

Osgood's solution to this problem is to conceptualize attitudes as components of a global psychological meaning reaction. In this conceptualization attitudes emerge as affective components together with perceptual-cognitive components. Such a solution avoids the theoretical dilemma of conceptualizing attitudes as involving affects, evaluation plus some generally undefined portion of perceptual-cognitive reactions.

Perhaps most importantly, however, assessing the total psychological meaning reaction has the advantage of simultaneously providing information on both attitudinal (effective, evaluative) components and perceptual-cognitive components. This solution is particularly attractive because it reduces the danger of exaggerating the role of one component while neglecting the other.

By this approach, attitudes are measured in their pure form as evaluative components of meaning along with perceptual-cognitive components as they spontaneously emerge in proportion to their natural saliences. This may help to avoid the hopeless, paradoxically sounding question of how much perceptual information attitude research should strive for.

III. APPROACH

To introduce this approach which aims at the empirical assessment of attitudes and perceptions as components of a psychological meaning reaction, it is first desirable to elaborate on the concept of psychological meaning. Second, the relationship between psychological and verbal associations will be outlined at a theoretical level and then the procedure described by which associations are used in the empirical assessment of the multicomponential meaning reaction. Third, a procedure for assessing attitudes as evaluative meaning components will be briefly summarized.

MEANING: A MULTICOMPONENTIAL SUBJECTIVE REACTION

Because Osgood's (1957) approach to meaning is fundamentally consistent with the general theories on attitudes, it offers an empirical foundation for deriving attitudes from psychological meaning.

In Osgood's conceptualization, meaning is a neural reaction with mediational and representational properties. The meaning or coding reaction is "multicomponential" representing a variety of meaning dimensions. One of these dimensions involves evaluation. This is usually the strongest single component and it is identified with attitude. As Osgood (1957, p. 199) puts it: "It seems reasonable to identify attitude, as it is ordinarily conceived in both lay and scientific language, with the evaluative dimension of the total semantic space as this is isolated in the factorization of meaningful judgments."

In this conceptualization the semantic space represents the totality of all meaning components and provides for the definition or localization of the meaning of a particular word or concept.

This conceptualization of attitudes as a component of meaning offers an integrated, "holistic" approach in which evaluative and cognitive elements are seen as factors of the total meaning. That such an approach also satisfies the requirements of providing valid attitudinal data in terms of direction and intensity has been repeatedly demonstrated in investigations where semantic differential evaluation factor scores were compared with other attitude measures. Osgood and his co-workers (1957) reported high positive correlations with Thurstone scales (.75 - .82—significant at the .01 level) and with a Guttman type of scale (.78—significant at the .01 level).

The present authors are in fundamental agreement with Osgood's theoretical position and consider the study of the psychological meaning reaction a natural and effective approach to the study of attitudes.

As a human reaction, psychological meaning naturally depends on the mental, emotional, and physiological state of the person. It is a type of subjective reproduction of a series of characteristics that appear meaningful to the person. The reproduction is selective, and some rules of this selectivity appear to be of particular importance in the conceptualization of psychological meaning.

First, the selectivity is largely a function of the disposition of the person—his goals, interests, experiences, perceptual and cognitive habits, affects and emotions. "Imagery" is frequently used interchangeably with "meaning", but

naturally neither of these concepts refers to a visual reproduction in a literal sense. In analyzing the meaning of physical objects, some physical characteristics will constitute salient meaning components, while others will simply be ignored. Additional non-physical characteristics will also be attributed to the object, and their importance should not be overlooked. Take "hammer," for example. Its psychological meaning goes beyond the mental image of its physical attributes (shape, weight, color) and includes such elements as its utility and the person's attitude toward hammers. Some of these added characteristics may have objective foundation outside of the object (e.g., utility); others may be purely projected or imaginary (e.g., the potential of protecting or bringing good luck attributed to certain charms). In a logical sense, these non-physical elements do not belong to the conventional, lexical meaning of hammer. In this sense, psychological meaning has a broader scope than lexical meaning.

Second, the components of subjective meaning are not stable and may show considerable variations from time to time. The meaning of an object (hammer) may be heavily influenced by some immediate experiences (hitting a thumb) and produce strong emotional reactions (pain, hate). This reaction naturally has nothing to do with the lexical meaning of the object, but it is likely to become, at least temporarily, a part of the psychological meaning reaction to that object. Such experiences affecting meaning may have manifest consequences in communication (saying that hammers are dangerous) as well as in other overt behavior (taking the hammer from the hand of a child).

Third, although in linquistics and in philosophy, meaning involves attributes that either apply or do not (e.g., a hammer is or is not a tool), from the angle of psychological meaning the characteristics are rarely either-or qualities but components of varying degrees of subjective importance, or salience. In the case of psychological meaning we are not dealing with some sort of philosophical abstraction but with a subjective reaction; therefore, it is plausible to assume that a few of the most salient components will be especially important and the role of the numerous intellectually applicable but low salience components will be relatively negligible. In this perspective the precise number of components is a rather meaningless, academic question. They may vary not only from word to word and from person to person but also from time to time. What appears to be of critical importance is to identify the most salient components since they are most likely to determine what communication will have effect and what behavior will be manifested.

The psychological meaning may be characterized then by a model involving a variety of component reactions. These components reflect qualities of the referent selected according to the motivational and cognitive dispositions of the person. The components show variations over time and include cognitive as well as affective elements, referential characteristics as well as evaluations. These components may be assumed as being especially critical in defining meaning as a subjective reaction.

Psychological meanings are not those found in dictionaries. In contrast to the limited dictionary meaning based on convention and formal rules of use, psychological meaning refers to the entire subjective reaction elicited by a particular concept as represented by its salient components. These components, which vary in salience, determine which aspects, characteristics are considered most important to the individual.

Let us follow the word "education" as an example in order to illustrate what is involved in analyzing the components of meaning and their varying dominance. Consider the differences in psychological meaning which the word "education" would have for a priest and a football coach. Based on what is commonly known of these two occupations, we can assume that they will agree on the importance of some of the possible components of meaning and disagree on others, or at least assign differing importance to them. They would probably agree on school attendance, but disagree on the most desirable types of schools or curricula. They may agree on character development as a part of education, but the priest might more likely stress morality and the role of the church in the nurturing of character, while the coach might be more concerned with discipline, physical fitness, training, fame, desire to win fairly, and the like in building character.

In Figure 1, we see how the composition of the subjective reactions of the priest and coach to "education" compare in schematic form. The length of the bars expresses the importance and the strength of particular meaning components. The longer the bar, the more important that aspect or association with education is to that person. When the bars coincide and are long, both persons share and give importance to that component. Such provides the basis for easy communication between the priest and the coach. Non-shared elements, i.e., bars which do not coincide or agree in length, tend to increase the difficulty of communication.

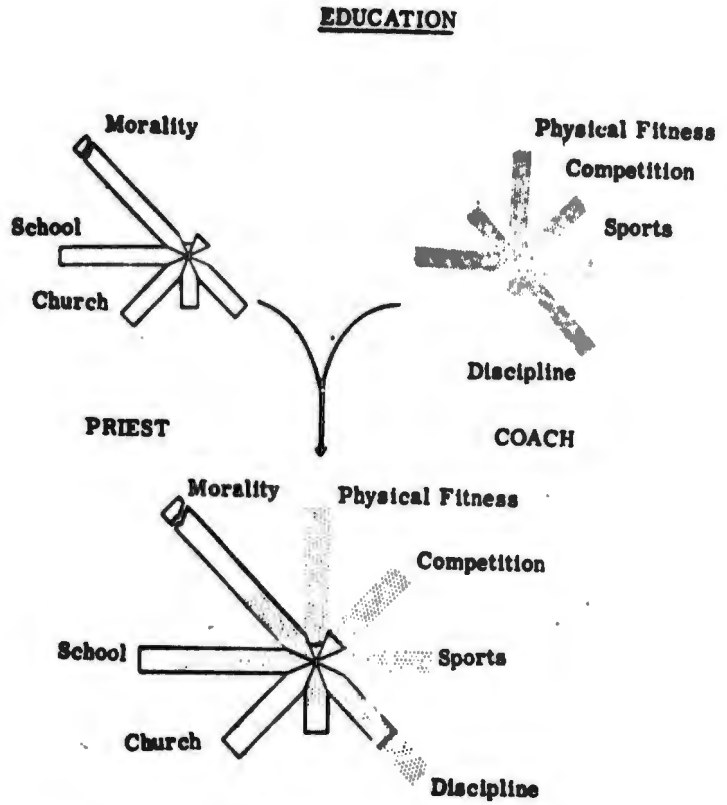

Figure 1. Illustration of Meaning of EDUCATION in Two Frames of Reference

This illustration shows the combination of subjective meaning reactions as well as the formal dictionary component. The subjective elements derive from the frame of reference of the person interpreting "education." For the priest, education contains strong religious elements (morality, virtue, church). The coach's subjective concept, reflecting his frame of reference, emphasizes sports, competition, and training. The two psychological meanings are shown in a comparative visual presentation by the semantograph. The radial direction of the bars is arbitrary, with the stronger components for one frame of reference on the left, the other on the right, and accommodation made for overlapping connotations or subjective meanings.

As the subjective, psychological meanings of individual words or themes such as education are influenced by the major components of a person's frame of reference, we may also expect these subjective meanings to tell us something about a more general characteristic frame of reference which would supply meaning for other words and themes in other communication situations. Thus the coach might carry over some of the same or consistent meaning components into his psychological reaction to words like "school," "teacher," or "sports."

In our home environment we are generally aware of the characteristic frames of reference of particular groups of people like priests and sportsmen; thus we can anticipate what types of psychological meanings they are likely to have about a particular theme like education. In interaction and communication with people of a different ethnic cultural background the situation changes. We are naturally less familiar with their actual frames of reference, and it is much more difficult to anticipate their psychological meanings. Because we cannot simply rely on our own meanings or frame of reference, it becomes more difficult to relate to these people, to foretell what communications will make good sense to them and which ones they are likely to ignore or misinterpret.

To obtain solid, empirically founded knowledge on meanings including characteristic evaluations and attitudes of selected groups, inferences drawn from verbal associations were used in the following investigations. This approach, its theoretical rationale, and analytic procedures will be briefly discussed next.

ASSESSMENT OF MEANING BY VERBAL ASSOCIATIONS

THEORETICAL RATIONALE

Verbal associations are one of the oldest and most widely studied subjects in psychology. Despite its long history, the subject is neither settled nor exhausted; as the literature of the 1960s suggests (Cramer, 1968), the subject is perhaps more popular as well as more controversial than ever. Without any attempt to give an historic overview, it may be briefly mentioned that although the psychologist's interest in associations has never abated, the direction and nature of that interest frequently took some drastic turns, from philosophical to experimental, from experimental to clinical, back to experimental to social-cultural, and so forth (see Boring, 1968; Woodworth and Schlosberg, 1956; Deese, 1965). At the risk of oversimplification, the current controversy about the nature of associations may be represented by two conflicting positions.

Verbal Habit or Contiguity Theories on Associations

One school of thought is that verbal associations are mainly verbal habits. For example, a particular stimulus word such as "mother" elicits the response "love" because these two words are used together in hundreds and thousands of speech events. Their repeated contiguity produces an associative connection between the two words (mother and love), and eventually each word will elicit the other as a matter of verbal habit.

Deese (1965), Vigotsky (1962), and others observe that the popularity of the contiguity principle has its main roots in the laboratory learning experiments involving extensive manipulation of largely meaningless verbal material such as the

nonsense syllables. Such experiments invest extensive effort in building connections between words by pairing them, that is, by presenting them together in contiguity. Based on these experiments, the principle of contiguity has acquired a position of hegemony in the interpretation of the association process.

As Deese (1965, p. 21) puts it:

> The history of the experimental study of associations from Ebbinghaus on has illustrated the almost complete dependence upon the principle of contiguity for defining experimental arrangements.

Associations Controlled by Central Processes—Structure, Meaning

In contrast to the contiguity principle, another school of thought says that verbal associations are derived from representational processes, that is, from organizational-structural characteristics of the mind. The previous example of "mother" and "love" occurs because "mother" as a stimulus elicits central processes that are related to central processes specific to "love"—or putting it simpler, because one's meaning of "love" is typically and saliently involved in his meaning of "mother." In discussing this relationship in the association processes, some authors emphasize the role of similarity; others, the role of structure. Nevertheless, they fundamentally agree that not the contiguity of words as phonemic structures is critical but that the response is elicited through some shared subjective reactions.

Based on experiences with extensive verbal association material produced in the United States as well as overseas, the authors are inclined to conclude that the dichotomy has some theoretical relevance but little practical consequences—at least for the problem area presently under consideration.

First of all, although verbal habit and meaning may appear antithetical in certain theoretical debates, in real life situations they are likely to be closely related, just as cognitive processes and language behavior show high correlations (Vigotsky, 1962). It is a natural human tendency to project a meaning into the co-occurence of two events, especially if they repeatedly occur as contiguous. Conversely, if two events or phenomena are similar or closely related, most probably they will also become contiguous, if not physically, at least mentally. They are likely to evoke each other in our thought processes. This explanation may be one reason why the verbal habit-versus-meaning controversy as an either-or dichotomy may never be settled.

Another reason is that the two mechanisms, rather than preclude, usually complement each other. As a complicating circumstance, the way in which they complement each other is likely to change from situation to situation. The associations of a small child, for example, are probably more heavily based on verbal habit mechanisms with only a small portion based on meaning. In the case of a normal adult, these proportions are reversed in most cases.

Furthermore, the level at which the individual will perform in association tasks will be influenced not merely by age but also by a variety of additional factors, such as the very nature of the stimulus material, the form of test administration, single response versus continued association tasks, written or oral presentation of the stimulus, and whether the tasks involve time pressure. Assumptions and findings about the effects of experimental conditions on the type of associative mechanisms are elaborated elsewhere (Szalay et al., 1970).

In this conceptualization of the association process, the first critical assumption is that the two main associative mechanisms complement each other in different proportions under different conditions.

Second, it is assumed on the basis of extensive empirical evidence that under normal conditions the verbal associations of an adult individual are largely meaning mediated. Thus, associations provide solid empirical foundation for the reconstruction of the covert meaning reaction. This seems to be especailly true under the conditions of the continued association task administered in written form without time pressure.

The processes involved in the continued association task may be characterized as follows.

Following the instructions to give single word associations, the subject begins a search for words based on his meaning or decoding reaction elicited by the stimulus word S. In view of the composite nature of meaning, the search for responses can be expected to take off from a single meaning element. A particular meaning element of the stimulus elicits certain memories, which also contain the same meaning element. The subject must respond with a single word, when in fact to describe these related experiences would require sentences or paragraphs. To comply with the instructions, a single word is then selected that contains the element as a characteristic meaning fraction. Thus, a series of responses are produced which have meaning elements in common with the stimulus word.

With the stimulus meaning being composed of meaning fractions of varying importance or salience, it is probable that the first association will be mediated by the most salient fraction or element. The meaning elements are likely to follow each

other in order of decreasing salience, and empirical evidence (Szalay et al. 1967) shows that indeed later responses do have lower stability; they contain meaning elements of lesser importance. Thus, the association process has the potential to reveal mosaic pieces of the covert subjective meaning reaction. It can also show the salience of the single mosaic pieces or components of the covert meaning reaction.

The higher the rank of elicitation of a response, the more salient the underlying meaning component is for that person. The more people produce a particular response, the more salient the underlying meaning component is for that particular group. This principle was found to apply to all components and is valid for the evaluative-attitudinal component as well.

A translation of this rationale into Indices of Evaluative Dominance served as the foundation for obtaining association based attitude measures. The testing of these attitude measures in various contexts constitutes one of the main subjects of the present report.

DATA COLLECTION AND ANALYSIS

As previously indicated, the continued association task provides an effective and economical method for obtaining extensive response material for assessing the psychological meanings characteristic of a particular group. In the continued association task, a person produces as many responses as he can think of in one minute. When the task is administered in written form, the participants receive the stimulus word (e.g., ME) on slips of paper (see upper half of Figure 2) and write their associations as they occur to them.

Generally, samples of 50-100 subjects are used in the representation of a particular culture or occupation. A sample this size will provide valid information on the meaning of a particular word or communication theme for the group from which the sample is drawn. Once the responses are made, all responses to each stimulus word are combined into a group response list for that word. Certain responses (for instance, self to ME) will occur to many members of the group; other responses may be given by only one or two members.

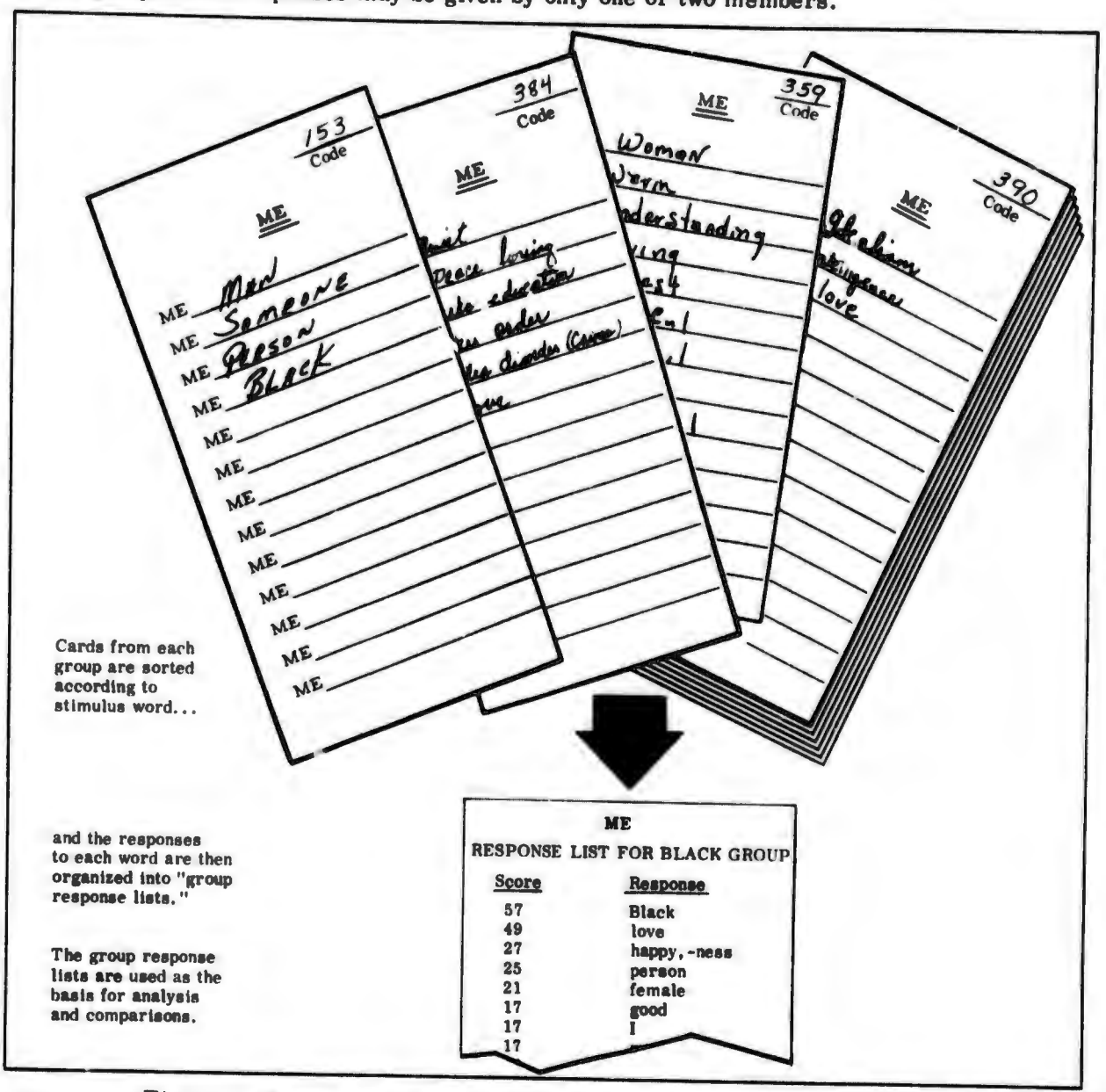

Figure 2. Formation of Group Response Lists from Individual Associations.

If we look at a group response list based on the associations of our own culture group, the responses appear to be generally plain common sense and natural. We tend to feel that everybody would produce similar responses, that the responses do not tell us anything new.

This impression changes, however, as shown in Table 1, if we compare response lists obtained from groups with different backgrounds. A closer look reveals that these distributions are specific to each particular group. Actually a systematic examination of such response lists has shown that every response word contains a piece of valid information about the group's characteristic understanding and evaluation of the stimulus word. Responses with a sizable score value (10-15) are rarely accidental. Using conservative estimates, score differences of 18 can be considered significant at the .05 level, score differences of 24 at .01 level (see Appendix V). Thus, the response lists so obtained contain a wealth of cultural information. To extract this information, various analytic methods have been developed.

Meaning Elements from Single Response Words

The simplest and most direct information on group meanings comes from individual responses by members of the group. Their distribution is shown by the group response lists (Figure 2, Table 1). Each associative response word provides a piece of information on how the responding group understands the stimulus word. For example, the response person to the stimulus ME shows that for this group one element of the meaning of ME is person. This fraction of ME's group meaning is labelled a "meaning element." It is assumed that people mean the same thing when giving the response person to ME. In other words,

TABLE 1

GROUP RESPONSE LISTS TO ME*

BLACK GROUP		WHITE GROUP		SPANISH GROUP	
Score	Response	Score	Response	Score	Response
57	Black	59	I	45	student
49	love	39	myself	41	my, mine
27	happy, -ness	33	happy, -ness	29	selfish
25	person	31	girl	29	intelligent
21	female	30	understanding	28	ego
17	good	24	self, -image	25	love
17	I	24	want, -ing, -ed	24	you
17	myself	24	you	23	man
16	individual, -ism, -ly	22	confused	19	understanding
16	loving, -able	20	tall	17	happy
15	understanding	19	alone	15	I am with her
15	educated, -ion	19	friendly	15	educated
14	ambitions	16	loving	13	am
14	women	15	selfish	13	person
14	personality	15	good	13	problems
13	help, -ful	13	person	12	tall
12	family	13	ego	12	just
11	school	13	intelligent	11	friendly
11	money	13	love	11	responsibility

*Group response lists show the distribution of responses to a particular stimulus word (e.g., ME) given in common by two or more members of a particular group (N=50). The scores consist of frequency within 50 member groups weighted by the order of occurrence. The weights beginning with the first response are: 6,5,4,,3,3,3,3,2,2,1,1,....

the same response from several individuals in the context of the same stimulus reveals identical meaning elements. Naturally, the order of the responses differs. A logical assumption is that earlier responses represent a more salient meaning than later ones; that the first response has more salience than the last. This assumption was also supported by empirical evidence. The stability of responses obtained at different rank places was studied by comparing the responses obtained from the same group in two separate sessions one month apart. The responses obtained at higher rank places in the first test showed higher stability in the second test than did the responses first obtained at lower rank places. The coefficients of stability obtained in this comparative study provide weighting scores for the various rank places.

All responses to a particular theme are compiled into a group response list which describes the meaning that a particular theme has for a particular group in terms of the broad variety of responses reflecting specific elements. Table 1 presents group response lists obtained from three different backgrounds (White, Black, and Spanish American) for the word ME. In this table we see that Black as a response to ME, ranks at the very top for the Black group, but is not mentioned by the other two groups. Comparable responses, White from the White group or Spanish from the Spanish group are not mentioned either. Education is a strong response from the Black and Spanish groups, but not from the White group. These responses show how specific group response lists are, and how the distribution of responses to the same word varies from group to group. The wealth of information provided by the group response list is impressive, since even fairly small score differences (10-15) can have significant implications for communication and choice behavior (Szalay et al., 1972).

Meaning Components from Categories of Response Words

Clusters of closely related responses are identified to assess group meaning by its main components. For instance, in the context of the theme ME, responses dealing with identity are grouped together in one category to describe one meaning component of the theme. The category IDENTITY: BLACK, STUDENT (Table 2) suggests a cluster of closely related responses by which the Black, White and Spanish groups may be distinguished from one another.

Each of the response categories is described by a score and by a label chosen as indicative of the content. The category score is the sum of the individual response scores and expresses the importance of the category for a particular group. If a category yields a high score for a group, it may be said that the category constitutes an important meaning component of the theme for that group. The combination of these categories, along with

their response scores, describes the total meaning of the theme for that group. An example of the total meaning of the theme ME is shown in Table 3.

TABLE 2

MEANING COMPONENT OF ME: IDENTITY...

Responses	Group Scores		
	Black	White	Spanish
Black	57	-	-
children	8	-	-
family	12	5	10
friends	6	11	9
others	-	7	-
person	25	13	13
personality	14	-	-
student	7	9	45
worker	8	-	8
human	3	-	9
you	3	24	24
Total	143	69	118

TABLE 3

ME—MAIN MEANING COMPONENTS FOR BLACK, WHITE, AND SPANISH GROUPS

Meaning Component	Black Group		White Group		Spanish Group	
	Score	%	Score	%	Score	%
I, Ego	79	(13)	149	(20)	130	(23)
Identity: Black, Student	143	(23)	69	(9)	118	(21)
Sex, Sex Roles	64	(10)	44	(6)	30	(5)
Physical Characteristics	19	(3)	47	(6)	29	(5)
Critical References	9	(2)	37	(5)	29	(5)
Feelings, Moods	111	(18)	174	(24)	71	(12)
Social Attitudes, Sociability	90	(15)	113	(15)	71	(12)
Needs, Wants, Motivation	60	(10)	66	(9)	35	(6)
Intellectual Characteristics	39	(6)	39	(5)	54	(10)
Total Scores	614		738		567	

The categories used as meaning components are obtained by asking judges with backgrounds comparable to those of the groups from which the responses were obtained to consider the content of responses and group them into clusters.

This task involves a type of content analysis that was tested for agreement among six judges. Interjudge reliability measured over six judges by Pearson's r equalled .7 calculated across categories.

The main content categories obtained by this analysis describe the meaning of the theme in terms of the main components characteristic of the group's understanding.

The results of this analysis may be presented in tabular form as in Table 3 or by a semantograph (Figure 3). The semantograph shows the main components of the meaning by concentrically arranged bars: the shaded bars representing the main components of the Black interpretations and the unshaded bars, the main components of White interpretations. Where the bars overlap, substantive agreement exists between the interpretations by Blacks and Whites. The bars are arbitrarily arranged so that those on the left of the semantograph show meaning components especially strong (salient) for the Whites; those on the right show meaning components especially strong for the Blacks. This method of presentation was designed to help the reader recognize the meaning components that will not be effective with Black audiences (those bars on the left that are not shared with Blacks). Those that will be effective are in the top right-hand area of the semantograph, as represented by the long shaded bars. Communications focusing on these components have a good chance of being listened to and accepted.

There are several other analytic methods described in some detail in the appendices. They provide various categories of information and inform about various important dimensions of the covert meaning reaction.

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There are several other analytic methods described in some detail in the appendices. They provide various categories of information and inform about various important dimensions of the covert meaning reaction.

The psychological importance or dominance of a particular theme or domain represented by a sample of themes can be inferred from the sum of responses produced by the members of the group. The calculation and use of the "dominance scores" are described in Appendix I. As illustrated there in the context of Black

and White samples, the dominance of themes and domains is informative on the interests and concerns of particular groups.

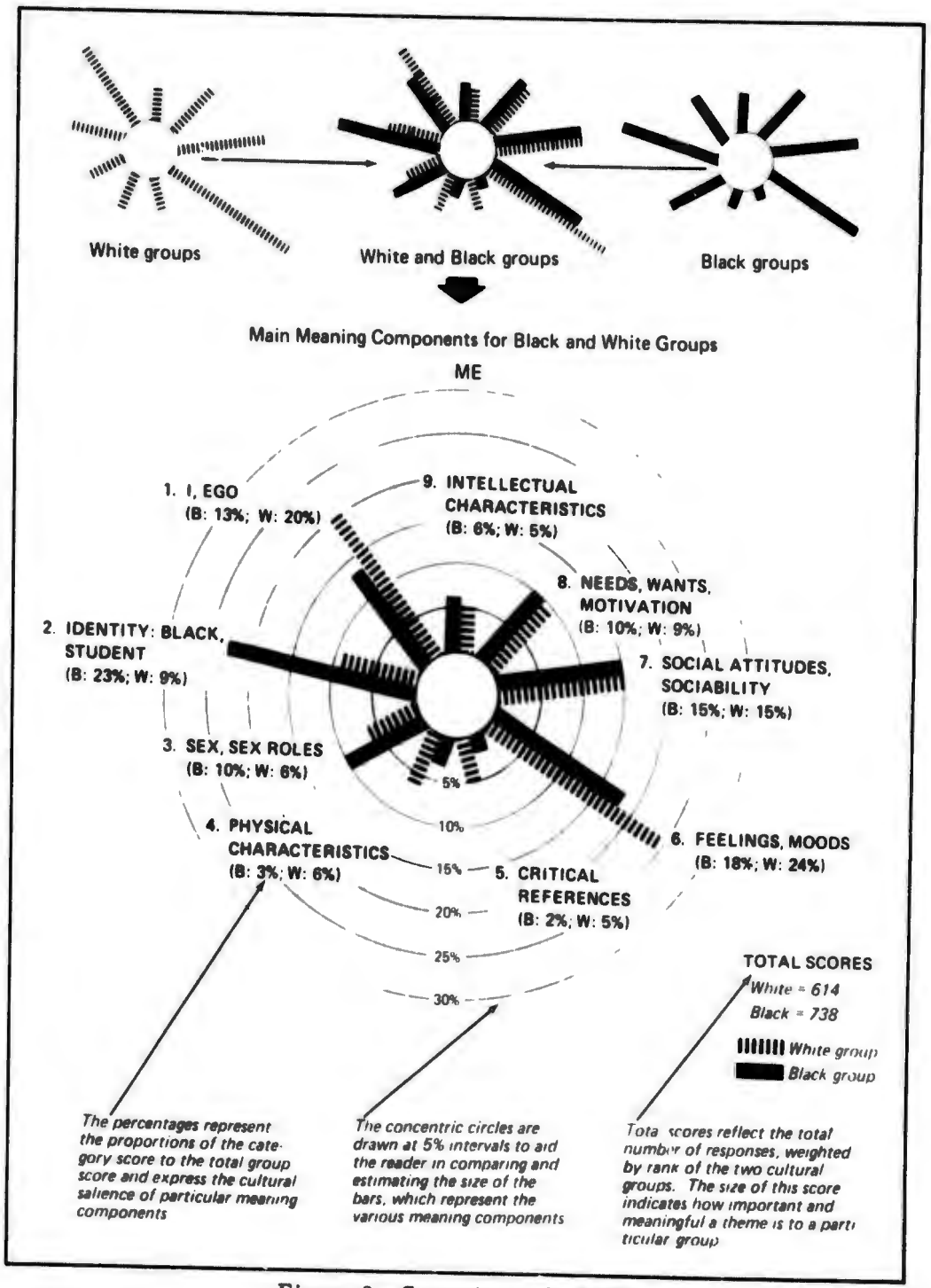

Figure 3. Semantograph of ME.

The main components of a group's meaning, the salient mosaic components of their images, can be inferred from a content analysis of their response distributions previously discussed and elaborated in more detail in Appendix II.

The level of overall similarity between two or more groups on selected themes can be measured by a simple correlation of the response distributions. This measure, the "Coefficient of Associative Similarity," is discussed in Appendix III. Its use is illustrated on data obtained on Black and White blue-collar samples on 60 themes representing 15 domains. This measure allows to identify areas of similarities and disagreements in the frame of reference of social or cultural groups compared.

The reliability and validity of these various categories of inferences are discussed in Appendix IV. Statistical significance is covered in Appendix V.

Another associative measure, the Evaluative Dominance Index, is used to indicate the evaluation of a theme, that is, the general attitude of a group toward a particular theme-subject or person. This measure, which was included in all of the following studies, will be discussed in detail next.

ASSESSMENT OF ATTITUDES BY ASSOCIATIONS: THE EVALUATIVE DOMINANCE INDEX (EDI)

In various cross-cultural and domestic applications, the association-based method of meaning assessment has produced extensive data suggesting that the information on meaning automatically includes information on attitudes. The associations show not only how people understand selected concepts but also how they evaluate them.

In the analysis of group meanings the identification of the meaning components reveals an evaluative or attitudinal component with affect-laden, emotionally colored, positive or negative responses. The proportions of the affect-laden responses varies greatly depending on different stimulus words. Many highly negative responses (kill, murder) were obtained to certain stimulus words (H-bomb, war), while few affect-laden responses were obtained to others (rice, ancestors). The varying number of emotionally laden responses, was found to be closely related to the evaluative attitudinal content of the stimulus word; this supports the theoretical position that the evaluative attitudinal component, just like any other meaning component, spontaneously reflects the covert meaning or coding reaction of the stimulus word.

This same position was also supported by previous findings of Staats and Staats (1959) who used the evaluative scales of the semantic differential and found high positive correlation between the attitudinal loading of stimuli and that of the associative responses.

These observations suggested the possibility of developing verbal association based measures. The attractivity of such a measure is supported by several factors. First, because the association task is unstructured and nondirective, the attitudinal information is inferential. By these characteristics, the association method can be a useful tool particularly in those situations where the direct methods are handicapped. Associations do not involve self-commitment, and they can supply data on attitudes without specifically asking for them. This is particularly useful for suspicious respondents and for sensitive social or political topics. They may be

similarly useful in reducing such response biases as acquiescence, social desirability, and experimenter effects common to direct measures.

Finally, associations have the potential to provide both evaluative-attitudinal information and information on relevant perceptual-cognitive data. The desirability of such simultaneous information, has been previously discussed.

CATEGORIZATION OF EVALUATIVE RESPONSES

Based on the assumption that the evaluative or attitudinal component of the stimulus meaning is validly represented by the positive or negative affect loading of its associative responses, the positive or negative direction and intensity of the associative responses to a stimulus may thus be expected to reflect in both proportion and degree the same properties found in the attitudinal part of the stimulus.

Thus, the practical task of assessing the attitudinal segment of the stimulus meaning requires an inventory of responses characterized by positive or negative attitudinal loading. First of all, the affect-laden responses, that is, associations with positive or negative connotations have to be identified. Judges representing generally the same group receive the associative response lists and are instructed to group the responses into three categories: positive, negative, and neutral. In previous tests the performance of three judges showed an inter-judge reliability of .93 (tested by the correlation of category scores produced by the judges across the fifteen stimulus words). The words on which the judges do not agree are put in the neutral category since interest is focused on the proportions of positive and negative responses.

CALCULATION OF EDI

To test the basic assumption that, in continued free verbal association tasks, positive attitudes toward the stimulus word result in positive responses while negative attitudes toward the stimulus word produce negative responses, a quantitative expression was needed that would take the relative proportions of positive, negative, and neutral responses into account. An index was designed to show the dominance of positive or negative evaluative responses as a portion of all responses.

$$EDI = \frac{\Sigma \text{scores of positive responses} - \Sigma \text{scores of negative responses}}{\Sigma \text{scores of all responses}} \times 100$$

Since responses obtained at different rank places in the individual's sequence of emission are of different stability on retest and contribute with different shares to the meaning of the stimulus, response scores weighted by the order of emission, rather than simple frequencies, were used in the index calculations.

The index values range between +100 and -100, with positive values reflecting the dominance of positive responses over negative responses. A low positive index may be the result of few positive responses with practically no negative responses, or it may derive from a large number of positive responses that are balanced by a sizable number of negative responses. This latter type of low positive index suggests a high degree of ambivalence and, in substance-oriented investigations where ambivalence in attitudes is of relevance, this circumstance may call for using a separate index of ambivalence.

EDIs may be calculated both on group and individual basis. The index formula is the same, only the score values substituted into the formula are different. In the case of the group, the group scores for the positive and negative responses as shown in the group response lists are summed. In the case of the individual index, the person's scores, positive and negative totals, are added, using score values based on the rank place.

The reliability of EDIs obtained for groups and for single individuals requires separate consideration. For purposes of comparison it is desirable to apply the same approach in testing the reliability of individual and group indexes. The split-half method could not be used on individual indexes, because the responses obtained from a single person are occasionally few (they range from two to ten and only some of these are either negative or positive) and have different weights (thus cannot be split equally by chance as the split-half method requires). Thus, the test-retest approach was adopted as being applicable to both individual and group indexes.

An American student group was used, composed of 25 male and 25 female students in diverse fields of studies. With an interval of one month, two testing sessions were given in which seven of the stimulus words were identical. In both instances the same continued association task standard instruction was used.

On a group basis, indexes were calculated for each of the seven words, using group response lists. A product-moment correlation was calculated between the two sets of indexes across the seven words as a measure of stability of the group indexes. The correlation coefficient of .99 was obtained, which is highly significant (.01) despite the low number of observations (N = 7).

A comparable mean reliability index of .76 was obtained for individual EDIs calculated on the basis of ten subjects.

Results of previous validation experiments will be discussed in some detail in the introduction of Study 1 as these experiments deal specifically with validation.

IV. RESEARCH OBJECTIVES

The central objective of the present investigations focused on the assessment of attitudes. The specific objectives of the investigations logically emerged from this attitudinal orientation, from previous results obtained in this field, and finally from the desire to test this research capability with special regard to its use in the area of interpersonal and race relations.

The main objectives of this investigation are:

a. The validation of association based attitudinal data tested at individual and group levels using generalized attitude measures derived from direct methods of assessment. These tests aim at the evaluation of association based attitude data in comparison with some commonly used paper and pencil tests.

b. The evaluation of association based attitude data as an indirect attitude measure relying on the inferential nature of the information. This involves testing such potentialities as the reduction of social desirability effects, the elimination of acquiescence and other sources of biases common to the most widely used attitude measures relying on frontal approaches and direct questioning.

c. The testing of association based information and other attitude data in respect to their potential to provide valid predictors on behavior in various fields including race relations.

d. As a final objective, the association data were studied with special regard to their potential to provide perceptual-cognitive information as well as attitudinal information. A related question was to explore the extent to which cognitive-

perceptual differences depend on attitudinal differences. Another question was the dependence of perceptual differences on differences in ethnic-cultural background. These questions appeared to be especially relevant to the frequently emotion-laden field of race relations. In this field the recognition that there are differences among people in their attitudes and evaluations is much simpler than the assessment of how people of a particular ethnic-cultural background actually perceive particular issues or events.

V. STUDY 1

TESTING ASSOCIATION BASED INFERENCES AGAINST ATTITUDE MEASURES AND VARIOUS CATEGORIES OF BEHAVIOR

The relationship between attitudes and behavior is a particularly intriguing question in contemporary social psychology. The interest in this problem logically follows from the centrality of attitudes in social psychology (Allport, 1954; McGuire, 1969) and from numerous studies showing a low level of consistency between attitudes and behavior (Freeman and Aatov, 1960; Vroom, 1962; Carr and Roberts, 1965). Observations that people do not always behave in consistency with their stated attitudes dealt a particularly sensitive blow to conceptualizations which simply equate attitudes with behavioral dispositions manifest in overt behavior (Cohen, 1964).

Since LaPiere's (1934) report on the discrepancy between hotel managers' verbally stated opposition to the Chinese (over 90%) and the high percentage of actual acceptance of Chinese guests, a great deal has been said, pro and con, about the value of verbally stated attitudes in predicting actual behavior.

Several authors have pointed out flaws in the conceptualization and interpretation of this famous case of "inconsistency." Some, like Kendler and Kendler (1949), argued that the concepts of "attitude and behavioral inconsistency" are imprecise; others, like Donald Campbell (1963), rejected that there was any "inconsistency" in LaPiere's observations, which were drawn from two different levels. Mischel (1968) questions the very propriety of contrasting attitudes with behavior in this case where the actual attitudes may be better represented by the observed behavior than by the results of a mail questionnaire.

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Instead of speaking of attitudes versus behavior, the problem appears to be more a difference of two types of behavior: verbal behavior stimulated by a questionnaire versus social behavior stimulated by and controlled by a given social situation. This conceptualization in turn leads to the frequently emphasized dichotomy of overt versus verbal behavior. There is a fairly widespread skepticism about just how much we should trust verbal statements, and this supports McNemar's (1946) previously articulated position that research on the validity of verbal measures is "direly needed."

The present research involved a comparison of direct and indirect attitude measures and their ability to predict behavior under various social circumstances.

The first experiment involved further testing of a new indirect attitude measure, the Evaluative Dominance Index (EDI), which is based on verbal associations. Although in a previous study the EDI correlated highly with direct attitude measures at a group level, the results at an individual level were inconclusive. In the present investigations several procedural strategies for calculating the individual and group EDIs were tested.

In a second experiment, the potential of this indirect association based attitude measure to predict behavior was also tested and compared with predictions based on direct attitude measures.

Finally, the influence of the particular social context on behavior was explored by comparing predictor values of the indirect and direct attitude measures in contexts involving different degrees of social constraint.

A. TESTING ASSOCIATION-BASED ATTITUDE MEASURES IN COMPARISON WITH DIRECT ATTITUDE MEASURES

The Evaluative Dominance Index (EDI) represents a new attitude measure derived from continued associations. It has been developed on the assumption that in continued association tasks the affective meaning of the stimulus word is truly reflected by the aggregate affective meaning of the responses. This assumption involves the principle of "summative affective-attitudinal equivalence." It does not presume that the affective attitudinal content of any particular response by itself will be the same as the attitudinal content of the stimulus. It considers the evaluative content of all responses collectively as produced by a person or by all members of a group. Thus, it assumes that the evaluative content of all the responses taken globally will be the same as the evaluative content of the stimulus word:

$$S_{Att} = \sum R_{1_{Att}} + R_{2_{Att}} + \ldots . R_{n_{Att}}$$

The Evaluative Dominance Index was designed to use the evaluative content of the responses—the relative dominance of the positive or negative responses—over all responses (negative plus positive plus neutral) to infer the evaluative content of the stimulus word. The Evaluative Dominance Index was developed to measure the attitudes of individuals and groups toward selected stimulus themes or objects.

The first simple and immediate question which every new attitude measure must face is how does it compare with some of the widely tested and used attitude measures.

In earlier investigations the individual and group EDIs have been compared with an attitude questionnaire and semantic differential evaluation scales—criterion measures

derived from two independent paper and pencil attitude measures. The attitude scores derived by EDI were compared with individual and group semantic differential and attitude questionnaire data.

On group basis, high positive correlations in the range of .8 to .9 were obtained with the two criterion measures. The correlations obtained with the individual EDI, however, were generally low, frequently nonsignificant. There are several possible explanations for these low correlations with the criterion measures. First, the low validity results may suggest that our fundamental assumption on the direct positive relationship between the evaluative component of the stimulus and that of the responses does not hold. Second, it is possible that the low individual validity scores were due merely to some procedural problems. Several such technical, procedural explanations were conceivable. The study had a relatively narrow scope. In the assessment of the evaluative attitudinal content of the responses, the judges' competence to reproduce the attitudinal position of the subjects may be questionable. The individual response repertoires, which occasionally contain only a few responses, may be too narrow and ambiguous to provide a solidly founded attitude index.

To test these possible explanations, this experiment was organized to compare group and individual EDI scores with themselves and other independent attitude scores. In this experiment the various procedural strategies designed for obtaining Evaluative Dominance Indices were the main experimental variables. Each of these procedures represented a different principle to be empirically tested.

ATTITUDE MEASURES

Criterion Measures

The EDIs obtained by these various procedures were tested against two independent criterion measures: an attitude questionnaire and a "connotation" rating.

Attitude Questionnaire. As a traditional attitude measure of high face validity, multiple choice attitude questions scored as equal interval scales were used. This was of a similar type used previously in the context of testing verbal association based attitudinal inferences against paper-and-pencil attitude measures. The subjects were asked how much they were in favor of or in opposition to selected stimulus themes. The subjects expressed their evaluation by choosing one of the following seven response options expressing neutral and positive or negative attitudinal positions.

My attitude toward_____is (check one of the following):

____highly in favor
____generally in favor
____slightly in favor
____neutral or undecided
____slightly in opposition
____generally in opposition
____highly in opposition.

For each of the attitude issues studied, the subjects were instructed to check the alternative most closely expressing their attitudes. Responses were scored by assigning zero to the neutral position, 1 to "slightly", 2 to "generally," and 3 to "highly" held positions. Responses "in favor" were given a positive sign and those "in opposition" negative signs. This criterion measure was kept the same as in the previous testing to ensure comparability.

Rating of Connotation. As the research involved assessment of attitudinal objects represented by verbal labels, rating the connotations of these labels constituted a simple and sensitive attitude measure. The subjects were asked to judge the connotation of the stimulus words in terms of positive or negative direction and intensity of their connotation. They were instructed to give the stimulus theme a rating of:

+3 if it has a strongly positive connotation;
+2 if it has a medium positive connotation;
+1 if it has a mildly positive connotation;
0 if neither positive or negative connotation or both
-1 if it has a mildly negative connotation;
-2 if it has a medium negative connotation; and
-3 if it has a strongly negative connotation.

This approach lent itself ideally to the task of attitude measurement as it has an apparent face validity. Furthermore, it is simple and readily applicable to verbal symbolic stimulus material.

Measures Representing Relevant Procedural Strategies

These inferential measures were based on associations obtained in continued association tasks in which the subjects were instructed to write to each stimulus theme as many associative responses as they could think of in one minute. From the associative data, Evaluative Dominance Indices (EDIs) were calculated based on the relative dominance of associative responses with positive versus negative connotation. Four types of EDI scores were obtained, each representing a different procedural strategy.

EDI—Standard. These scores were obtained on both group and individual basis. Two independent judges were instructed to categorize responses into

positive. neutral, and negative categories using the procedure elaborated previously (see Approach). Responses on which the judges disagreed (-, +; +, -) were placed in the neutral category. Based on this categorization, the EDI indices were calculated by the standard formula expressing the dominance of positive or negative responses over all responses. The Evaluative Dominance Indices obtained by this standard procedure were calculated on a broad variety of themes.

EDI—Weighted. The procedure used for obtaining the weighted index was generally the same as above, with two modifications. First, the judges were asked to give intensity weights (1-3) to their positive and negative categorization. Second, these intensity scores were used as weights in calculating the index by the standard formula. Again, indices were calculated on the basis of both individual and group response distributions. This strategy was used to test whether the intensity of evaluative attitudinal content of the responses disregarded in the standard EDI makes a difference.

EDI—Domain Based. Instead of calculating the Evaluative Dominance Index for single stimulus words, this index was calculated for particular domains, by using all responses obtained to each of the stimulus words used in the representation of a particular domain. This method allowed to calculate individual EDIs on the basis of more extensive response lists, wider foundation. This index variety was used to test whether the scarcity of information provided by the frequently short individual response lists may be a factor reducing the validity of attitudinal inferences produced on individual basis.

EDI—Subject Based. In contrast with the previous indices based on the evaluative-attitudinal content of responses as specified by judges, in this case the subjects themselves were asked to specify the positive or negative connotation of their responses. This method was used to test the theoretical position which assumes a summative attitudinal equivalence between the stimulus and responses obtained in continued association tasks. The comparison of the subject-based EDI with the standard EDI was expected to show how closely the judges can reproduce the idiosyncratic evaluations of the words by particular subjects.

ATTITUDINAL THEMES

Six themes were selected from three semantic domains to represent a wide spread of attitudinal issues, both positive and negative. The attitudinal domains—(a) race relations, Blacks, (b) women's liberation, and (c) drugs—were represented by the following themes:

Race Relations, Blacks	Women's Liberation	Drugs
Blacks	women's liberation	marijuana
Black man	career woman	heroin
Black woman	housewife	drug pusher
Malcolm X	woman	drug addiction
Martin Luther King	male chauvinist	drug rehabilitation
interracial marriages	female equality	getting high

These themes were included in the continued association task, the connotation rating task, and the attitude questionnaire.

SUBJECTS

Eighty-eight students (37 males, 51 females) from the University of Maryland participated in this study and were paid an hourly rate of $2. They

received the previously described tasks and a few additional psycholinguistic tasks in different orders to reduce undesirable learning effects. Not all subjects participated in all tasks.

RESULTS, DISCUSSION

First, it is desirable to assess the relationship between the two criterion measures used in this study: the attitude questionnaire and the connotation task. Using Pearson's product-moment correlation, the two criterion measures showed high positive correlation on both group and individual levels. At group level based on 50 subjects, the correlation of mean attitude questionnaire scores with mean connotation scores over 18 themes was .99. At the individual level based on 20 subjects, the correlation of individual attitude questionnaire scores with connotation scores over the 18 themes was .81 (average r after Fisher's Z transformation). As is usually the case, the individual measures showed lower correlations than the measures compared on group basis.

The high correlations suggest a close agreement between the two criterion measures. This agreement does not preclude, however, some differences as will be discussed in the next experiment where direct and indirect attitude measures are compared.

In testing the Evaluative Dominance Indices against the criterion measures, three modifications of the standard EDI were considered both at individual and group levels. As previously described, these EDIs were introduced to test the implication of various procedural strategies in the use of association data.

Validation of Group EDIs

The following table shows the correlation of the three group level EDIs with the criterion measures. The results are based on 18 themes and three domains, and the correlations are significant at the .01 level of probability.

TABLE 4

CORRELATION OF GROUP EDIs REPRESENTING VARIOUS PROCEDURAL STRATEGIES WITH THE CRITERION MEASURES

Criterion Measures	EDI Standard	EDI Weighted	EDI Domain-based
Attitudes	.93	.94	.99
Connotation	.93	.93	.98

$p < .01$

The differences between the three different indices are not significant. There appears to be a slight improvement when domain-based EDIs are used. The results suggest a generally high validity of all group-based Evaluative Dominance Indices as attitude measures. Already the standard EDI produced a positive correlation that is sufficiently high for validation purposes, and this practically ruled out the possibility that the various procedural modifications could have produced a drastic improvement.

The high correlations with the criterion measures generally support the principle of attitudinal equivalence at a group level, suggesting that a group's attitude toward a particular stimulus theme can be inferred from an evaluation of their spontaneous associative responses to that theme—at least at a group level.

Validation of EDIs as Individual Attitude Measures

To clarify whether the low validity of the individual EDI measures found in a previous study was a result of procedural problems and to test the general

assumption that an individual's attitudes toward particular stimulus themes can be inferred from the connotation of his responses, a task was designed in which the subjects were asked to indicate the connotation of the stimulus as well as the connotation of their responses to the stimulus. The "subject-based EDI" was calculated from this data. A comparison of the subject-based EDI with the criterion measures was then used to test the validity of our theoretical assumption at an individual level.

Table 5 presents the results obtained for twenty subjects on 18 stimulus themes. It shows the correlations obtained on individual basis between the subject-based EDI, which shows the attitudinal content of the responses, and the attitude questionnaire and connotation task, which show the attitudinal content of the stimulus themes. As an additional reference point, correlations of the subject-based EDI with the standard EDI are also included in the table. Data on individual subjects are presented here to show the considerable individual variations in the relationship of these four measures. While about six subjects produced low, generally nonsignificant correlations, the correlations of the remaining fourteen subjects are high and significant. This suggests that the theoretical assumption about the close correspondence of the attitudinal evaluative content of the stimulus and that of the associative responses holds in most but not in all instances.

By reviewing the data input behind the subject-based EDI, we find that some of the low scoring subjects apparently did not understand or follow the instruction. Some did not use negative signs at all in indicating the connotation of their responses but gave positive values even to the obviously negative ones like addiction and death. Others relied heavily on the 0 rating, apparently to avoid more careful thinking and

TABLE 5

CORRELATION OF SUBJECT-BASED EVALUATIVE DOMINANCE INDICES WITH THE CRITERION MEASURES AND STANDARD EDIs FOR 20 SUBJECTS *

Code # of Subject	Attitude Score	Connotation Score	Standard EDI
1	.67	.69	.78
2	.35	.27	.32
3	.65	.68	.81
4	.13	.34	-.04
5	.89	.66	.64
6	.13	.85	.75
7	.15	.11	.48
8	.42	.58	.80
9	.10	.56	.76
10	.40	.48	.80
11	-.21	.50	.17
12	.89	.88	.87
13	.24	.27	.50
14	.68	.40	.85
15	.79	.87	.84
16	.00	-.16	-.24
17	.39	.49	.20
18	.65	.74	.76
19	.93	.93	.87
20	.65	.72	.75
Average r	.56	.61	.64

*.47 and above is significant at .05 level.
.56 and above is significant at .01 level.

judgment. Although in the cases of subjects #11, #7, and #16 these mistakes are consistent and pervasive, in the case of others (#4 and #13) they are less consistent, although repeatedly apparent. This makes the situation more complex than could be properly clarified by dropping 2 or 3 subjects. This is another reason why the correlation on individual subjects are shown, instead of attempting to formulate conclusions at a more general level.

In the interpretation of these data, we may conclude that while results in the majority of cases supported our assumption about the close relationship between the affective attitudinal content of the stimulus and that of the associative responses, due to apparently extraneous factors this confirmation was only partial and not without ambiguities.

Nonetheless, as doubts about the validity of this underlying theoretical principle arose originally from the discrepancy of association based individual and group attitude measures, Table 6 shows the relationship of the individual EDIs to the group EDIs as well as to the criterion measures at a more summary level.

TABLE 6

CORRELATION OF INDIVIDUAL EDIs REPRESENTING VARIOUS PROCEDURAL STRATEGIES WITH CRITERION MEASURES

Criterion Measures	EDI Standard	EDI Weighted	EDI Domain-based
Attitude		.68	.67
Connotation		70	.71
Group EDI (standard)	.[illegible]		.80

$p < .01$

The correlations on the attitude and [illegible] culated involving in most instances 20 subjects; the group EDI [illegible] 50 subjects.

The correlation figures presented in the table represent mean correlation values obtained by Z transformation using Fischer's Z scores.

The major finding is the medium high positive correlation of individual EDIs with the other attitude measures. Compared with the generally low, frequently insignificant correlations (.27 to .50) obtained in a previous comparison with attitude measures (Szalay, Windle, and Lysne, 1970), the present results show a significant and fairly close relationship. The difference between earlier and present results may find a plausible explanation in the fact that the previous findings were obtained on a small word sample (N=3) across subjects within each word. Thus, the narrow range of variation in attitude scores on the selected words probably accounts for the low correlations. In the present study the word sample was fairly large (n = 18) and included themes with varied positive and negative attitudinal content, and the correlations, which were calculated across words instead of across subjects, were much higher. The correlations obtained with the EDIs representing various procedural strategies suggest again slight improvements resulting from weighting and from a broader domain based foundation. The differences, however, are slight, far from being significant. Yet the direction and the consistency of these differences indicate that the relatively narrow data base of individual indices is probably one of the factors which accounts for the differences between the individual and group EDI measures in respect to their correlations with other attitude measures (compare Tables 4 and 6).

B. COMPARISON OF THE ASSOCIATION-BASED ATTITUDE MEASURE WITH INDIRECT ATTITUDE MEASURES AND THE PREDICTION OF BEHAVIOR FROM ATTITUDE DATA

During the recent years several concepts have been formulated to provide explanations for the frequent discrepancy between expressed attitudes and inferred attitudes.

In this context, Orne (1962) speaks of the "demand characteristics" of the situation which frequently cause the subjects to make attitude statements to please the experimenter. In a similar context, Rosenberg (1965) refers to "evaluation apprehension," that is, the subject's concern to be viewed by the experimenter as a person of integrity, perceptiveness, and maturity. Jones and Sigall (1971) discuss the "generosity effect," the tendency to describe people, for instance, on antonym scales, in more positive, favorable terms than negative ones. Abelson and Rosenberg (1958) observe that in making socially desirable statements, there is also a sizable component of "self deception." Nonetheless, most of these biases may be generally subsumed under the effects of social desirability (Edwards, 1957; Crowne and Marlowe, 1964).

Many of the attitude measures which rely on questionnaires or scaling techniques have been criticized for various biases and distortions associated with their direct, frontal approach. There is indeed extensive research evidence suggesting problems with the validity of attitude data derived by the widely used survey methods in which people are bluntly asked about their feelings and attitudinal positions. As Wechsler and Bernberg (1950) observed:

> A great deal of criticism has been directed against the use of certain attitude measurement techniques, especially against those based on simple scales and on direct questioning, because they deal only with manifest verbal content and fail to reach into the more comprehensive aspects of personality. The person who is asked "point blank" to express his feelings on a subject about which he is reticent for one reason or another may well evade the issue by providing an answer which conforms with the views of the investigator or which is sufficiently neutral to protect his psychological security. This process does not have to be conscious or intentional and many clinical studies have shown that certain attitudes, although no less real to the individual, have been suppressed for being unacceptable to his values and standards and become inaccessible to explicit frontal approach of the various direct measurement techniques.

Sanford (1950-51) points out that the danger of biases is particularly acute when dealing with psychologically touchy problems:

> Probably every researcher who has worked with attitudes has had occasion to worry about whether the respondent was giving "real" answers or answers that were merely polite, safe, or off the top-of-the-mind variety. The problem is more knotty if the question concerns matters that are believed socially or psychologically touchy to the respondents. Any respondent can be expected to have many attitudes which he will not readily express even to himself.

It is generally assumed that indirect, inferential methods provide more valid attitudinal information than the direct approaches of attitude questionnaires and scales.

Finding indirect, inferential methods appears to be particularly desirable in the field of race relations. Racial attitudes are frequently emotion-laden (Katz and Braly, 1933; Karlins et al., 1969), and there are distinct trends to be less than articulate and frank about prejudicial attitudes (Katz and Benjamin, 1960; Crowne and Marlowe, 1964). These factors, especially when considered in combination, suggest that the field of race relations is probably one of those characteristically touchy areas where discrepancies between feelings and overt statements are particularly likely, where direct and indirect attitude measures may be

expected to produce different results. Race relations present then a particularly critical context fot the study of verbal association based inferences in regard totheir potential to assess attitudes as "gut feelings." Thus, we posed the following question in the context of race relations: Do the verbal association based attitudinal inferences show "gut feelings," attitudes unbiased by such factors as "demand characteristics of the situation," "social desirability," etc.?

In the framework of the following empirical investigations, a group of fifty subjects (25 males, 25 females) were tested by several direct and indirect attitude measures on a number of attitudinal themes. These direct and indirect attitude measures were compared for their ability to predict volunteering behavior in a project to help in the education of poor Black children.

ATTITUDE MEASURES

In a group session the subjects were administered the attitude questionnaire and continued association task on eighteen attitudinal themes as described under the first experiment. The standard individual EDI calculated from data obtained in the association task was used to represent an indirect association based attitude measure. Data from the attitude questionnaire were also included in the comparison to represent a direct attitude measure.

The Criterion Measure

Finding an adequate criterion measure—an attitude measure free from social desirability effects—is a particularly difficult task. An attitude measure which is generally accepted to have this desirable quality is not readily available.

According to the present state of art, the "Bogus Pipeline" approach, as introduced recently by Jones and Sigall (1971), seems to come closest to such an ideal. The Bogus Pipeline paradigm is applicable in laboratory studies using "naive" subjects. It is based on the assumption that "no one wants to be second guessed by a machine." The working of this paradigm presupposes that the subjects can be convinced that the equipment used by the experimenter has the capability to measure "true sentiments." If the subject is genuinely convinced that the equipment, an "electromyograph," uses physiological indicators, such as involuntary muscle movements and actually measures true feelings, he will be motivated to predict accurately what the machine is saying about him when he is asked to do so. In this approach the dependent measure is the subject's prediction of what the equipment shows as being his attitude.

Using the Bogus Pipeline paradigm several studies have been conducted recently. Sigall and Page (1972) compared Bogus Pipeline measurements with results obtained by a standard rating procedure on a selected stimulus person. Female subjects were asked to rate an obnoxious male who had appeared to be handicapped to some of the subjects and normal to others. The subjects using the standard rating procedure all said they liked the person, while subjects using the Bogus Pipeline procedure expressed disliking. As expected, those expressing negative feelings were less negative toward the handicapped person, but the differences were not significant.

In another experiment comparing the two procedures, Sigall and Page (1971) studied ethnic racial stereotypes. The subjects were asked to apply a series of adjective traits to the words "Americans" and "Negroes." The findings showed

that "Negroes" were described more negatively in the Bogus Pipeline than the standard rating procedure, while "Americans" were described more favorably.

These and similar experiments with the Bogus Pipeline procedure suggest that the method has a distinct potential to reduce certain social desirability effects and produce attitude data closer to "gut feelings" than do direct methods of rating or questioning.

Based on such observations, the Bogus Pipeline procedure appeared to be a promising measure against which to compare attitude data obtained by the verbal association based measure, the Evaluative Dominance Index.

An individual testing was organized a few weeks after the group session at which time participants of the previous testing session were tested by the Bogus Pipeline procedure. In the Bogus Pipeline procedure attitude statements are obtained from each subject after they have been convinced that they are attached to an electronic instrument (a phony electromyograph) that measures their "true feelings." The subjects were given the following description:

> Recording electrodes will be attached to your forearms, and you will be asked to hold the steering wheel and focus on the drawn scale. Various attitude statements will be read to you, and the only thing you will have to do is listen carefully to the statements and focus on the scale. Your reactions to each of the statements will be recorded by the electrodes, analyzed by the computer, and displayed on the "EMG Output" meter in front of you. The EMG does this by recording and analyzing implicit neural set reactions in your forearms which reflect the intensity and direction of your tendency to turn the wheel one way or the other in response to the attitude statements. The wheel cannot be turned; what will be measured is your initial, undistorted reaction tendency to turn the wheel one way or the other. In other words, it indicates where you

would turn the wheel if you could turn it. This immediate response tendency is not affected by what you think your response "ought to be". Nor is it affected by gross muscle movements.

With the belief in mind that their true attitudes would be electronically monitored, the subjects were asked to state their attitudinal position on a number of attitudinal themes, of which six were the *same* as those used in the preceding group session. The six identical themes were: (a) Blacks, Malcolm X; (b) housewife, woman; and (c) marijuana, drug addiction. The Bogus Pipeline attitude data on these six themes were then compared with the attitude data obtained in the previous group session.

BEHAVIORAL MEASURE

A behavioral measure was included in the study to see how these various direct and indirect attitude measures compare in providing valid data for predicting actual behavior. The overt behavior involved a volunteering task.

To obtain a behavioral measure which could be used as a reference point, the same subjects were contacted by phone and invited to participate as an assistant in a toy lending library project conducted in Washington, D. C., at two different locations. The calls were separated by several weeks from the previous testings so that the subjects would not be aware that the tests were connected.

The callers, young Black graduate students of the same sex as the subject, asked the subject to help in his free time to teach economically disadvantaged, predominantly Black parents how to use certain educational toys and to motivate

them to play with their children using the toys in game playing sessions. The caller identified himself as a student of Howard University and explained the purpose of the call as follows:

> I am calling college students in the area like yourself who might be interested in committing themselves to do volunteer work at the toy lending library located in . . . . Washington, D. C. Generally, the toy lending library is a project in a predominantly Black community that has the overall purpose of reducing some of the problems minority group children face at the very beginning of the educational process as a consequence of economic inequalities.

The caller assured the subject that the work did not require any special skill, only some familiarization with the task.

RESULTS, DISCUSSION

The Relationship Between EDI and Bogus Pipeline as Indirect Attitude Measures

In the previous experiment we explored the relationship between the association-based attitude measure, the EDI, and the paper-and-pencil attitude measures. The present study focused on the relationship of the association-based EDI to another indirect attitude measure, the Bogus Pipeline. The Bogus Pipeline served as a criterion measure on "gut feelings." The study also included attitude questionnaire data from the previous experiment as a direct attitude measure. A comparison of these three measures is presented in the next table.

TABLE 7

CORRELATION OF THE EDI WITH THE BOGUS PIPELINE AND QUESTIONNAIRE-BASED ATTITUDE SCORES

	Bogus Pipeline	Att. Questionnaire
EDI	.21	.66**
Bogus Pipeline		.82**

** $p < .01$

The low correlation between EDI and Bogus Pipeline, which does not reach the level of significance, comes somewhat as a surprise. The low number of subjects (n = 20) and words (n = 6) representing a somewhat restricted range of variance may serve as a partial explanation. Contrary to expectations, the correlation between these indirect measures is lower than the correlation between these and the direct measure: the attitude questionnaire.

Another way of looking at the relationship of these measures is to see to what extent the indirect measures show a tendency to produce generally less positive, more critical evaluations than does the direct measure. This is in line with observations that a variety of related mechanisms—generosity effect, social desirability, etc.—induce people to state more favorable, more positive evaluations than they actually feel. As a general trend it may be expected that compared to the direct attitude questionnaire, the Bogus Pipeline and EDI may produce a decrease rather than an increase in the positiveness of the evaluations.

TABLE 8

COMPARISON OF BOGUS PIPELINE AND EDI WITH THE ATTITUDE QUESTIONNAIRE ON THE TREND TO OFFER FAVORABLE EVALUATION (n = 24)

Theme	Subjects' Ratings as Compared to the Attitude Questionnaire					
	on Bogus Pipeline			on EDI		
	Same	Less Positive	Less Negative	Same	Less Positive	Less Negative
Blacks	15	8	1	3	12	6
Malcolm X	12	8	4	7	4	10
Women's Lib	11	9	4	6	7	8
Female Equality	11	7	6	8	10	3
Marijuana	11	5	8	4	13	4
Getting High	10	7	6	2	15	4
Total	70	44	29	30	61	35

The general trend, with a few reversals, is such that indeed the two indirect attitude measures produced less positive attitude ratings than the attitude questionnaire. In this respect the EDI and the Bogus Pipeline have shown similarity in the expected direction. This similarity, however, does not explain the low correlation on the attitude data obtained by these two measures.

Prediction of Volunteering from Attitude Data

The question of predicting behavior from attitude data has been further underscored by the previous findings which indicated that the attitude data obtained by the three methods show considerable differences among each other.

Some of these differences were in agreement with prior expectations, while others were not. In any case, the differences only underscore the question of which measure provides the most valid data for predicting actual behavior.

To explore this question we have used the volunteering task. It suggested a natural setting, an opportunity to test to what extent the readiness to help children of poor Black families may be a direct function of general attitudes toward Blacks. The task was used to provide data on observable behavior which can be related to attitudes measured by various methods. In response to the volunteering task, the following results were obtained:

Actually volunteered: 23

Not volunteered (flatly rejecting or using some excuse): 27

This volunteering behavior was then related to the attitude data available from the three attitude measures: the attitude questionnaire, Bogus Pipeline, and the individual Evaluative Dominance Index. Two ethnic-racial themes appeared to be relevant in the present context: "Blacks" in general and "Malcolm X" in particular. Focusing then on those who volunteered and those who did not, the relationship between volunteering behavior and the attitude measures was calculated. The point biserial correlation produced the results shown in Table 9.

TABLE 9

CORRELATION BETWEEN VOLUNTEERING BEHAVIOR AND VARIOUS ATTITUDE MEASURES

Stimulus Themes	Attitude Measures		
	Att. Quest.	EDI	Bogus Pipeline
Blacks	.10	.14	-.06
Malcolm X	-.03	-.11	.35
Total N	50	50	18

All the correlations are low and none reaches the level of significance. The direct and indirect measures do apparently equally poorly as behavior predictors on this subject matter. This does not mean that direct and indirect attitude measures produce equally poor or equally valid data on racial attitudes, merely that in the present attempt to predict overt behavior both performed poorly. In this particular case, the improvement in predictions apparently does not hinge upon the directness or indirectness of the attitude measure as the central issue. As the previous findings on the comparison of direct and indirect attitude measures show, the results are only in partial agreement and the differences are frequently significant. As we have used several diverse attitude measures, their general lack of predictive power observed in this study apparently has a reason deeper than the validity of the measures. It seems to involve the very question of the relationship of attitudes and behavior. To put it differently, our findings suggest that racial attitudes, whether they are assessed directly or indirectly, whether they are colored by social desirability or not, apparently bear little on the type of behavior which we have selected to study. In this case, some students with negative attitudes volunteered

while many with positive attitudes on Blacks did not volunteer to assist poor Black families in the toy lending library.

The failure of all three attitude measures to make a valid prediction on the selected category of race-related behavior is in agreement with several recent findings which show little or no relationship between attitudes and overt behavior. As Wicker (1969) concludes after an extensive, timely review of the literature: "The present review of attitudes and behavior toward minority group members reveals little correspondence between the two types of variables, and in several cases there are reversals of the expected relationships." These findings suggest that the prediction of complex social behavior in real life situations requires more than the knowledge of a single attitude. The findings are reminiscent of Kurt Lewin's (1951) point that social behavior is usually complex and depends on personality and environmental factors, on a multiplicity of attitudes as well as a multiplicity of social constraints.

The following study represents an attempt to consider social situations of various types and to make predictions on a broader base than using merely attitudinal information.

C. THE PREDICTION OF BEHAVIOR FROM ATTITUDES AND PRIORITIES IN VARIOUS SOCIAL CONTEXTS

The growing number of findings which show a low level of consistency between attitudes and behavior (Freeman and Aatov, 1960; Vroom, 1962; Carr and Roberts, 1965) has led to a critical re-evaluation of theories assuming an attitude-behavior consistency. The new trend is toward a position of "contingent consistency" (Warner and DeFleur, 1969). This position assumes that there is a positive relationship between attitudes and behavior, but whether this relationship becomes manifest or not depends upon such "contingencies" as conflicting attitudes in higher positions of the hierarchy (Kamal et al., 1971), situational variables (Wicker, 1969), and other social constraints (Frideres et al., 1971).

Our previous findings, which showed no apparent relationship between attitudes toward Blacks and volunteering to help disadvantaged Black families, may merely show that the actual behavior probably depended on several factors, and the attitude toward Blacks was not influential enough to affect behavior under the given experimental conditions. As Weissburg (1965) makes the point: "An attitude, no matter how conceived, is simply one of the terms in the complex regression equation we use to predict behavior. . . The embarrassing thing is that we have not systematically investigated these other sources of influence on overt behavior."

Knowledge of a critical attitude may be sufficient for predicting behavior in the context of a more compartmentalized, independent activity; however,

social action choices, like volunteering in a racial situation, which involve a broad network of interdependent issues, demand accordingly more information for accurate prediction.

Several investigators (Cook and Selltiz, 1964; Newcomb et al., 1965; Rokeach, 1967) have found that information on a single attitude was frequently not enough to make valid predictions on social behavior with complex, multifactorial foundation. Although most would agree that predictions should be made on a broader foundation, the opinions diverge in respect to which variables should be included in the multiple regression.

One of the most popular strategies is to include information on several related attitudes. Although the verbal association method can readily provide such attitude data, this approach was not used in the present study for two practical reasons. First, there are some distinct limitations on the maximum number of variables to be used in multiple regression. Second, deciding which particular attitudes should be included from a usually large group of candidates requires prior assessment. Such an assessment is time consuming and its results are not readily generalizable to different situations.

Thus, instead of using multiple predictions based on several attitudes, the present study applied a more parsimonious paradigm relying on two main predictor variables. The two major variables were: (a) attitude toward the central theme, and (b) the subjective priority assigned to that theme. This strategy was based on the assumption that if we know not only a person's attitude but also the importance he assigns to a particular theme or social issue, we will be able to predict his behavior more accurately than from his attitude alone. For instance, in the

volunteering task discussed in the previous experiment, we may reason that probably more valid predictions could have been made if, in addition to considering people's attitude toward Blacks, we would have also included in our consideration how much importance people assign to helping disadvantaged Blacks. While some Whites may have positive feelings toward Blacks, they may feel little urge to help. Others may have negative attitudes but feel a type of moral obligation to help the disadvantaged.

Another major consideration in the prediction of behavior is the influence of various situational factors. As Wicker (1969) points out: "Clearly the greatest need in the attitude-behavior area is to operationalize and to test the contributions of the factors which have been offered as reasons for attitude-behavior inconsistency." Some of the factors emphasized are: differences between life situations and the assessment situation (Barker, 1965; Mischel, 1968), situational constraints (Warner and DeFleur, 1969), the presence of other people (Hyman, 1949), the availability of alternative behaviors (Insko and Schopler, 1967), anticipated consequences (Kutner et al., 1952), etc. As most of the above variables fall under the broader rubric of constraints, the following study was designed to consider situational constraints as a third category of independent variables. Just how much constraint is operative in a particular situation naturally depends to a large extent on how a given person perceives the situation. This makes it particularly difficult to use situational constraints as a controlled experimental variable. As methods for a quantitative expression of constraints are not available, the following situations have been chosen to represent marked variations in dimensions which imply constraints by their very nature. The dimensions involved both dependence and demand characteristics of behavior.

Dependence Characteristics of Behavior. Certain human activities are separate, compartmentalized, with little or notapparent personal implications (e.g., presidential choice); while others have broader life consequences (e.g., choice of occupation, education). The wider the perceived implications of a particular behavior, the greater is the level of interdependence and the potential for interference of situational constraints.

Demand Characteristics of Behavior. Certain activities represent easy, well established, institutionalized patterns of behavior; others place considerable burden on the actor by calling for new solutions, deviations from the customary, readiness to take inconveniences, to lose time, money, prestige, esteem, etc. From the angle of behavioral implications, we may conceive social situations in two extremes: constrained and relatively free. Situations with a high level of interdependence and high demand characteristics place obvious constraints on certain behavior alternatives.

GENERAL HYPOTHESES

Thus, social behavior and its predictability are conceived as a function of three major factors:

(a) the attitudinal position supporting the alternative;

(b) the relative priority this position occupies in the person's hierarchy; and

(c) the social situation and the constraints it places on a behavioral alternative.

Considering the nature and relationship of these three categories of variables, the following hypotheses appeared to have direct relevance to the present study.

I. The validity of behavioral predictions based on a single attitude will vary depending on the amount of constraint operating in the given social situation.

II. Behavioral predictions based on a single attitude have a higher validity in social situations with little inherent constraints, while their validity is relatively less in situations with a high level of constraint.

III. Behavioral predictions are more accurate if, in addition to attitude scores, priority scores are used to indicate the relative salience of the theme under consideration.

IV. In more constrained social situations the role of priority data used in combination with attitude data is greater than in situations characterized by a low level of constraint.

In testing these hypotheses, we were interested in comparing the predictive powers of the selected measures—attitude questionnaire, connotation task, and verbal association based inferences on attitudes and priorities—under various social situations representing different levels of constraints.

SOCIAL SITUATIONS AND CONTINGENT BEHAVIOR

Three major social contexts varying in degree of constraints were selected to study the relationship between selected predictor variables and overt behavior. Within each context, conditions of relatively low and high constraints were established.

The first context, voting behavior, represents an institutionalized activity with relatively few social constraints. Voting for a presidential candidate was selected to study because it is a specialized, compartmentalized activity, limited to two or three possible choices. It is private, institutionalized as secret, with no likely repercussions for the person. It is an easy routine involving minimal personal inconvenience. As a second category of political behavior, campaign

volunteering was studied. Campaign volunteering places greater demands on the person and calls for more commitments; in short, it represents a more constrained situation.

The second social context, religious behavior, was selected to represent a socially institutionalized activity with more constraints because it requires more involvement: daily or weekly commitments of time and money, etc. For those who are active in the church, attendance and financial contributions are routine activities. Nonetheless, these routine responses involve a certain amount of personal sacrifice and inconvenience. Volunteering for church activities was perceived again as a behavior representing acceptance of more commitments and inconvenience beyond the level of routine involvement. Thus, volunteering was viewed as a behavior involving additional constraints.

The third social context chosen was civil rights activities promoting racial equality. This represented the least traditional, least institutionalized type of activity studied. In civil rights activities there is a relatively greater chance of meeting opposition, value conflicts, personal inconveniences, etc. Because it has relatively high demand characteristics, the situation is likely to involve more constraints. Compared to past involvement, volunteering for new civil rights activities may be viewed as being even more constrained.

Using these three major categories of activities, in the following study information was obtained on the subject's behavior as the main dependent variable and on his related attitudes and priorities as the two main predictor variables to test the above hypotheses and to explore the relative potential of various attitudinal and priority data in making valid behavioral predictions.

Fifty students from the University of Maryland, 25 males and 25 females, participated in the study. They were administered several tasks in a single two-hour group session, for which they were paid $4. The subjects received the tasks in different orders to balance possible learning effects.

The data on the predictor variables were obtained by various attitude measures and verbal association based inferences on subjective priorities; the data on behavior were obtained by a behavioral questionnaire.

ATTITUDE AND PRIORITY MEASURES

Verbal Association Data

Free verbal associations were elicited to the words Nixon, McGovern, church, and Blacks as verbal-symbolic representatives of the selected attitudinal domains—politics, religion, and race relations. When these stimulus words were administered, they were interspersed with a diversity of other stimulus words. In another type of association task, the subjects were asked to list fifteen "important" areas of life." The associative response distributions were used to extract information on attitudes and priorities:

Attitudes. The Evaluative Dominance Index (EDI), based on the dominance of positive or negative responses to a particular theme, was calculated to assess attitudes on the four selected themes under study.

Subjective Priorities. Two types of information were obtained on priorities. If in his listing of the fifteen important areas of life the subject mentioned any of the three social contexts selected in this study, the response was given a ranked score. For example, if a subject mentioned "religion" as his fourth response out of fifteen, it was given a rank score of 12 (15 being the highest and 0 the lowest associative priority score). As another type of priority measure, called associative dominance,

the number of responses obtained to the four selected stimulus words was used: The more responses a theme elicits, the more importance that theme has for the person responding.

Attitude Data by Independent Methods

To obtain independent attitude data by direct methods, an attitude questionnaire and connotation task like the ones described under the previous study were used. They produced generalized attitude scores on the selected stimulus themes.

BEHAVIORAL MEASURES BY QUESTIONNAIRE

The questionnaire asked about behavior in respect to presidential choice, religious involvement, and civil rights activity. The questions involved past behavior as well as readiness for future participation and volunteering in action programs.

In the context of political behavior, the subjects were asked about their preferred presidential choice as well as about the intensity of campaign involvement, financial contribution, time spent, etc. In the context of religious activities, questions were asked about past church attendance, frequency of attendance, financial contributions, and about volunteering for church activities. About civil rights activities promoting racial equality, several questions were asked about past participation and contribution and about future volunteering.

RESULTS, DISCUSSION

The evaluation of the results centers on prediction of behavior in three main contexts selected to represent various degrees of situational constraints.

Prediction of Political Behavior

In the social context of political behavior, a correlation matrix was obtained on the predictor variables and on various categories of behavior as shown in Table 10.

TABLE 10

CORRELATION OF ATTITUDES AND PRIORITIES AS PREDICTOR VARIABLES WITH PRESIDENTIAL CHOICE AND CAMPAIGN BEHAVIOR

	Attitude Measures			Priority Measures		Behavior			
	Att.	Con.	EDI	Assoc. Prior.	Domin. of Assoc. resp.	% of Income	% of Time	Vol.	Choice
Attitude		.92	.52	.21	.14	.18	.40	.13	.78
Connotation			.44	.09	.25	.15	.39	.06	.73
EDI				.16	-.12	.12	.02	.00	.43
Assoc. Priority					-.02	-.02	-.16	-.07	.07
Dominance of assoc. resp.						-.04	.22	.26	.15
% Income							.51	.03	.14
% Time								.10	.24
Volunteer.									.04
Choice									

The results suggest that attitude data closely bear on prediction of the actual presidential choice. However, they make little contribution in predicting campaign volunteering. Somewhat the opposite is true about the priority measure based on the number of associative responses. This priority measure showed a low but significant correlation with the volunteering task.

The above observations are supported by the results of multiple correlations which show the combined predictor value of attitude and priority data (see Table 11).

TABLE 11

MULTIPLE CORRELATION OF ATTITUDES AND PRIORITIES WITH PRESIDENTIAL CHOICE—McGOVERN

Measures used for Attitude and Priority	Correlation of Predictor Measures with Choice				
	Attitude	Priority	Att. and Priority R	R^2	Std. Error
Connot. task and assoc. priority	.73**	-.07	.74**	.55	.29
Connot. task and assoc. dominance	.73**	.15	.74**	.55	.29
EDI and assoc. priority	.43**	.07	.44**	.39	.39
EDI and assoc. dominance	.43**	.15	.48**	.38	.38
Att. quest. and assoc. priority	.78**	.07	.78**	.27	.27
Att. quest. and assoc. dominance	.78**	.15	.78**	.27	.27

**$p < .01$

On the presidential choice, the direct attitude measures provided good predictors, as shown by the rather high positive correlations of both connotation task and attitude questionnaire scores with voting behavior. The association based attitude measure, EDI, has shown medium low correlations with the voting. The predictive power shows only a slight increase when the association based priority data are used in combination with the attitude scores.

In this context, the priority data drawn from the associative dominance scores were introduced into the comparison because the associative priority data originally obtained contained little information of political relevance. The associative dominance measure on subjective priorities shows a greater contribution in the context of campaign volunteering (Table 12).

TABLE 12

MULTIPLE CORRELATION OF ATTITUDES AND PRIORITIES WITH CAMPAIGN VOLUNTEERING

Measures used for Attitude and Priority	Correlation of Predictor Measures with Volunt.				
	Attitude	Priority	Att. and Priority R	R^2	Std. Error
Connot. task and assoc. priority	.06	-.07	.04	.00	1.52
Connot. task and assoc. dominance	.06	.26	.30	.09	1.45
EDI and assoc. priority	.00	-.07	.05	.00	1.52
EDI and assoc. dominance	.00	.26	.29	.09	1.45
Att. quest. and assoc. priority	.13	-.07	.08	.01	1.61
Att. quest. and assoc. dominance	.13	.26	.29	.08	1.54

In the case of campaign volunteering behavior, none of the attitude measures was found to make any noticeable contribution. In general, the above cases on political behavior—voting and campaign volunteering—suggest that in the largely unconstrained context of voting behavior, attitude data provide useful information, while in the case of the more dependent, demanding campaign volunteering behavior, attitudes alone were of no help. In this second case, however, priority data have shown some slight contribution.

Prediction of Church Participation

In the context of predicting church related behavior, similar attitudinal and salience data were considered and tested for their correlation with various categories of behavior. On the relationship of the predictor variables and the church activities conceived as dependent variables, the correlations shown in Table 13 were obtained. The correlation matrix suggests that both attitude and priority data have distinct relationship to the various categories of behavior.

To assess the combined effects of our predictor variables, multiple correlations were again calculated (see Table 14).

TABLE 13

CORRELATION OF ATTITUDES AND PRIORITIES AS PREDICTOR VARIABLES WITH VARIOUS CATEGORIES OF CHURCH BEHAVIOR

	Attitude Measures			Priority Measure	Behavior		
	Att.	Conn.	EDI	Assoc. Priority	Money Contrib	Attend.	Volunt.
Att.		.73	.56	.23	.34	.39	.30
Conn.			.57	.16	.29	.36	.36
EDI				.23	.23	.41	.39
Assoc. Prior.					.50	.13	.57
Money Contrib.						.33	.48
Attend.							.44
Volunt.							

TABLE 14

MULTIPLE CORRELATION OF ATTITUDES AND PRIORITIES WITH CHURCH PARTICIPATION

Measures used for Attitude and Priority	Correlation of Predictor Measures with Church Involvement				
	Attitude	Priority	Att. and Priority R	R^2	Std. Error
Connot. task and assoc. priority	.51	.46	.63	.40	6.03
EDI and assoc. priority	.54	.46	.63	.40	6.03
Att. quest. and assoc. priority	.50	.46	.63	.39	6.26

$p < .01$

The three attitude measures show similar medium correlations with church participation. The priority measure correlates with church participation at about the same level. A combined use of the two predictor variables—attitudes and priorities—shows a small but consistent gain in predicting behavior. All the correlations are significant at the .01 level.

To volunteer for various church related activities requires some additional sacrifice and commitment beyond the level of accepted routine. A comparison of the previous, more routine behavior with the more demanding volunteering has some apparent relevance to the hypotheses on the varying role of predictors as a function of certain critical situational variables: dependence, constraints, etc.

TABLE 15

MULTIPLE CORRELATION OF ATTITUDES AND PRIORITIES WITH VOLUNTEERING ASSISTANCE IN CHURCH ACTIVITIES

Measures used for Attitude and Priority	Correlation of predictor measures with Volunteering Church Assistance				
	Attitude	Priority	Att. and Priority R	R^2	Std. Error
Connot. task and assoc. priority	.36**	.57**	.63**	.49	1.35
EDI and assoc. priority	.39**	.57**	.63**	.40	1.36
Att. quest. and assoc. priority	.30*	.57**	.64**	.41	1.37

*p < .05
**p < .01

Compared to Table 14, the results in Table 15 suggest a decrease in the role of the attitude measures and an increase in the role of the priority measure. The attitude measures offer predictions generally at the same relatively low level. When used in combination with the priority data, the power of predicting increases, nearly doubles.

Prediction of Civil Rights Participation

The civil rights related activities were used as a social context representing the least traditional, least institutionalized category of behavior in this study. Our

questionnaire included two types of questions which bear on civil rights behavior. The first one asked about the person's past involvement in civil rights activities promoting racial equality. The second question bore on the subject's readiness to volunteer for promoting civil rights, whereby he was asked to express a choice and rank it in connection with other alternative choices (e.g., volunteering for solving population problems). The correlations of these data on past participation and future volunteering with attitude and priority measures are shown in Table 16.

TABLE 16

CORRELATION OF ATTITUDES AND PRIORITIES AS PREDICTOR VARIABLES WITH PAST AND FUTURE INVOLVEMENT IN CIVIL RIGHTS ACTIVITIES

	Attitude Measures			Priority Measure	Behavior	
	Att.	Conn.	EDI	Assoc. Priority	Past Participation	Volunteer.
Attitude		.55	.21	.18	-.01	.37
Connot.			.51	.12	.30	.27
EDI				-.01	.28	.17
Assoc. Priority					.21	.08
Past Partic.						.32
Volunt.						

The correlations of the predictor and the dependent variables one by one are generally low. The combined effects of the two predictor variables are shown next as analyzed by multiple correlation (Table 17).

TABLE 17

MULTIPLE CORRELATION OF ATTITUDES AND PRIORITIES WITH CIVIL RIGHTS PARTICIPATION

Measures used for Attitude and Priority	Correlation of Predictor Measures with Civil Rights Participation				
	Attitude	Priority	Att. and Priority R	R^2	Std. Error
Connot. task and assoc. priority	.30*	.21	.33	.12	1.20
EDI and assoc. priority	.28*	.21	.35	.12	1.19
Att. quest. and assoc. priority	-.01	.21	.21	.04	1.31

*$p < .05$

All three attitude tasks function at a somewhat similar low level. Only the connotation and EDI tasks produced correlations that reached the level of significance. The correlation with the priority data is low as well. The combined effects of attitudes and priority amount to a small but consistent increase. Under the present situational conditions, which may be characterized as relatively non-routine activities with a high level of situational stress and constraints, the value of attitudinal and priority data is relatively low in making valid predictions.

The inferences on volunteering have a similarly low level of validity (see Table 18). The correlations between attitudes and volunteering reach the level of significance on only two tasks. The priorities add practically nothing.

Generally, the findings show that the effectiveness of behavioral predictions varies between wide extremes: r = .00 to .80. This variation appears to depend on situational variables: interdependent, constrained, demanding activities versus independent, free activities facilitated by past experiences and routine

TABLE 18

MULTIPLE CORRELATION OF ATTITUDES AND PRIORITIES WITH VOLUNTEERING FOR CIVIL RIGHTS ACTIVITIES

Measures used for Attitude and Priority	Correlation of Predictor Measures with Civil Rights Volunteering				
	Attitude	Priority	Att. and Priority R	R^2	Std. Error
Connot. task and assoc. priority	.27*	.08	.27	.07	1.23
EDI and assoc. priority	.17	.08	.19	.04	1.26
Att. quest. and assoc. priority	.37**	.08	.37*	.14	1.27

*p <.05
**p <.01

(Hypothesis I). Data on single attitudes were found to have considerable predictor value for the second type of relatively unconstrained well established behavior, while their predictor role practically disappears in constrained situations in which the person is faced with a network of related issues, creating conflicts and posing new demands and inconvenience (Hypothesis II). In such situations a combined use of attitudinal and priority data offers generally better predictions (Hypothesis III). The value of priority data is generally less in instances of low situational constraints like predicting presidential choice where attitudes alone were found to provide for valid predictions (Hypothesis IV).

From a methodological angle, these findings have two main implications. Generally, they suggest that various tasks of predictions call for different measures and measurement strategies. What appears to be a high power predictor in an unconstrained setting may turn out to have little or no value in a complex, constrained situation.

Some of the previous results seem to suggest that direct attitude measures, which are frequently biased by social desirability, may be occasionally better

predictors than inferential attitude measures. It is possible that the direct measures perform better in instances when the observable behavior is controlled to a considerable extent by social desirability as well.

Such conclusions do not imply that it would not be desirable to obtain attitude measures unbiased by social desirability factors; rather that it is important to realize that in approaching such an objective we may not necessarily bridge the gap which frequently exists between attitude data and observed behavior.

In relation to the problem area of interpersonal and race relations, which is of special interest in the present study, the last two experiments have produced results which show in both instances a very low validity of attitudinal data in the prediction of racial behavior. The apparent implications of these findings, however, do not support the idea that the frequently low relationship between attitudes and behavior is a result of the biased, unreliable nature of attitude information. These investigations suggest that the problem may be less the unreliable nature of the attitude data than a fundamental deficiency of attitudinal information. More specifically, information on single specific attitudes, irrespective of their validity, are not enough to predict race related behavior, at least under the usual circumstances of high situational constraints.

Following the rationale of this observation, the value of verbal association data apparently hinges more on the capability to provide data simultaneously on several variables rather than on increasing the validity of inferences on a single variable. At least in the context of behavioral prediction, the inferential nature of the association based attitude measure could not be shown to have special

value. Compared with the other attitude measures, the association based measures appeared to be equal as a group measure, slightly less precise as an individual measure. In behavioral prediction, however, the association data have the apparent potential to offer more than one type of input. In the present study association based priority data allowed in several instances to improve the accuracy of prediction.

Generally the findings suggest that the potential of the association based inferences is not limited to attitude assessment but lies rather in the scope and diversity of measures applicable to the data obtained from a single unstructured continued association task. These measures provide for a combined use of attitudinal, perceptual, and priority data. The second series of investigations focuses on the relationship of the attitudinal and perceptual information obtained from continued associations.

VI. STUDY 2

A COMPARATIVE ANALYSIS OF ETHNIC-RACIAL GROUPS ON AFFECTIVE-EVALUATIVE AND PERCEPTUAL-COGNITIVE VARIABLES

In the conceptualization of attitudes, the relationship between evaluative and perceptual dimensions is probably the most central issue behind the present investigations. Its importance follows from several circumstances.

First, the relationship between purely evaluative components and perceptual cognitive components is the dimension on which contemporary as well as past conceptualizations of attitudes seem to show the most variation.

Second, different ethnic-racial experiences can produce differences not only in evaluations but also in perceptions, concerns, priorities—all of which are important in the prediction of behavior. A recognition of the proper relationship between these two dimensions is especially important in the field of race relations.

Third, although in the past cultural perceptions and imagery have been particularly difficult to assess, the association-based method selected for these investigations promises an analytic capability for the simultaneous empirical assessment of both affective-evaluative and perceptual-cognitive components.

In the present study, Black, White, and Spanish-American groups were analyzed in two main contexts: (a) the interrelationship of the three ethnic-racial groups; and (b) their relationship to the social environment in terms of its main units. In both of these contexts the analysis had two main dimensions: affective-evaluative and perceptual-cognitive.

Each ethnic-racial group was represented by 50 subjects (25 males, 25 females). The White group was tested at the University of Maryland. The Black group was formed of students at D.C. Teachers College. The Spanish group was tested at the American University but included students from various universities in the Washington, D.C. area. The Spanish-American group included members of domestic Spanish groups as well as foreign students from Central and South America. All three samples were comparable groups representing various major fields of study. The Black student group had a greater percentage of married students.

A. ETHNIC-RACIAL IMAGES AND ATTITUDES BY BLACK, WHITE, AND SPANISH-AMERICAN GROUPS

The following study compares the relationship between attitudes and perceptions in terms of a group's image of its own race and of other ethnic-racial groups.

It makes good sense to ask whether a person or a group is liked or not. It makes similarly good sense to ask for a description of a person or group, how it is perceived—big, small, rich, poor, etc. These two questions can then be studied in combination to see what effect liking or disliking may have on the perception or image of a particular group or person. These images may also be influenced by the ethnic-cultural background of the viewer.

We will present some summary statistics which bear on the relationship of these three variables—ethnic-racial background, attitudes-evaluations, and imagery-perception. First, data will be shown on generalized attitudes toward Blacks, Whites, and Spanish-Americans by representative groups. Then the images of Blacks, Whites, and Spanish-Americans by each of these ethnic-racial groups will be presented.

GENERALIZED ATTITUDES TOWARD ETHNIC-RACIAL GROUPS

On the first question—how Blacks, Whites, and Spanish-Americans evaluate themselves and the other two ethnic groups—three types of attitude data were collected:

a. attitude scores derived from an attitude questionnaire, a direct paper-and-pencil method;

b. attitude scores derived from the connotation task, a less direct approach which appears to be less affected by social desirability; and

c. "evaluative dominance indices" (EDI), as derived from verbal association based inferences.

For methodological reasons, only the attitude scores derived from the connotation task will be presented here. Compared to the questionnaire approach, the connotation task appears to be less personal, less direct, and less sensitive to biases by social desirability—at least this was the indication of findings discussed in the context of Study 1. Furthermore, while the perceptual data come from the association task, it appears to be desirable in the context of the present methodologically oriented study to rely on an independent, valid attitude measure, such as connotations.

Table 19 shows the generalized attitude scores obtained by connotation tasks on the three ethnic-racial groups. These attitude data show distinct differences among Blacks, Whites, and Spanish Americans. These differences are particularly articulate compared to the relatively minor differences found among these groups in respect to their social environment, its major groups, and constituent organizational units, as shown in the second part of the study. The sizable differences here reflect the high emotional loading of the domain of race relations within the broad field of social milieu and social relations.

TABLE 19

GENERALIZED ATTITUDES TOWARD SELF AND ETHNIC RACIAL GROUPS BY BLACKS, WHITES, AND SPANISH AMERICANS

Rating by Group	Average Attitude Rating on: ME	BLACKS	WHITES	SPAN.-AMER.
Blacks	2.4	2.4	-.7	.4
Whites	2.0	.7	1.4	.2
Spanish	2.4	1.2	1.1	2.2
Difference Significant at .01 level:				
Black-White		*	*	
White-Spanish		*		*
Black-Spanish		*	*	*

After having identified the affective-evaluative component of ethnic-racial relations, we may turn our attention next to the perceptual components and their variations.

ETHNIC-RACIAL IMAGES BY BLACK, WHITE, AND SPANISH-AMERICAN GROUPS

The following study explores ethnic-racial images of selected ethnic-racial subject groups with focus on perceptual components. To illustrate what is meant by "perceptual" as opposed to "evaluative" we may take the example of a picture and consider two questions: first, what we see and second, whether we like it. What we see in a portrait of a person, for instance, involves perception—shapes, colors, movements. A later remembrance of the portrait involves a reactivation of former perceptions by cognitive processes, frequently labelled cognitive representation or mental image. The elements of this reproduction process—colors, shapes, smell, sound—are commonly referred to as perceptual-cognitive.

The second question, whether the picture is liked or not, is obviously related to what is seen in the picture, but it is still a distinctly different one. This second question asks about the viewer's evaluation, affective reaction to the portrait, frequently called attitude.

As has been previously discussed, although a distinction between perceptual and evaluative dimensions appears to be desirable, such a distinction is presently clouded both by problems of theoretical conceptualization and difficulties in empirical measurement.

Compared to the emphasis placed on the affective-emotional components, the importance of the perceptual components has received much less attention. In the context of the present study, the methodological problems related to the measurement of perceptual components were of special interest. The assessment of perceptual variables in their natural salience is a particularly complex and demanding task. The verbal association based approach provides an empirical method whose

analytic potential has not been fully realized. In the shadow of the "verbal habit" philosophy, which has been briefly discussed previously, the potential of verbal associations to provide empirical information on the perceptual components of cognitive representations has been continually overlooked. To illustrate this potential, a few examples will be presented which show the relationship between associations and salient perceptual components. The examples are based on verbal association data submitted to various types of analysis. In the administration of the association task, on which the following data are based, the standard instruction designed for the elicitation of continuous responses was used. The process of administration and the methods of analysis are described in some detail in the Appendices I to III.

The relationship between associations and perceptual components becomes particularly apparent by reviewing the associative responses produced by pictures used as stimulus material. As a first example, we may consider associations produced by White students to the photo of Martin Luther King, Jr., as shown in Figure 4.

To aid the reader in reviewing the lengthy response list, we have grouped the responses under selected labels. Some of the labels are high frequency responses, while others are more arbitrarily selected higher order categories, such as "goals, ideals." A quick glance at the responses leaves little doubt that pictures produce responses predominantly predisposed by what the subjects see, what they perceive. The associative responses to the picture of Martin Luther King are not limited to purely visual attributes like black or beautiful, but include references to intangibles such as courage, ideals, roles, dates, etc. None of these perceptual-cognitive dimensions is surprising; actually, they are commonsensical to the point

	P
INTELLIGENT, CONCERNED UNDERSTANDING	**130**
strong	9
courageous	12
determined	1
outspoken	3
concerned	15
interested	9
intelligent	17
insight	7
understanding	18
kind	15
devoted	3
love	4
peaceful	17
GOALS: CIVIL RIGHTS, EQUALITY	**193**
freedom	17
justice	3
equality	30
unity	4
nonviolence	27
peace	26
hope	3
rights	13
civil rights	36
equal rights	6
discrimination	-
cause	11
dream	12
POLITICAL, RADICAL	**14**
liberal	-
radical	6
SCLC	5
MARCHES, DEMONSTRATIONS	**36**
marching	3
1963 march	16
boycotts	4
riots	3
sit-ins	4
speeches	6

P - Response scores produced by picture stimulus

	P
BLACKS, PEOPLE	**131**
Black man	3
man	21
Blacks	85
people	5
wife	2
Coretta King	13
B. Kennedy	2
LEADER, FIGHTER	**124**
leader	64
black leader	6
fighter	10
influencing	3
speaker	16
reformer	3
minister	5
preacher	9
religion	8
DEATH, ASSASSINATED	**65**
assassinated	35
dead	4
killed	14
murdered	7
shot	4
James E. Ray	1
GREAT, MARTYR	**73**
martyr	6
hero	3
good	10
great	22
admirable	3
humanitarian	12
helpful	14
MISCELLANEOUS	**27**
D.C.	1
sad	6
eyes	7
moustache	8
beautiful	5

Figure 4. Images, Components, Responses Produced by the Picture of Martin Luther King, Jr.

that they may appear banal and mundane. However, this impression changes after recognizing certain characteristics of these distributions.

First, these reactions do not reflect some type of photoprint of what we may call objective reality, but a subjective image characteristic of the group. This image, as we will see, varies from group to group. Mental images are generally personal, private, inaccessible, incommunicable, but verbal associations convey mosaic pieces of this image, which may be pieced together. The importance of the association method is not that it shows what these pieces are but that it shows the relative proportions of these pieces, component reactions compared to each other. The emphasis placed on these various components reflects the group's characteristic views and concerns. The scores accumulated by single responses, clusters of related responses, and the totality of all responses allow the image to be reconstructed in its true proportions. Thus, the personal image reaction becomes communicable, quantifiable on empirical grounds, as is shown in a summary presentation in a visual form later by Figure 5.

The close relationship between the photo and the responses elicited by the photo is fairly apparent. A comparison clearly shows that various response clusters reflect on various dimensions, some of which are visual-perceptual, like those dealing with appearance; others, like civil rights, equality, are cognitive, ideational.

When, instead of a photo, the word Martin Luther King is used, it is interesting to observe that fundamentally similar perceptual, cognitive response dimensions do occur, merely their salience shows some occasional differences. Generally, the distribution of responses to the word and to the picture is closely similar (see Figure 5).

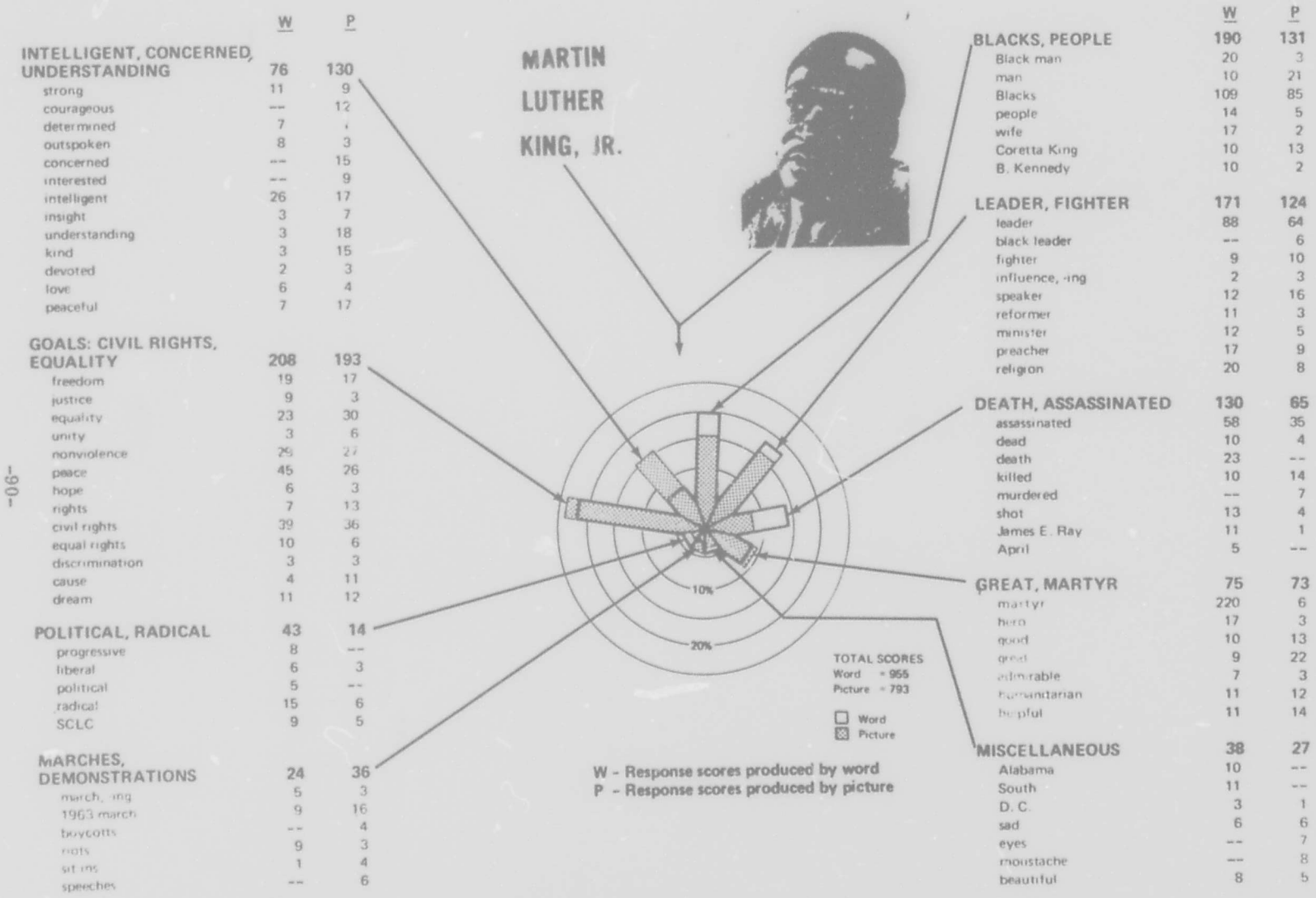


Figure 5. Images through Responses and Components Elicited by the Word and Picture of BLACKS.

This observation has considerable relevance for the research strategy used by the Associative Group Analysis method, since this method relies on words as stimuli.

The response distribution to the word Martin Luther King reflects a group image composed fundamentally of the same perceptual components. There are some shifts in focus, but these can be logically explained by the different nature of the stimulus material. The picture naturally brings slightly more into focus certain visual characteristics such as facial expression of interest, concern, eyes, moustache; while past events, like assassination and death, and such abstract, ideals as peace are somewhat less salient.

The consistency between responses produced by visual and verbal stimuli in this concrete example clearly illustrates that verbal stimuli also produce empirical information on perceptual components of the group's characteristic cognitive representation or mental image.

This close agreement exists only in those instances where picture and word have the same referent, as was the case with the name and picture of Martin Luther King as a specific concrete person. This same degree of similarity is naturally less likely to occur in relationship to collective names like Blacks and a visual representation which can only include an arbitrarily selected group in a specific context. The verbal concept Blacks is obviously more generic than any particular picture could be. The resulting differences are illustrated in Figures 6 and 7 which show associations to the word and picture of Blacks.

The picture has produced two mosaic components not elicited by the word. The first, "Listening, Watching," refers to activity and posture of the group in

	P
LISTENING, WATCHING	209
lecture	8
speech	7
attentive	24
concerned	14
intent	11
interested	40
listening	24
thought, -ful	11
serious	11
bored	9
calm	10
spectators	6
watching	20
staring	8
waiting	6
UNITY, TOGETHER, POWER	119
united, unity	14
together, -ness	46
gathering	6
rally	5
group	10
crowd, -ed	25
organization	10
power	3
GOALS: CIVIL RIGHTS, EQUALITY	38
cause	7
civil rights	8
equality	10
freedom	3
WHITES	9
whites	9
honky	--
APPEARANCE	12
dark	--
color	6
beautiful	--
hair, bushy	6
POSITIVE CHAR.: PROUD	--
normal	--
nice	--
nonviolent	7
proud	2

P - Response scores produced by picture stimulus

	P
PEOPLE	136
friends	--
man, men	10
women	17
sisters	7
brothers	8
people	9
human, beings	--
race	--
M. L. King	6
Negro	6
niggers	5
Blacks	60
minority, -group	--
COUNTRY, ORIGIN	18
Africa	--
Afro-American	15
city	3
South	--
SOCIAL, ECON. PROBLEMS	9
education	9
schooling	--
ghetto	--
slums	--
poor, poverty	--
welfare	--
DISCRIMINATION, OPPRESSION	29
discrimination	9
segregation	5
prejudice	3
oppression	--
slave, -ry	--
racism, white, black	12
NEGATIVE CHAR.: LOUD	45
hate	5
bitter	3
frustration	6
mad	13
unhappiness	9
fight, -ing	5
radical	4
loud	--

Figure 6. Images, Components, Responses Produced by the Picture of Blacks.

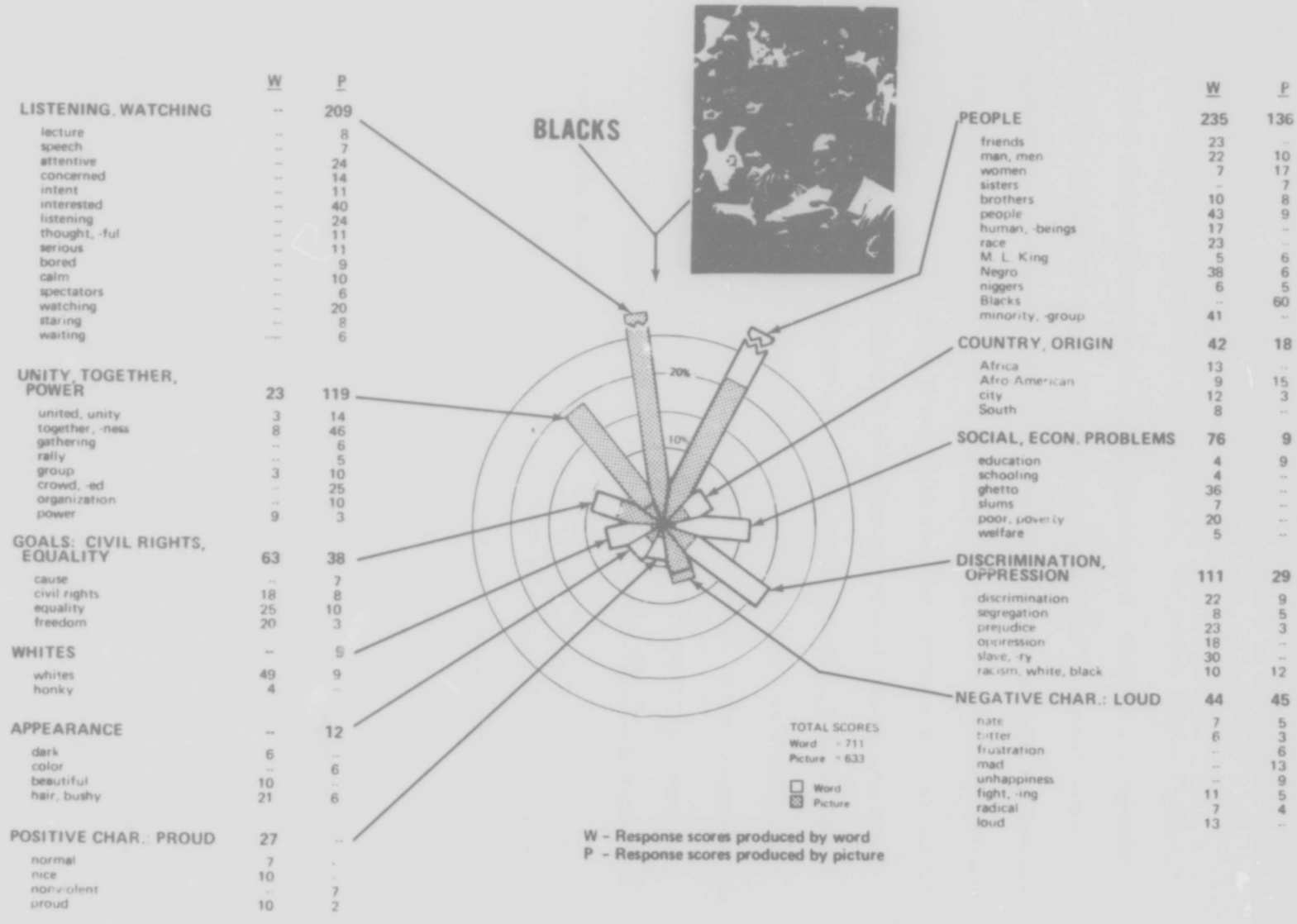


Figure 7. Images through Responses and Components Elicited by the Word and Picture of MARTIN LUTHER KING, JR.

the picture which depicts some type of audience. The second, "Unity, Together," reflects again on the picture showing a group or crowd. While these components were prominent in the context of the pictorial image, other less visual, more ideational dimensions were less salient here than in the context of the word stimulus. One component that received less emphasis was "People," involving such references as friends, race, and minority group, which were less relevant in the context of the given concrete picture. Similarly, the component a "Discrimination, Oppression" was less emphasized; responses like slavery, which were strongly associated with the word "blacks," were apparently not mentioned because they were not directly applicable to the scene presented in the picture. Similarly, on other components like like "Social, Economic Problems," the picture produced responses with less salience; these dimensions again are less concrete and not immediately apparent in a visual presentation.

How the words and pictures compare as stimulus material represents an interesting question of considerable practical and theoretical consequences. This question requires, however, a wider and systematic study and falls beyond the scope of the present investigations.

The preceding examples on pictorial and verbal stimuli illustrate several types of perceptual information produced by the associative responses on group images. Based on these examples we may try to summarize a few important characteristics of these perceptual data. They involve generally characteristics, attributes, contingencies of a cognitive representational nature. Although they may reflect evaluations, generalized attitudes, they are primarily cognitive-

referential in nature. Some of these variables may involve physical, visually observable qualities as conveyed by the word image; others involve characteristics in other sense modalities (sound, taste, smell) that are not directly observable, but that may achieve a high degree of salience. The images, composed of these perceptual-cognitive mosaic pieces, characterize a type of group reaction, a group process conceived as an aggregate of the individual representational reactions triggered by the stimulus—verbal or visual—used in the association task.

In the following we will explore ethnic-racial images by ethnic-racial groups—Blacks, Whites, and Spanish Americans. Compared to the analysis focused on generalized attitudes, the present analysis will capitalize on the salient perceptual dimensions: How Black, White, and Spanish American groups view themselves and each other. On the significance of differences observed between response scores and category scores between as well as within groups, see Appendix V.

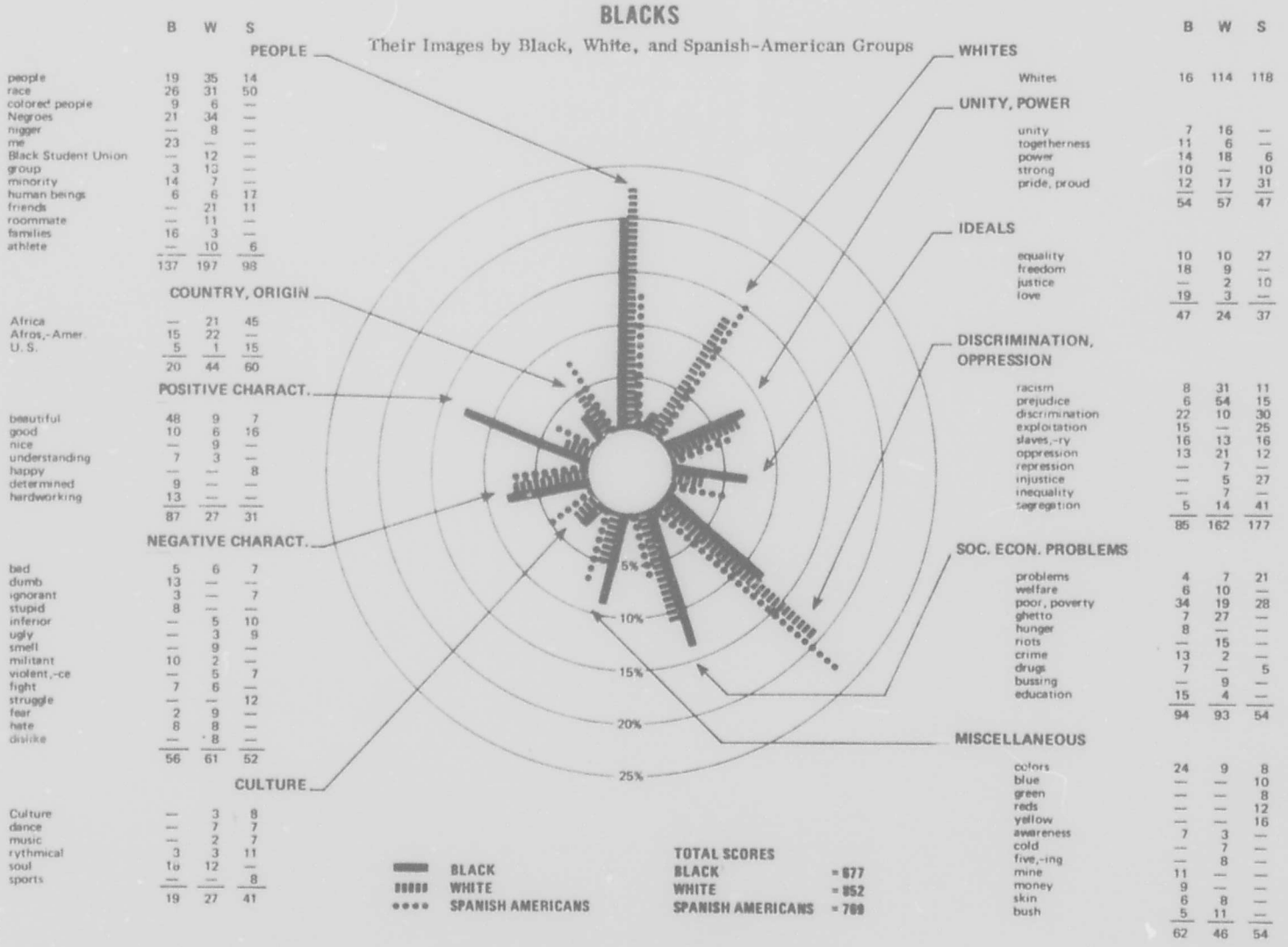


Figure 8. Semantograph of BLACKS.

BLACKS—MAIN MEANING COMPONENTS FOR BLACK, WHITE, AND SPANISH GROUPS

Component	B	W	S
People: Negros, me, friends	137	197	98
Country, Origin: Africa, U.S.	20	44	60
Positive Characteristics: beautiful, good	87	27	31
Negative Characteristics: dumb, militant	56	61	52
Culture, Music, Environment	19	27	41
Social and Economic Problems: crime, poverty	94	93	54
Discrimination, Oppression	85	162	177
Social Ideals: equality, justice	47	24	37
Unity, Power	54	57	47
Whites	16	114	118
Miscellaneous	62	46	54
	677	852	769

Black Group

As a part of the collective self image, the component PEOPLE, ME conveys distinct identification. DISCRIMINATION, OPPRESSION represents one of the most salient components and expresses intensive preoccupation with such timely issues as racism and prejudice. More optimism emanates from POSITIVE CHARACTERISTICS: beautiful, hardworking, good. Among the IDEALS, love, freedom, and equality rank highest.

White Group

DISCRIMINATION, OPPRESSION represents one of the most salient single components with particularly heavy emphasis on racism and prejudice. The PEOPLE involved include diverse categories such as friends, athletes, roommates. Next, a particularly strong association is shown with WHITES, not matched by the Black group. The POSITIVE ATTRIBUTES are outweighed by the NEGATIVE CHARACTERISTICS and REACTIONS.

Spanish American Group

The Spanish group's image of BLACKS is similar to that of the White group. DISCRIMINATION, OPPRESSION and SOCIAL, ECONOMIC PROBLEMS in general represent the most salient components with particularly heavy emphasis on segregation and discrimination. They make heavy references to WHITES. Again, the NEGATIVE ATTRIBUTES score higher than the POSITIVE.

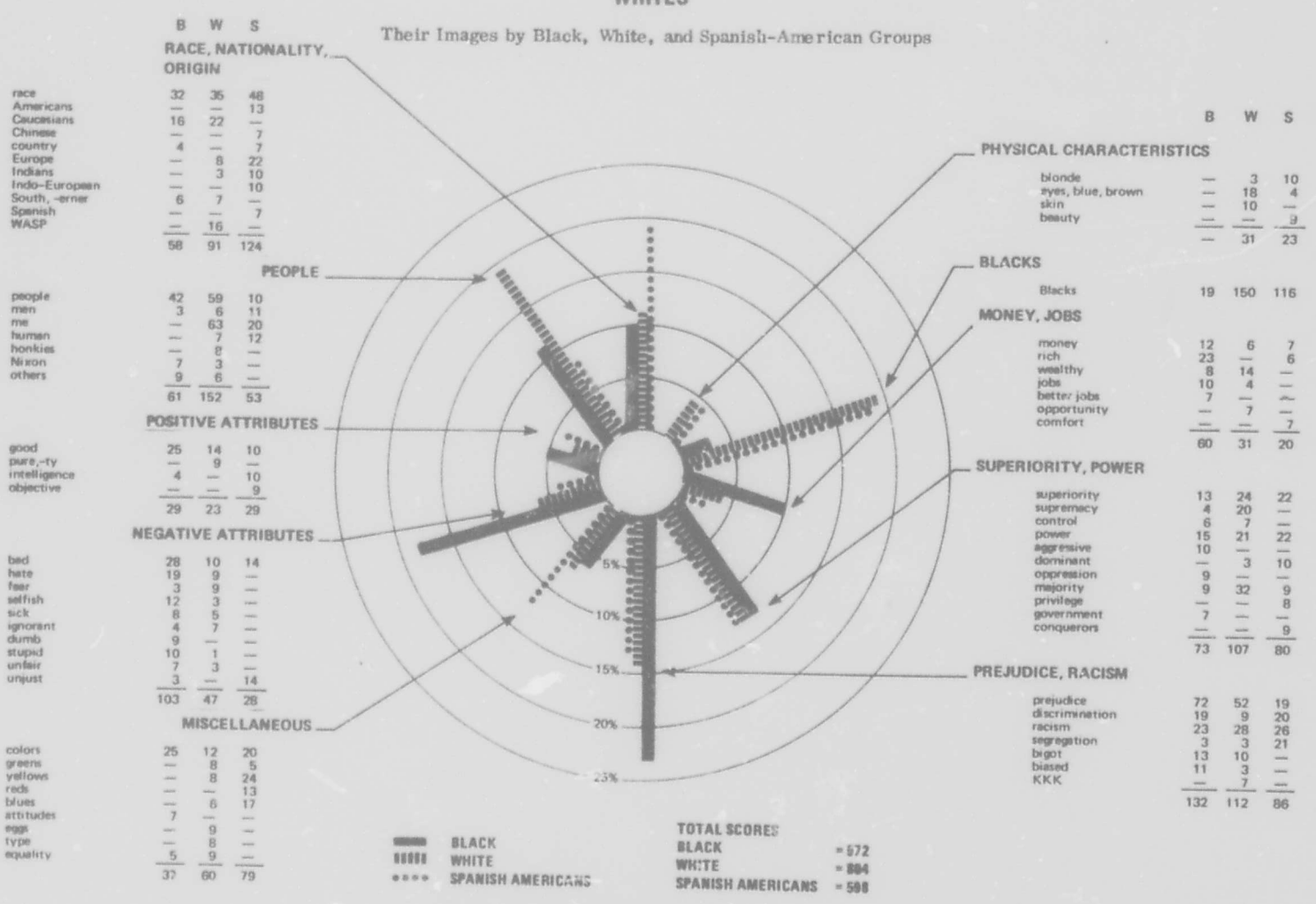


Figure 9. Semantograph of WHITES.

WHITES—MAIN MEANING COMPONENTS FOR BLACK, WHITE, AND SPANISH GROUPS

Component	B	W	S
Race, Nationality, Origin: American, WASP	58	91	124
People: Me and Others	61	152	53
Positive Attributes: Good, Intelligent	29	23	29
Negative Attributes: Bad, Selfish	103	47	28
Prejudice, Racism	132	112	86
Superiority, Power	73	107	80
Money, Jobs	60	31	20
Blacks	19	150	116
Physical Characteristics	-	31	23
Miscellaneous	37	60	79
	572	804	638

Black Group

In the perspective of the Black group the NEGATIVE ATTRIBUTES of WHITES, such as bad and biased, are particularly salient. A similar focus is placed on RACISM with prejudice as a central idea. A third and closely related focus bears on POWER and MONEY. Another large component involves PEOPLE in general and Nixon in particular.

White Group

The White collective self-image includes PEOPLE, ME as the most salient component which conveys identification. The next largest component is BLACKS, which is not matched by comparable responses from the Black group. SUPERIORITY, POWER probably has majority as the central idea. PREJUDICE, RACISM includes similarly references which are apparently self critical in tone.

Spanish American Group

PREJUDICE, RACISM occupies again a particularly salient position in the Spanish group's perception of WHITES. This focus on RACE is underlined by a similarly heavy emphasis on BLACKS. SUPERIORITY and POWER are dominant attributes. By NATIONALITY and ORIGIN the Whites are characterized as mainly European and American. The component PEOPLE, ME suggests that some of the Spanish American subjects identify themselves as white.

SPANISH AMERICANS

Their Images by Black, White, and Spanish-American Groups

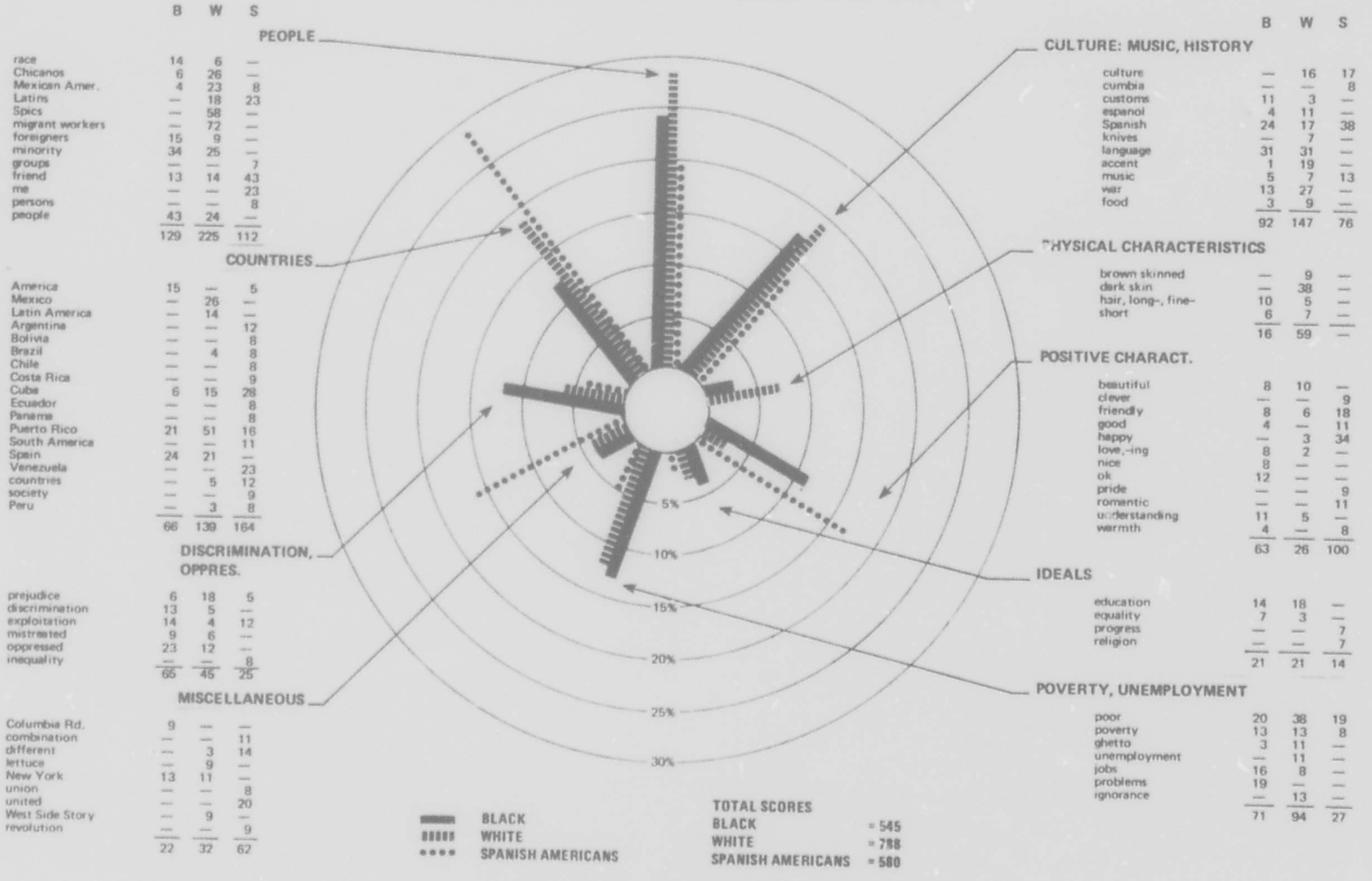


Figure 10. Semantograph of SPANISH AMERICANS

SPANISH AMERICANS—MAIN MEANING COMPONENTS FOR BLACK, WHITE, AND SPANISH GROUPS

Component	B	W	S
People: Chicanos, friends	134	225	112
Countries: Argentina, Cuba	66	139	173
Discrimination, Oppressed	65	45	25
Poverty, Unemployment	71	94	27
Ideals: Education, Equality	21	21	14
Positive Characteristics: beautiful	63	26	100
Physical Appearance: dark	16	59	-
Culture, Music, History	92	147	76
Miscellaneous:	22	32	62
	550	788	589

Black Group

Social and economic problems constitute the most salient components, with emphasis on POVERTY and DISCRIMINATION. This is so partially because they have apparently more domestic minorities, PEOPLE, Chicanos, Puerto Ricans, than Latin American COUNTRIES in mind. CULTURE, language, and music constitute salient considerations. The Black group describes SPANISH-AMERICANS in terms of POSITIVE CHARACTERISTICS.

White Group

This group has two about equally salient referents: PEOPLE, involving primarily domestic minority groups; and COUNTRIES, foreign, mainly Latin American. POVERTY and DISCRIMINATION appear to be particularly salient, and apply perhaps to both of these categories of referents. The Spanish CULTURE, including language and music, receives distinct attention. In the PHYSICAL APPEARANCE, dark skin is observed.

Spanish American Group

For this group the label refers primarily to the population of diverse foreign, Latin American COUNTRIES rather than to PEOPLE, involving domestic minorities. POSITIVE CHARACTERISTICS--happy, friendly, romantic--are given more attention than such social and economic problems as POVERTY and DISCRIMINATION. CULTURE, language, music show similarly high salient. They make no references to PHYSICAL APPEARANCE.

B. THE SOCIAL MILIEU IN THE PERSPECTIVES OF BLACKS AND WHITES

The following analyses seek to assess people's relationship to their social environment. Social environment represents a particularly complex and evasive subject matter. Its importance derives from its ubiquitousness, from the range and intensity of its influences, and from a nearly total dependence on this environment in our development and existence.

In the present study social environment is approached as the totality of relevant social units, that is, groups and organizations which provide the framework of our social existence.

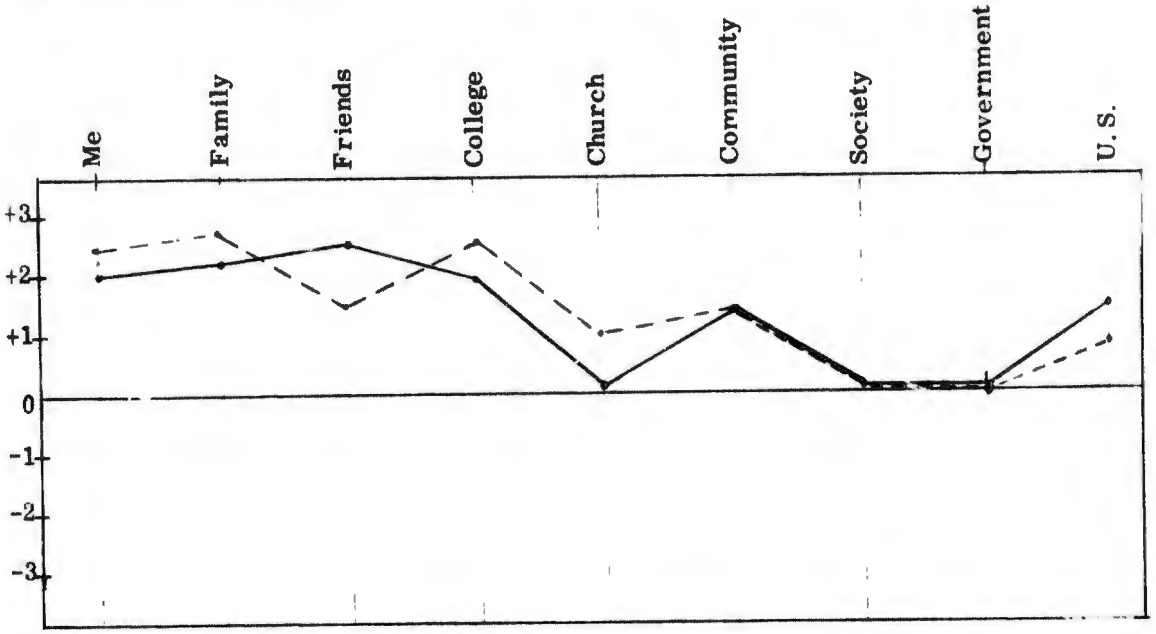
In the following analysis Black and White student groups are compared with respect to their relationship to the units of their social environment, such as family friends, society, etc. The approach is two-fold: affective-evaluative and perceptual-cognitive. In other words the analysis focuses on two types of questions: (a) how people evaluate their social environment in terms of its major groups and organizational units and (b) how they perceive their social environment in terms of characteristic attributes, timely concerns, salient problems.

EVALUATION OF THE SOCIAL ENVIRONMENT THROUGH ITS MAJOR UNITS

To assess their evaluations, two methods have been used. The subjects filled out an attitude questionnaire which aimed at the assessment of the generalized attitudes toward a selected number of themes, among them, such stimulus words as family and friends. This task has been discussed in more detail in Study 1

(see p. 41). In a second task the subjects were asked to rate words representing the above social units on the basis of their general connotation by using a seven-point scale from -3 to +3, with 0 implying a neutral attitudinal position.

These two measures had a high positive correlation (r = .96) but because connotation were obtained from more subjects than were attitude questionnaire data, the results presented in the following are based on the score values obtained in the connotation task. The following graph shows the mean attitude scores obtained by the Black and White groups for the social units studied including self (ME).



Blacks	2.4	2.7 *	1.5 **	2.5 *	1.0 *	1.4	.2	.0	.7 *
Whites	2.0	2.3	2.6	1.8	.1	1.4	.2	.2	1.4

*Black-White difference significant at .05 level
**Black-White difference significant at .01 level

---- Blacks
—— Whites

Figure 11. Mean Attitudes on Selected Social Units by Blacks (N=50) and Whites (N=100)

The mean attitudes of the groups are quite similar; the differences in most instances do not reach the level of significance (see Figure 11). These results suggest that in their attitudes toward the social environment, the Black and White students tested have relatively small differences. However, the comparison is based on means and does not show the actual distribution of the attitudes. Because the data

are based on relatively small groups, the findings naturally do not warrant broad generalizations. Furthermore, in view of the primarily methodological objectives of the study, little effort was made to obtain representative samples.

Instead of looking at attitudes toward single social units, it appears desirable to find clusters of attitudes that may show broader trends in people's relationship to their social environment. It would be particularly useful to know if there are certain patterns by which people identify with some of the units of their social environment and reject others. This type of knowledge is particularly relevant in the context of such timely social phenomena as social isolation, anomie, and social alienation. Each of these concepts involves a more or less generalized rejection of the social environment (Keniston, 1967; Coleman, 1964; Browning, 1968; Seeman, 1959; Dean, 1961).

About the prevalent patterns of identification-rejection, the data in Figure 11 suggest some relevant trends. First, they suggest that there may be a linear relationship between the size of social unit an. the degree of identification or rejection. Within this general relationship, we may identify three major categories of social units.

a. primary groups (me, family, friends) characterized by a generally high level of identification.

b. medium size secondary groups (college, church, community) characterized by generally moderately positive attitudes.

c. large collectives or organizations (society, country, government) characterized with generally low level of identification.

The above trends are based on mean attitudes, which do not tell us how the actual attitudes are distributed across individuals and across social group categories. In order to assess the prevalent individual patterns of identification and rejection, the subjects' attitude scores were analyzed for each of t e three social unit categories: primary groups, medium secondary groups, and large collectives. Three identification-rejection attitude prototypes occurred with a relatively high frequency. We have labelled them prototypes A, B, and C, each characterized by a different identification-rejection profile as is schematically shown in Figure 12.

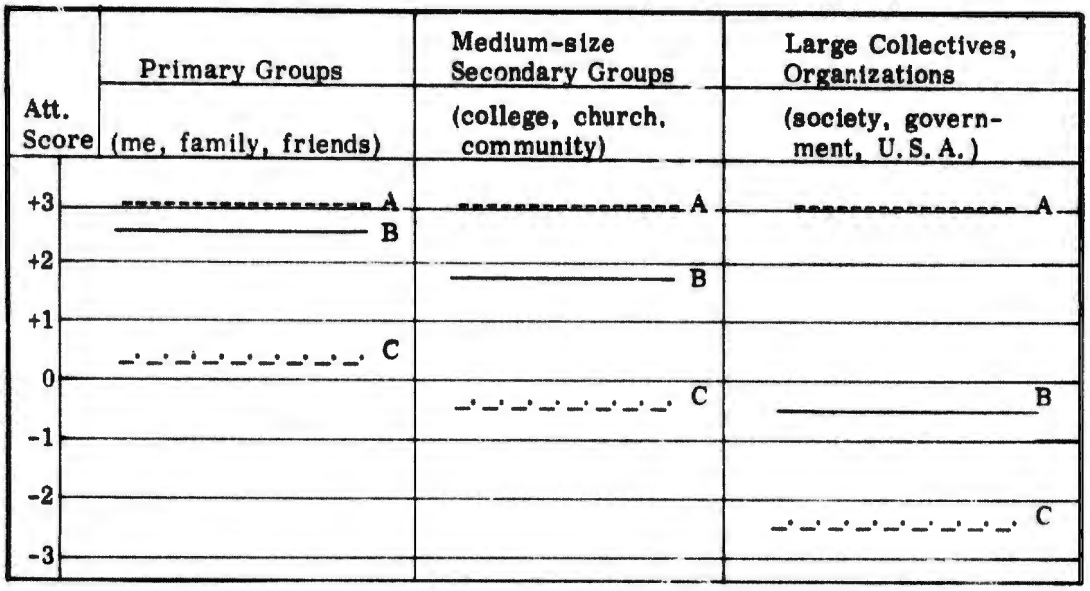


Figure 12. A Schematic Representation of Social Identification-Rejection Profiles for Prototypes A, B, and C.

Prototype A characterizes subjects who show consistently high positive attitudes toward all three categories: primary groups, medium size secondary groups, and large collectives.

Prototype B is characterized by a similarly high regard for primary groups, especially for friends, but only moderate regard for medium size secondary

groups and slightly negative regard for the large collectives of secondary groups.

Prototype C shows moderately favorable attitudes toward primary groups, with the possible exception of friends. It shows slightly negative attitudes toward medium size secondary groups and distinctly negative attitudes toward large social and political collectives.

After these attitude prototypes were identified as the most frequent trends, they were defined by total scores with score limits set for each unit category.

The subjects belonging to a particular prototype were identified on the basis of their total scores obtained for particular categories. In this identification process, small deviations not exceeding a total score of 2 per prototype, were tolerated.

When analyzed in terms of these relationships, naturally not all subjects fell in one prototype, A, B, or C. Subjects characterized by diverse attitude patterns which did not meet the criteria of the specified prototypes were placed in a "D" group.

The Black and White subjects categorized along these prototypes show the distributions presented in the next table. Prototype A, which may be characterized as a group with intensive, across-the-board identification includes the same number of Blacks and Whites. Prototype B, which may be looked at as representing the mainstream of strong identification with primary groups but with little regard for the large collectives, appears to be somewhat more frequent for the White group.

Prototype C, which shows a clear rejection of medium and particularly large social political collectives, is the smallest group of about equal size for both Blacks and Whites tested.

The Group D would merit closer analysis because of its size and because it contains various mixed types, some of which are likely to have broader social relevance. Nonetheless, such an analysis would fall beyond the scope of our present interest. The mixed nature of this group with subgroups showing various affinities to the three main prototypes prevented the use significance tests at this point.

TABLE 20

RELATIONSHIP TO SOCIAL ENVIRONMENT BY BLACKS AND WHITES BY THREE MAIN ATTITUDE PROTOTYPES

Categories of Social Units	Prototypes and their Prevalent Attitude Scores			
	A	B	C	D
Primary Groups	+3	+3	+2	?
Medium Secondary Groups	+3	+2	-1	?
Large Social Collectives	+3	+1	-2	?
No. of Whites per prototype	14	22	4	8
No. of Blacks per prototype	14	16	6	12

The Black and White subjects studied show generally similar patterns of attitudes toward the main units of the social milieu: (a) closer connection with primary groups, (b) the rejection of secondary groups generally increasing with the size of the groups, and (c) a relative homogeneity of attitudes within and increasing heterogeneity between the three main group categories.

The preceding analyses on attitudes compared the Black and White groups at two levels. The first analysis compared their mean attitudes toward single

units of the social environment, such as family, community, and society. The mean attitude scores for the Black and White groups were generally similar.

The second analysis compared the Black and White subjects on their individual profiles of social identification-rejection using three main prototypes. The frequency with which these prototypes occurred within the Black and White groups was similar. Instead of looking at attitudes toward various social units in isolation, this approach aims at a more synoptic view. It uses a profile of social identification-rejection and maps the person's or group's relationship toward their social environment. Rather than relying on such loosely defined concepts as alienation or anomie, which imply overall rejection of the social environment, this approach utilizes empirical data on prevalent patterns of social identification-rejection. It offers an empirical method for pursuing the dynamics of social change which may be adapted to the study of institutional adjustment.

While this first part of the study focused on the evaluation of the social environment by Black and White subjects, the next part of the study will show how these same groups perceive their environment.

IMAGE OF THE SOCIAL ENVIRONMENT BY BLACKS AND WHITES

Parallel to the assessment of attitudes of Blacks and Whites toward the social milieu, the present analysis explores how these two ethnic racial groups view their social environment. The main question here is not what people like or do not like but what elements of the social environment are important, what characteristics are salient, to what attributes do they pay attention. To

reconstruct a mosaic image of the social milieu, the associative responses of the Black and White groups were elicited to nine stimulus words representing such social units as family, society and to six stimulus words involving concepts of social relations such as equality or segregation.

In the standard procedure of the Associative Group Analysis method (see p. 21), the response distributions obtained to each selected stimulus word are analyzed separately. The following analyses, however, are based on the responses obtained to all 15 stimuli representing social units and social relations.

This second type of analysis is more global, and its purpose is to identify the major response trends which characterize broader semantic domains (e.g., the social environment) represented by a cluster of stimulus words (e.g., family, society). In the "domain centered" approach instead of a single response list, a matrix of response distributions serves as the point of departure. The matrix produced by computer contains the stimulus words as heads of the columns and response words as the rows. The cells contain the scores of responses elicited by one or more stimuli. The marginals of the matrix show the sums of elicitations by associative responses across stimuli (rows) and the sums of elicitations by stimuli (columns). Each ethnic-racial group has a separate matrix for each domain. It may be mentioned at this point that in addition to the analyses at the level of single stimulus words and particular domains, at a third level analysis of the global cognitive organization has also been developed. The matrix in this analysis uses the sums of domain matrices as columns.

The following analysis at the domain level is based on all responses that accumulated a total score of ten or more in the matrices of the Black and White group.

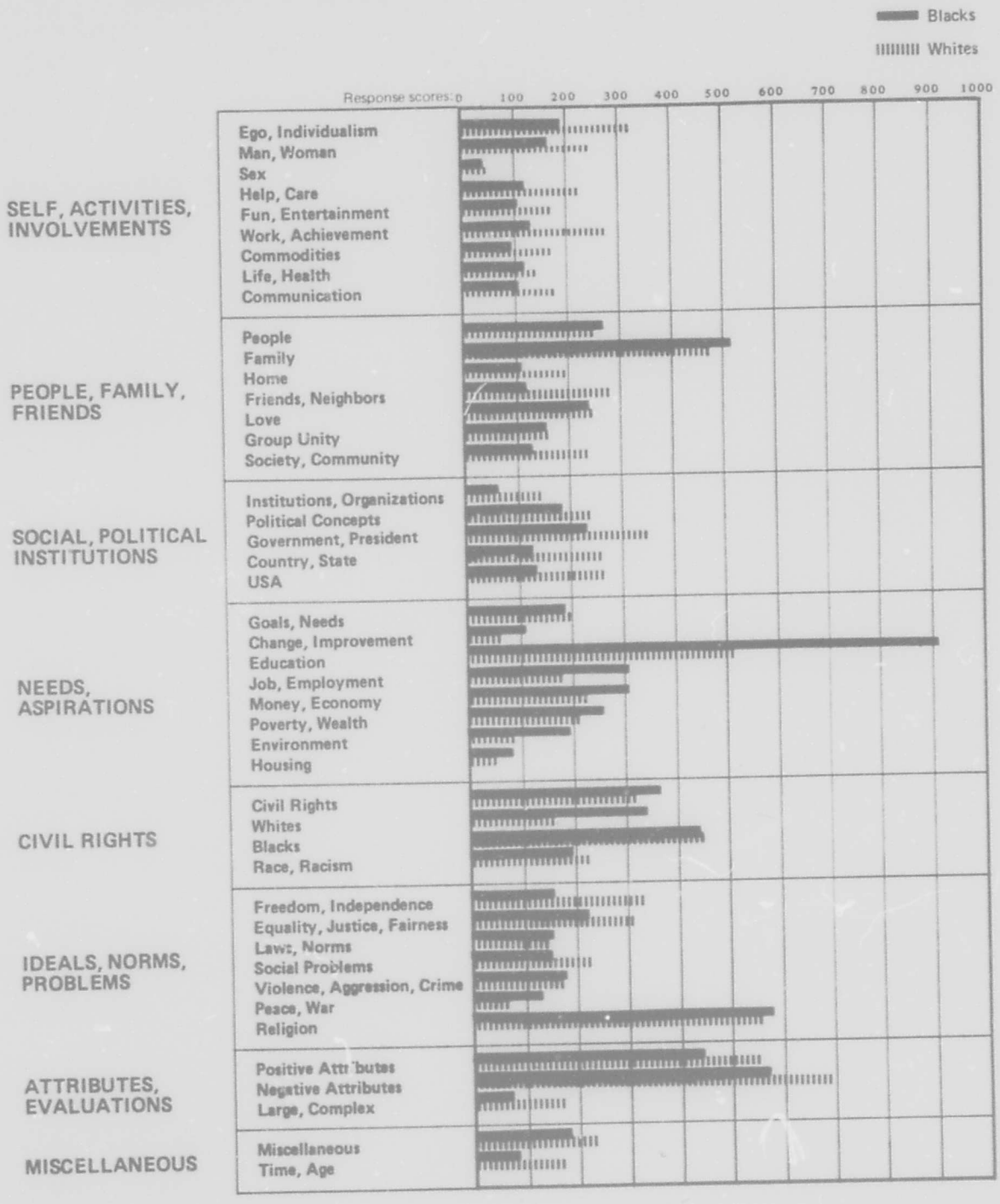
The data are presented at two levels: (a) An overview of the social environment presented in terms of its major components and their salience for Blacks and Whites; and (b) a detailed presentation of the responses underlying the particular components.

The information value of this presentation depends on a proper understanding of the relationship between the single responses and the total response distribution. There are obvious difficulties inherent in any attempt to describe fundamentally shapeless and nameless subjective reactions by appropriate labels. Such attempts constitute at best rough approximations. The identification and naming of the major response components involves a certain degree of inescapable arbitrariness. Thus, the reader is advised to keep in mind several elements and their relationships: (a) the specific responses making up a particular mosaic component, (b) the relationship between the responses and the label given to a cluster of responses, and (c) the connection between apparently related, occasionally overlapping components.

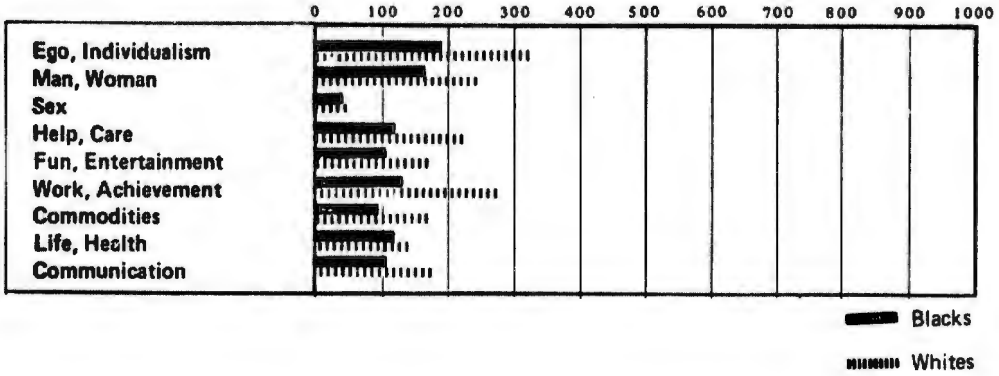
The image of the social environment as perceived by the Black and White groups may be described in terms of the following main mosaic components. The 45 mosaic components may be conveniently grouped and presented in the form of a "profile of the social environment" (see Figure 13). What these components are cannot be conveyed by the arbitrarily selected labels, but must be ascertained from the actual responses, their weight and distributions as shown in the following tables. About the significance of score differences, see Appendix V.

Figure 13

PROFILE OF THE SOCIAL ENVIRONMENT FOR BLACKS AND WHITES



SELF, ACTIVITIES, INVOLVEMENTS



Ego, Individualism	B	W
self, -image, -structure	9	24
myself	23	55
mine	16	13
me	47	82
individual, -ism	31	23
personal	3	11
impersonal	-	20
ego	5	13
I	17	59
personality	14	-
person	25	13
human, -being	3	-
	192	313

Man, Woman	B	W
male	10	-
man, men	22	55
women	50	84
female	26	22
boys	9	25
girl	50	60
	167	246

Sex	B	W
sex	37	125

Help, Care	B	W
help, -ing	42	85
helpful	21	33
care, -ing	25	52
share, -ing	26	51
	114	221

Fun, Entertainment	B	W
fun	50	87
entertainment	11	3
enjoy, -able	11	17
parties	30	23
boring	-	38
	102	168

Work, Achievement	B	W
ambitious, -ion	14	6
work, -er	60	65
business	11	25
opportunity	18	38
lazy	6	20
inefficient	-	22
grades	3	47
degree	13	22
try, -ing	7	7
	132	262

Commodities	B	W
car	11	32
clothes	1	12
food	21	8
comfort	5	16
stereo	5	19
resources	3	25
service	6	15
travel	20	19
drugs	14	16
	89	162

Life, Health	B	W
live	36	25
life	27	78
sick	18	21
health	27	6
	108	130

Communication	B	W
argument	12	6
speech	35	10
talk	24	28
laugh	6	11
communication	-	10
press	12	18
misunderstanding	9	21
confused, -ion	6	65
	104	169

SELF, ACTIVITIES, INVOLVEMENTS

This group of components is characterized by a generally higher level of salience for the White group. This is probably a reflection of ego-centered individualistic philosophies and of a high cultural priority placed on such values as activism, achievement, consumption, etc.

Ego, Individualism. The center of interest is "me," the individual. As other data dealing with self image suggest, the separation of self in counter position to others emerges as a particularly distinct characteristic of the White group.

Man, Woman. This component suggests an emphasis on and a separation of sex roles with special regard to the social environment.

Sex. In this same context the White group's emphasis on sex is particularly distinct.

Help, Care. This component probably reflects concerns with attitudes of cooperativeness and sociability.

Fun, Entertainment. The reactions reflect cultural characterizations capitalizing on leisure and entertainment.

Work, Achievement. Similarly this component is reminiscent of the achievement motive as a broadly recognized cultural characteristic (McClelland).

Commodities. This component in turn appears to be reminiscent of the U.S. as a "consumer society" with its emphasis on consumer goods and services.

Life, Health. The reaction "life" emerges here implies mainly way of life, life style, as the main connotation stressed primarily by the White group.

Communication. The emphasis of the Black group is apparently on oral, face-to-face interactions while the White group is apparently more preoccupied with problems hampering communications.

PEOPLE, FAMILY, FRIENDS

People	B	W
people	267	237

Family	B	W
family	40	59
wife	59	-
husband	57	-
father	35	79
dad	9	12
mother	77	88
parents	27	67
child, -ren	102	37
brother	44	78
sister	43	42
relatives	16	3
	529	465

Home	B	W
home	109	182

Friends, Neighbors	B	W
friend	52	179
neighbor, -hood	59	62
others	-	7
you	3	24
	114	272

Love	B	W
love	280	207
loving, -able	16	16
likeable	-	7
like	2	10
	298	240

Group Unity	B	W
group	57	38
united	15	4
together	21	50
togetherness	50	12
understanding	58	35
trust	10	9
loyalty	11	6
	222	154

Society, Community	B	W
society	27	53
social	25	32
everyone	18	41
all	3	10
community	18	23
classes	19	33
middle class	16	11
gathering	-	19
	126	222

PEOPLE, FAMILY, FRIENDS

In this group components are presented dealing with people in general as well as with primary and secondary groups.

Family. The Black group shows somewhat stronger emphasis on the family particularly on certain members of family such as husband, wife, and children. Some of the differences amy be due to the fact that a larger percentage of the Black group was married and had children.

Home. The White group placed more emphasis on the concept of home.

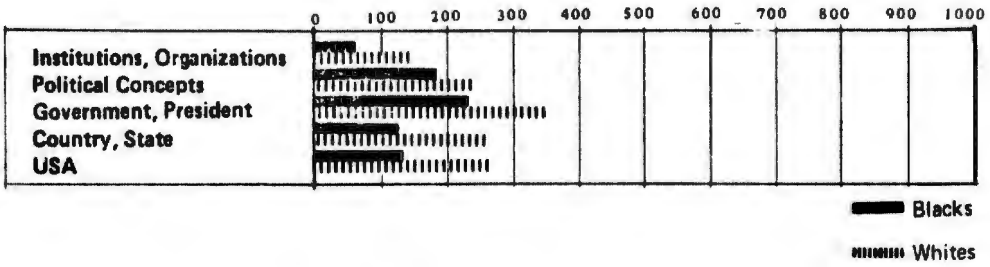
Friends, Neighbors. The Black group also makes more references to people in general, while there is an apparently stronger emphasis on friends and neighbors by the White group. The greater White emphasis goes together probably with their more positive attitudes toward friends as shown in previous observations. There are also indications that "friends" has a more focused, selective meaning for the Black subjects, while it is more liberally used by the Whites.

Love. The cohesive force of love has apparently a higher salience for Blacks.

Group Unity. This also appears to be a more immediate concern for the Black group.

Community and Society. These medium and large scale units of the social environment receive more attention from the White students. The focus on society and its classes is quite articulate and may represent a trend of increasing social awareness.

SOCIAL, POLITICAL INSTITUTIONS



Institutions, Organizations	B	W
Institutions	12	20
organization	13	11
bureaucracy	6	33
structure	-	31
center	6	23
Army	17	8
club	8	13
	62	139

Political Concepts	B	W
political, -ics	18	32
politicians	-	14
election	5	11
vote	-	10
democracy	22	46
capitalism, -st, -ic	51	39
power	77	69
force	13	10
	186	231

Government, President	B	W
government	68	92
president	37	35
Nixon	51	132
Washington	10	15
D. C.	19	5
Uncle Sam	3	10
Senate	3	12
Congress	27	35
FBI	5	10
	223	346

Country, State	B	W
country	50	67
state	9	46
states	12	12
local	6	26
Maryland	15	63
South	30	39
	122	253

USA	B	W
US, USA	68	114
of America	-	24
America	44	81
constitution	10	18
flag	6	22
	128	259

SOCIAL, POLITICAL INSTITUTIONS

This group of components is characterized by a consistently higher level of attention from the White group.

Institutions and Organizations. These general references indicate a distinct preoccupation with such concepts as bureaucracy and structure.

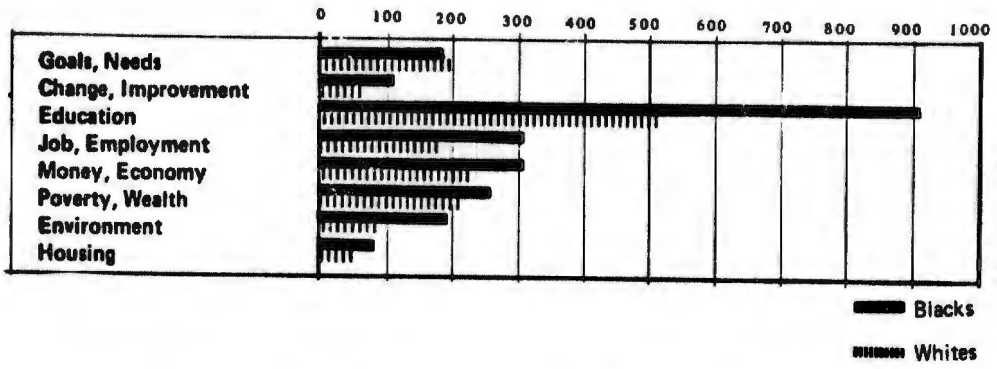
Political Concepts. Both groups recognize power with relatively the highest salience; for the Black group capitalism is a relatively more salient issue, for the White group, democracy.

Government, President. The government and President Nixon constitute the two most outstanding elements of the political structure for both groups. Nonetheless, the attention paid to these and other elements is consistently stronger by the Whites group.

Country, State. These units of political organization, especially the state, are apparently more in the focus of interest of the White group. While D. C. is more salient for Blacks, Maryland is more salient for the Whites, as an apparent reflection on their different schools and residences.

USA. The country, its various names and symbols are again more in the foreground of interest of the White group.

NEEDS, ASPIRATIONS



Goals, Needs	B	W
hope-ful, -ing	3	10
goal	11	2
plans	22	9
dream	16	7
want	22	34
belief	11	5
survival	16	2
necessary	30	42
need, -ed	49	76
unnecessary	13	16
	181	187

Change, Improvement	B	W
change	14	7
development	15	10
increase	13	-
improvement	17	4
seek	22	4
searching	-	9
reform	13	3
revolution	13	6
better	3	12
	110	55

Education	B	W
education, -ed	243	99
uneducated	15	9
learn	45	28
professors	14	3
teacher	14	12
student	62	31
graduate	23	5
knowledge, -able	18	22
books	23	6
mind	23	6
ideas	13	8
ignorant, -ce	39	37
training	20	13
untrained	13	2
skills	16	-
experience	25	10
schools	160	125
college	14	22
D. C. Teachers	62	-
U. of Md.	-	51
Howard	23	-
intelligent	5	13
smart, -at times	3	8
think, -ing, thoughts	5	7
	908	507

Job, Employment	B	W
employment	44	13
job	225	155
no jobs	21	-
unemployment	13	-
	303	168

Money, Economy	B	W
money	192	127
no money	10	18
compensation	18	-
economy	18	7
taxes	48	44
industry	12	10
depression	3	10
	301	216

Poverty, Wealth	B	W
poor	92	111
poverty	74	30
rich	46	32
wealth	14	18
hunger	26	13
	252	204

Environment	B	W
environment	56	6
ghetto	33	9
pollution	14	8
rural	12	3
town	23	14
urban	24	3
area	10	7
cities	21	27
	193	77

Housing	B	W
house	17	21
housing	53	2
building	6	18
	76	41

NEEDS, ASPIRATIONS

The reactions in this group of components suggest strong concerns and aspirations involving basic needs of direct personal relevance. The needs and aspirations are generally concrete and immediate.

Change, Improvement. This component reflects a stronger emphasis by the Black group on certain objectives and needs which aim at improvement, especially in respect to present social economic status.

Education. There is an especially strong emphasis on education. The Blacks outscore the Whites on practically all responses—except references to the University of Maryland where the White group was tested. This suggests an emphatic recognition of education as a major avenue for improvement. This strong educational emphasis may be also influenced by the circumstance that the Black group tested represented students of the D.C. Teachers College, an institution with primary vocational focus on education

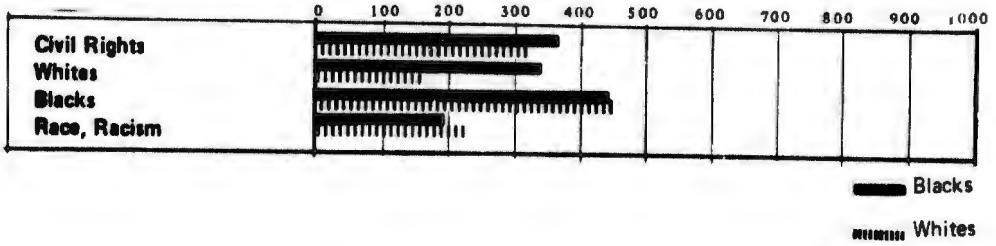
Employment, Job. There is similarly strong and consistent emphasis by the Black group on this component. While the attention paid by the Black group to employment, job is obvious, this component should be considered in conjunction with the "Work, Achievement" component in the group I, Self, Activities, Involvements.

Money, Economy and Poverty, Wealth. There is generally stronger emphasis by the Black group on these two economic components, particularly with the desirability and lack of money.

Environment. The attention given to physical environment is also quite articulate. It includes such timely issues as pollution and references to urban and rural locations.

Housing. This idea is directly related to the environment component and again reflects a greater Black concern.

CIVIL RIGHTS



Civil Rights	B	W
bussing	43	81
integration	13	35
segregation	13	17
slavery	48	26
minority	41	33
oppression	26	5
discriminate, -tion	38	8
prejudice	67	60
rights	61	45
	360	310

Whites	B	W
white	169	91
whites	167	62
	336	153

Blacks	B	W
Black	209	123
blacks	223	297
Negros	13	26
	445	446

Race, Racism	B	W
race, -s	73	92
racial	41	48
racism	31	40
racist	18	12
Indians	30	24
	193	216

CIVIL RIGHTS

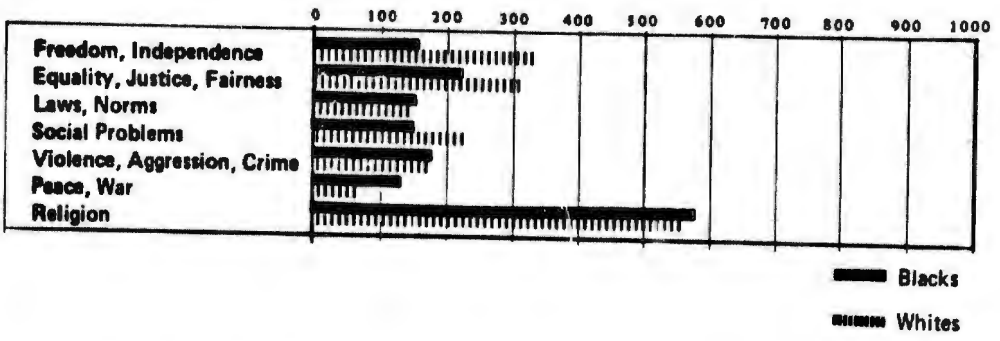
This group of components is apparently at a closely similar level of interest for both groups; only the distribution of their attention shows somewhat different focuses.

Civil Rights. Bussing and integration are more salient issues for the Whites while prejudice and rights are more salient for the Blacks. Oppression and discrimination appear to be primarily Black concerns.

Whites and Blacks. As a general trend in the context of the social environment, Blacks make heavier references to Whites and Whites to Blacks.

Race, Racism. The Black and White reactions are closely similar on this component.

IDEALS, NORMS, PROBLEMS



Freedom, Independence	B	W
free	31	47
freedom	32	90
independence, -t	18	30
liberty	15	39
liberal	-	17
uninhibited	10	5
apart	11	22
separate	47	54
alone	-	19
	164	323

Equality, Justice, Fairness	B	W
equality	28	49
equal	28	31
inequality	14	26
justice	34	42
unjust	9	21
fair	27	27
unfair	61	74
honest	16	23
sincere	-	8
	227	306

Laws, Norms	B	W
norms	4	14
socialization	10	2
control	20	18
must	6	16
rules	25	21
laws	60	54
police	16	10
	141	135

Social Problems	B	W
problems	67	39
crowded, -ing	-	19
waste	-	18
security	12	24
red tape	6	20
social security	-	18
welfare	53	65
restrictions	-	13
	138	216

Violence, Aggression, Crime	B	W
violence	8	16
brutality	3	12
guns	6	24
riots	2	19
hurt	6	23
force, -ful	-	19
aggressive	15	2
crime	93	26
jail	17	18
courts	21	5
	171	164

Peace, War	B	W
peace	51	31
war	66	38
	117	69

Religion	B	W
religion	105	116
God	112	99
Christ	9	13
holiness	12	-
holy	8	-
worship	35	10
pray	7	12
faith	11	7
Bible	16	-
church	63	10
steeple	3	14
synagogue	-	31
temple	-	16
chapel	6	13
priest	24	15
minister	6	14
preacher	16	10
Catholic	37	63
Jew, -ish	19	66
Baptist	48	-
Jesus	12	17
moral	27	13
mores	-	15
	576	554

Freedom and Independence. These responses constitute high priority social political values in line with American historical tradition and the ideology of individualism. The scores of the White group are about twice as high as those of the Black group. This observation is ccnsistent with the distinctly stronger White emphasis on Self, Activities, Involvements.

Equality, Justice, Fairness. The differences of the Black and White groups on these more socially oriented values were smaller. As Rokeach's recent investigations show, the greater emphasis on freedom over equality is fairly symptomatic of the main trends of social value orientation in contemporary American society.

Religion. The general level of reaction indicates the same level of attention from both groups. While for the Black group, God, church, and Baptist religious affiliation have particularly high salience, for the White group other religious affiliations, Catholic, Jewish, are apparently more representative.

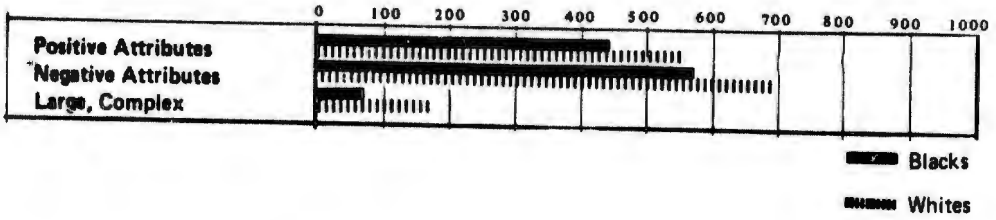
Laws, Norms. This component receives about equal attention and concern from both groups.

Violence, Aggression. There the White group shows a distinctly stronger preoccupation with violence and aggression. The Black group shows particularly strong concern with crime.

Social Problems. This represents a somewhat miscellaneous component involving a diversity of issues with more or less direct social implications and relevance reflecting generally a critical, skeptical position, especially by the White group.

Peace, War. The Black group's references both to peace and war suggest a relatively stronger preoccupation.

ATTRIBUTES, EVALUATIONS



Positive Attributes	B	W
peaceful, -loving	8	3
good	151	153
best	12	27
great	5	37
important	11	29
yes	13	18
real	14	2
open	3	16
nice	12	16
kind	23	19
close	33	30
involvement	24	12
humanistic	-	17
warmth	3	12
happiness	52	56
happy	49	[illegible]
responsibility	13	15
respect	13	4
confident	-	10
proud	-	7
generous	-	2
	439	538

Negative Attributes	B	W
bad	105	152
evil	6	14
corrupt	22	67
wrong	27	28
hate, -red	97	92
dislike	16	14
fear	25	27
bigots	3	14
enemies	10	7
hypocrites	21	7
bias	48	19
exploitation	11	6
narrow	-	13
no	30	10
none	20	20
unreal	19	3
impossible	6	25
divided	11	4
small	12	24
few	17	10
dumb	4	16
stupid	17	32
sad	10	23
fight	11	9
unsure	-	9
worried	-	6
moody	-	9
selfish	-	15
shy	-	8
sensitive	-	10
	558	693

Large, Complex	B	W
big	9	53
large	17	53
many	10	17
complex	3	13
high	24	27
	63	163

ATTRIBUTES, EVALUATIONS

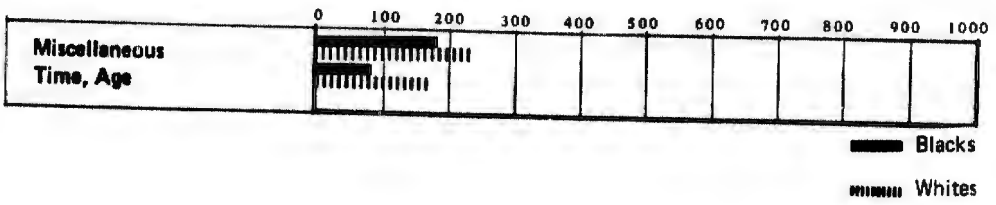
This group of components reflects certain trends in the general evaluation of the social environment by both ethnic racial groups. On all three categories of attributes, Whites scored higher than Blacks.

Positive Attributes. The basic elements suggesting positive evaluations are closely similar. The salience of these positive evaluations is somewhat stronger for the White group.

Negative Attributes. The Whites are also apparently more critical about their social environment. Corruption represents one of the more salient concerns of the White group, whereas bias is a more salient Black concern.

Large, Complex. The White group is apparently more impressed by the dimensions and the complexities of the social environment.

MISCELLANEOUS



Time, Age	B	W
now	26	17
time	14	3
new	4	10
never	4	22
Sunday	14	28
future	-	23
age	2	15
old	3	22
old age	4	17
19	10	-
	81	162

Miscellaneous	B	W
one	24	10
relations	4	19
feeling	12	15
cheap	10	-
some	14	21
why	23	11
hell	3	10
reaction	13	11
take	12	4
dogs	20	5
giving	5	11
choice	11	10
culture	2	18
world	16	19
nature	6	14
fat	3	18
tall	6	20
athletic	-	9
	184	225

MISCELLANEOUS

This miscellaneous group is composed of reactions that could not be readily assigned to any of the other 43 components. This component is included in order to provide the reader with a complete list of reactions produced by both groups. The list enables the reader to draw his own inferences from the distribution of responses. This may lead him to disagree with some of our results.

Findings in the first two parts of the study show relatively little difference in attitudinal terms, in the overall evaluation of the social environment by the Black and White groups tested. However, distinct differences were found in focus, emphasis, and saliences of particular components of social environment.

The Black group placed more emphasis on needs, aspirations and on people, love and cohesive forces.

The White group placed more emphasis on ego, its activities and involvement (individualism) and on normative aspects.

On many broader issues such as religion and race, the degree of interest was similar but somewhat differently focused.

In the present context it is not the novelty or the generality of certain comparisons and findings that is at issue but more the capability to quantify such comparisons on empirical grounds. The results presented on the Black and White groups tested were not meant to produce generalizeable findings about the Black-White images of the social environment. Some of the present findings are likely to vary considerably depending on the groups' economic, educational, and social background.

To achieve broader and more generalizeable findings, improvements are particularly desirable in three dimensions:

1. The domain of social environment should have a broader and more systematic representation by using more social units.

2. The size of the sample should be larger and more carefully selected or more clearly defined in order to be more representative.

3. The grouping of responses into relevant response categories which has been performed by the investigators and entails a certain degree of arbitrariness and subjectivity may be achieved on entirely empirical grounds by using overlap indices discussed elsewhere (Szalay and Brent, 1967). Such calculations require, however, data on larger word samples.

While these limitations do not seriously interfere with the objectives of the present methodologically oriented study, they are especially important in the planning and design of investigations that are primarily substance oriented rather than methodological.

C. PERCEPTUAL DIFFERENCES AS FUNCTIONS OF GENERALIZED ATTITUDES AND ETHNIC-CULTURAL BACKGROUND

SOME GENERAL HYPOTHESES

The preceding analyses have explored generalized attitudes and perceptual images of Blacks, Whites, and Spanish Americans in two main contexts: ethnicity-race and social environment.

On the question of ethnicity and race, we have found extensive variations in attitudes as well as in perceptions among the groups studied. On the relationship to the social environment the attitudinal differences were relatively small between Blacks and Whites, but their perception of the social environment has shown considerable variations.

To arrive at more general conclusions, the following analysis explores the dependence of perceptual variations on attitudes and on ethnic-racial background. The conclusions are expected to bear on such questions as: Do differences in ethnic-racial background cause more variations in perceptions than do differences in generalized attitudes? For instance, do Blacks and Whites with the same attitude differ more in their ethnic-racial images than do Whites with positive and negative attitudes?

In the context of generalized attitudes, we may assume that perceptual distance is a function of attitudinal distance. It is likely that people who are more similar in their attitudes (e.g., positive compared with positive) will show

also greater similarity in their perceptions of ethnic-racial groups than people with different attitudes (positive versus negative).

In the context of ethnic-racial background, it is plausible to assume that people with the same cultural background (comparison within the group) or with similar (Black-White) cultural background will have more similar perceptions than people with different cultural backgrounds (Black-Spanish).

Because cultural background and attitudinal disposition are each expected to contribute to differences in perceptions and imagery, it is plausible that their combined effects will result in greater perceptual differences than those produced by one or the other of these two variables.

These assumptions may be represented in the form of general hypotheses applied to the schematic matrix shown in Table 21. This matrix involves three ethnic-cultural groups—Blacks, Whites, Spanish Americans—each represented by subjects with positive, negative, and neutral generalized attitudes. The values in the cells of the matrix express the similarity of these ethnic-cultural and attitudinal subgroups in respect to their image of a selected group (e.g., Blacks) or theme (e.g., capitalism).

To make the present analysis more understandable, certain elements of the matrix will be described in more detail. The cells (B, W, S) along the diagonal of the matrix represent monocultural blocks. The values in these cells indicate the degree of similarity among subgroups of different attitudes within a particular ethnic-racial group. The variation found within these monocultural blocks are attributable to differences in attitudes.

TABLE 21

ETHNIC-RACIAL IMAGES: THEIR VARIATION BY ETHNIC BACKGROUND AND ATTITUDINAL DISPOSITIONS

Group and Attitude		N	Black			White			Spanish		
			-	0	+	-	0	+	-	0	+
Black	-			M	L		M	L		M	L
	0			B	M	M	B-W	M	M	B-SP	M
	+					L	M		L	M	
White	-						M	L		M	L
	0						W	M	M	W-SP	M
	+								L	M	
Spanish	-									M	L
	0									SP	M
	+										

Theoretically, the monocultural diagonal cells would represent a perfect correlation; practically, the correlation shown is a result of split-half analysis and constitutes a type of stability measure which depends on the homogeneity of the population and on the reliability of the measure. It is natural to expect the stability figures in the diagonals of the monocultural blocks to be less than one but still to represent the highest positive values (Hypothesis I).

The values of the other cells in the monoculture block may be expected to be generally higher than comparable cells in the heteroculture block, because in the monoculture block ethnic-cultural background does not add to the variance as may be the case in the heteroculture blocks (Hypothesis II).

Based on the purely attitudinal variations, the cell values may be expected to fall in three categories (Hypothesis III):

(L) largest difference, smallest coefficient between groups with opposing attitude attitudes (+, -)

(M) medium difference, higher coefficient between neutral and extreme values (0, -; 0, +)

(S) smallest difference, highest coefficient between groups with same attitudinal positions (+, +;-, -;0, 0) as discussed in the context of the diagonals

In the heteroculture blocks the diagonals represent cells which are affected by ethnic-cultural differences alone, but not by attitudinal differences. Accordingly, these cells may be expected to represent the highest values in the heteroculture blocks (Hypothesis IV).

On the remaining cells of the heteroculture blocks two types of predictions may be made. First, applying the same logic used in the context of attitudinal

variables in the monoculture blocks, a linear progression of perceptual distance may be expected as a function of attitudinal distance (see Hypothesis III).

Considering the first three hypotheses based on the logic of similarity as a function of attitudes, we may expect a decrease in similarity going from the central diagonal toward cells in more distant positions. There is a decrease from the diagonals of the monoculture blocks toward the diagonals of the heteroculture groups. And there is a decrease within each monoculture and heteroculture block from the diagonal toward more distant positions.

A second and more questionable prediction involves ethnic-cultural distance. Psychocultural distance may be conceptualized as a function of several independent variables such as ethnicity, cultural milieu, and language. While Black-White differences were found to be relatively small in a previous study (Szalay and Bryson, 1973), the Spanish group used in the present investigations represents subjects with different language and culture, which is traditionally recognized as different. Although many critical questions may be raised if we would try to introduce our Spanish sample as statistically representative, in the present context, it should be sufficient to stress that the majority of our Spanish sample had Spanish as the mother tongue and that they were foreign born.

Based on these considerations it is logical to assume that White and Black may be closer than White and Spanish or Black and Spanish (Hypothesis V).

Finally, analysis within the framework of the above matrix may tell something about the relative order of magnitude of perceptual differences produced by different attitudes as to those produced by different ethnic cultural background.

There is no logical rationale for assigning greater importance to one over the other, because both attitude and ethnic-cultural background represent continuous, nondiscrete variables with dramatically different distributions as characteristic of various samples. Nonetheless, a relative assessment of the influence of the attitudinal versus background variable in perceptual variations may have some information value when considered within the parameters of the present study.

SIMILARITY IN ETHNIC-RACIAL IMAGES BY ETHNIC-CULTURAL GROUPS WITH VARIOUS ATTITUDES

The Black, White, and Spanish-American student groups whose generalized attitudes and ethnic-racial images we have compared in the first part of Study 2 were divided into subgroups based on their generalized attitudes. The following analysis compares the positive, neutral, and negative attitudinal subsamples of the ethnic-cultural groups on their images of Blacks, Whites, and Spanish Americans. The similarity of these images is measured by the correlation of their associative responses using the Coefficient of Associative Similarity discussed in Appendix III.

One serious shortcoming of this comparison is that as the groups did not split evenly on their attitudes, some of the attitudinal subsamples had only a narrow base. The group size (N) is shown in the first column of the matrices. In view of the small size of some of the attitudinal subsamples, the figures in the diagonals of the monocultural blocks are based on splitting the whole cultural sample in two halves, rather than splitting each attitudinal subgroup.

TABLE 22

SIMILARITY IN THE IMAGE OF BLACKS BY BLACK, WHITE, AND SPANISH-AMERICAN GROUPS WITH VARIOUS ATTITUDES (+, 0, -)

Group and Attitude	N	Black			White			Spanish		
		-	0	+	-	0	+	-	0	+
Black										
-	1	(.10)	.00	-.10	.01	.08	.10	-.06	.03	-.06
0	3		(.10)	-.19	-.15	-.06	-.13	-.20	-.13	-.13
+	43			(.10)	.22	.22	.26	-.09	.23	.23
White										
-	11				(.85)	.12	.16	.05	.14	.02
0	10					(.85)	.86	-.02	.67	.74
+	29						(.85)	-.05	.64	.68
Spanish										
-	3							(.59)	.15	.02
0	16								(.59)	.76
+	31									(.59)

The matrix on the images of Blacks generally supports the first three hypotheses. The diagonals of the monoculture blocks are the highest; the diagonals of the heteroculture blocks are next highest (with a few exceptions); and the medium position cells have generally higher coefficient values than the cells in the remote lateral positions. Nonetheless, Hypothesis IV is not supported by the results as the White-Spanish heteroculture block contains generally higher coefficient values than the Black-White or the Black-Spanish blocks. Furthermore, these seems to be a generally closer relationship between groups with positive and neutral attitudes than between groups with neutral and negative attitudes.

TABLE 23

SIMILARITY IN THE IMAGE OF WHITES BY BLACK, WHITE, AND SPANISH-AMERICAN GROUPS WITH VARIOUS ATTITUDES (+, 0, -)

Group and		Black			White			Spanish		
Attitude	N	-	0	+	-	0	+	-	0	+
Black										
-	24	(.48)	.57	.57	.01	.31	.35	.30	.21	.16
0	10		(.48)	.35	.08	.42	.50	.16	.16	.34
+	13			(.48)	.04	.22	.24	.32	.19	.07
White										
-	2				(.91)	.28	.23	.10	.36	.45
0	12					(.91)	.78	.21	.62	.77
+	34						(.91)	.20	.56	.72
Spanish										
-	2							(.67)	.18	.14
0	20								(.67)	.70
+	25									(.67)

The data on the similarity of Black, White, and Spanish American groups' images of Whites again generally supports the first three hypotheses. There are, however, a few cells which deviate from the predicted level of similarity. Again, contrary to the prediction of Hypothesis IV, the Spanish-White similarity in the perception of Whites is closer than the similarity of Black and White or Black and Spanish groups. This is perhaps a finding specific to racial images. The consistently higher White-Spanish similarity on this matter may be predisposed by the common Caucasian racial identity of these two groups, both Anglo- and Spanish-Americans identifying themselves as Whites.

TABLE 24

SIMILARITY IN THE IMAGE OF SPANISH AMERICANS BY BLACK, WHITE, AND SPANISH-AMERICAN GROUPS WITH VARIOUS ATTITUDES (+, 0, -)

Group and		Black			White			Spanish		
Attitude	N	-	0	+	-	0	+	-	0	+
Black										
-	10	(.34)	.01	.26	.10	.16	.26	-.06	.10	-.07
0	18		(.34)	.33	.17	.18	.32	.03	.02	-.05
+	19			(.34)	.08	.34	.37	.05	.05	.06
White										
-	9				(.48)	.57	.40	-.06	-.06	-.03
0	24					(.48)	.48	-.02	-.12	.00
+	15						(.48)	.03	-.05	.05
Spanish										
-	1							(-.02)	.38	.12
0	6								(-.02)	.11
+	43									(-.02)

There is generally a low level of similarity in the perception of SPANISH AMERICANS among the three ethnic-cultural groups. Nonetheless, Hypotheses I and II are generally confirmed by the data—the diagonals of the monoculture blocks are the highest and the cells of the monoculture blocks are also generally higher than the comparable cells of the heteroculture blocks. Hypothesis III predicting the salience of the diagonals of the heteroculture blocks over the remaining cells is not borne out by the data--at least not in the case of the White-Spanish and Black-Spanish comparison. There is apparently so little agreement in the image of Spanish Americans among these ethnic-cultural groups from the outset that an added dimension of attitudinal agreement or disagreement does not make a clearly noticeable difference. Blacks and Whites show in this case, however, somewhat more similarity (Hypothesis IV).

The three images explored generally support the assumptions made in the introduction, but the comparisons apparently suffer in certain cases from the small size of the subsamples representing a particular attitudinal disposition. The sample of themes studied is also small and the context of ethnic racial images may be too specific to warrant any generalizations.

To reduce the consequences of these limitations, the following analysis attempts to present a summary picture on a somewhat broader data base.

A SUMMARY MATRIX: GENERAL TRENDS

To arrive at somewhat more general conclusions, the following analysis includes findings on the previous images and on three additional images: ME, SOCIALISM, and CAPITALISM. The similarity data produced on these additional images are not presented in separate matrices but the mean similarity coefficients calculated on the basis of all six matrices are shown in a single matrix (Table 25). The means were obtained by using Fischer's Z transformation. The number of subjects on which these mean coefficients are based is shown in the first column.

To provide a quick and easy check on some of the hypothetical assumptions formulated, additional means were calculated for the relevant cells.

To test the margin by which the stability coefficients exceed the coefficients affected by background or by race alone a mean of the diagonals in the monoculture blocks (.57) may be compared with the mean of the remaining cells in the monoculture blocks (.38) respectively with the mean of the diagonals in the heteroculture blocks (.27). The differences are sizable and in both instances significant.

TABLE 25

MEAN SIMILARITY OF SIX IMAGES BY BLACK, WHITE, AND SPANISH AMERICAN GROUPS WITH VARIOUS ATTITUDES (+, 0, -)

Group and Attitude	N	Black			White			Spanish		
		-	0	+	-	0	+	-	0	+
Black										
-	79	(.33)	.29	.29	.18	.27	.25	.12	.17	.12
0	57		(.33)	.16	.25	.33	.27	.11	.11	.12
+	143			(.33)	.19	.33	.36	.18	.25	.28
White										
-	60				(.80)	.47	.39	.21	.21	.23
0	79					(.80)	.68	.20	.38	.46
+	157						(.80)	.17	.39	.48
Spanish										
-	37							(.48)	.27	.25
0	68								(.48)	.52
+	187									(.48)

The Ns in this table are the total number of subjects taking a positive, neutral, or negative attitudinal position in the context of the six images studied. This N does not indicate the pairs of observations on which the correlations were based, as the correlations were calculated between word lists. The average length of the word lists was N = 90.

This comparison confirms that the stability test results are generally the highest (Hypothesis I).

A comparison of the means of the values of the cells in nondiagonal positions of the monoculture blocks (.38) with means of the comparable cells of the heteroculture blocks (.24) indicates that the effects of attitudinal differences alone are effectively less than the combined effects of attitudinal and ethnic-cultural background differences (Hypothesis II). The differences appear to be relatively sizable and go into the expected direction.

The comparison of mean values of cells in diagonal position (.44) with cells in medium (M) position (.31) and with cells in lateral extreme (L) position (.24) shows a gradual decrease as a function of no, medium, and large attitudinal differences (Hypothesis III).

Within the heteroculture blocks, a comparison of the means of the diagonals (.27) with the means of the remaining cells (.24) shows a difference in the expected direction. Although this difference is not large, it shows that the similarities are lower when both background and attitudinal differences are taken into account than if only ethnic-cultural background differences alone are considered (Hypothesis IV).

A comparison of the means of heteroculture blocks—Black-White (.27), Black-Spanish (.16), and White-Spanish (.31)—suggests the most similarity between Spanish and White Americans and the least between Blacks and Spanish Americans. This finding, which does not support Hypothesis V, may be influenced by the specific focus on images.

As a final question we may ask to what extent are similarities of perceptions and images affected by differences in the groups' ethnic cultural background

(Black, White, Spanish) and by differences in the groups' attitudinal dispositions (+, -, 0). As previously indicated, similarities affected by attitudinal differences but not by background emerge from the nondiagonal cells of the monoculture blocks (.38). Similarities affected by differences in ethnic-cultural background between subgroups of the same attitudes emerge from the diagonals of the heteroculture block (.27). As the mean similarity coefficient for groups with same background but different attitudes is higher than the mean similarity coefficient for groups with same attitudes, but different background, the results suggest that ethnic-cultural background is responsible for more variance. It represents a more important source of perceptual differences than general attitudes.

As this conclusion is based on a small sample of words and as three of the six words were ethnic-racial images, the generality of these findings on the primacy of ethnic-cultural background requires a closer examination. The present study did provide some additional results which bear on this question. The Black, White, Spanish American groups as mentioned in the description of the experiment took an attitude test. On 20 themes for each group mean attitude scores were calculated. The correlation of these mean attitude scores between groups across themes is shown in the first row of Table 2.9. The mean similarity coefficients obtained between these groups on these same twenty themes is shown in the second row.

TABLE 26

ATTITUDINAL AND PERCEPTUAL SIMILARITIES BETWEEN THE ETHNIC-CULTURAL GROUPS: BLACKS, WHITES, AND SPANISH AMERICANS

Type of Similarity	Ethnic-Cultural Groups Compared		
	Black-White	Black-Spanish	White-Spanish
Attitudinal similarity (correlation mean group attitude scores)	.79	.80	.91
Perceptual similarity (mean coefficient of similarity)	.52	.31	.41

The above comparison suggests that the three ethnic-cultural groups studied are generally closer to each other in their mean attitudes than in their perceptions. It generally supports the previous finding about the relative importance of ethnic-cultural background as a source of perceptual differences.

REFERENCES

Abelson, R., and M. J. Rosenberg. "Symbolic Psychologic: A Model of Attitudinal Cognition," Behavioral Science, III (1958), pp. 1-13.

Allport, G. W. "The Historical Background of Modern Social Psychology," in G. Lindzey (ed.), Handbook of Social Psychology, Vol. 1, Theory and Method. Cambridge, Mass.: Addison-Wesley, 1954.

Barker, R. G. "Explorations in Psychological Ecology," American Psychologist, XX (1965), pp. 1-13.

Boring, E. G. History of Experimental Psychology. New York: Appleton, 1968.

Campbell, D. T. "The Generality of Social Attitudes." Doctoral Dissertation. University of California, Berkeley, 1947.

Campbell, D. T. "Social Attitudes and Other Acquired Behavioral Dispositions," in S. Koch (ed.), Psychology: A Study of a Science, Vol. 6, Investigations of Man as Socius: Their Place in Psychology and the Social Sciences. New York: McGraw-Hill, 1963.

Carr, L., and S. O. Roberts. "Correlates of Civil-Rights Participation," Journal of Social Psychology, LXVII (1965), pp. 259-267.

Chein, I. "Behavior Theory and the Behavior of Attitudes: Some Critical Comments," Psychological Review, 55 (1948), pp. 174-188.

Cohen, A. R. Attitude Change and Social Influence. New York: Basic Books, 1964.

Cook, S., and C. Selltiz. "A Multiple-Indicator Approach to Attitude Measurement," Psychological Bulletin, LXII (1964), pp. 36-55.

Cramer, P. Word Association. New York: Academic Press, 1968.

Crowne, D. P., and D. Marlowe. The Approval Motive: Studies in Evaluative Dependence. New York: Wiley, 1964.

Deese, J. The Structure of Associations in Language and Thought. Baltimore, Md.: Johns Hopkins Press, 1965.

DeFleur, M. L., and F. R. Westie. "Attitude as a Scientific Concept," Social Forces, XLII (1963), pp. 17-31.

Doob, L. W. "The Behavior of Attitudes," Psychological Review, LIV (1947), pp. 135-156.

Freeman, L. C., and T. Aatov. "Invalidity of Indirect and Direct Measures of Attitude Toward Cheating," Journal of Personality, XXXVIII (1960), pp. 443-447.

Frideres, J. S., L. G. Warner, and S. L. Albrecht. "The Impact of Social Constraints on the Relationship Between Attitudes and Behavior," Social Forces, L (1971), pp. 102-112.

Edwards, A. L. Techniques of Attitude Scale Construction. New York: Appleton-Century-Crofts, Inc., 1957.

Guttman, L. "A Basis for Scaling Qualitative Data," American Sociological Review, IX (1944), pp. 139-150.

Hess, E. H. "Attitude and Pupil Size," Scientific American, 212 (1965), pp. 46-54.

Hyman, H. "Inconsistencies as a Problem in Attitude Measurement," Journal of Social Issues, V (1949), pp. 38-42.

Insko, C. A., and J. Schopler. "Triadic Consistency: A Statement of Affective-Cognitive-Conative Consistency," Psychological Review, LXXIV (1967), pp. 361-376.

Jones, E. E., and H. Sigall. "The Bogus Pipeline: A New Paradigm for Measuring Affect and Attitude," Psychological Bulletin, 76 (1971), pp. 349-364.

Kamal, Z., M. L. DeFleur, and L. G. Warner. "Congruency of Own and Other's Attitudes as an Intervening Variable Between Attitudes and Behavior." Unpublished manuscript, 1971.

Karlins, M., T. L. Coffman, and G. Walters. "On the Fading of Social Stereotypes: Studies in Three Generations of College Students," Journal of Personality and Social Psychology, 13 (1969), pp. 1-16.

Katz, I., and L. Benjamin. "Effects of White Authoritarianism in Biracial Work Groups," Journal of Abnormal and Social Psychology, LXI (1960), pp. 448-456.

Katz, D., and K. W. Braly. "Racial Stereotypes of 100 College Students," Journal of Abnormal and Social Psychology, XXVIII (1933), pp. 280-290.

Kendler, H. H., and T. S. Kendler. "A Methodological Analysis of the Research Area of Inconsistent Behavior," Journal of Social Issues, V (1949), pp. 27-31.

Krech, D., and R. S. Crutchfield. Theory and Problems of Social Psychology. New York: McGraw-Hill, 1948.

Krech, D., R. S. Crutchfield, and E. L. Ballachey. Individual in Society. New York: McGraw-Hill, 1962.

Kutner, B., C. Wilkins, and P. R. Yarrow. "Verbal Attitudes and Overt Behavior Involving Racial Prejudice," Journal of Abnormal and Social Psychology, XLVII (1952), pp. 649-652.

LaPiere, R. T. "Attitudes vs. Actions," Social Forces, XIII (1934), pp. 230-237.

Lazarsfeld, P. T. "The Logic and Mathematical Foundation of Latent Structure Analysis," in S. A. Stouffer (ed.), Measurement and Prediction. Princeton: Princeton Univ. Press, 1950.

Lewin, K. Field Theory in Social Science. D. Cartwright (ed.). New York: Harper, 1951.

McGuire, W. J. "The Nature of Attitudes and Attitude Change," in G. Lindzey and E. Aronson (eds.), Handbook of Social Psychology. Vol. 3. Reading, Mass.: Addison-Wesley Publishing Co., 1969.

McNemar, Q. "Opinion-Attitude Methodology," Psychological Bulletin, XLIII (1946), pp. 289-374.

Mischel, W. Personality and Assessment. New York: Wiley, 1968.

Nelson, E. "Attitudes," Journal of General Psychology, XX (1939), pp. 367-436.

Newcomb, T. M., R. H. Turner, and P. E. Converse. Social Psychology. New York: Holt, Rinehart, and Winston, 1965.

Orne, M. T. "On the Social Psychology of the Psychological Experiment: With Particular Reference to Demand Characteristics and Their Implications," American Psychologist, XVII (1962), pp. 776-783.

Osgood, C. E., G. J. Suci, and P. H. Tannenbaum. The Measurement of Meaning. Urbana: Univ. of Illinois Press, 1957.

Remmers, H. H. (ed.). "Studies in Attitudes; a Contribution to Social Psychological Research Methods," Stud. High. Educ., 35 (1934).

Rokeach, M. "Attitude Change and Behavior Change," Public Opinion Quarterly, XXX (1967), pp. 529-550.

Rosenberg, M. J. "When Dissonance Fails: On Eliminating Evaluation Apprehension from Attitude Measurement," Journal of Personality and Social Psychology, I (1965), pp. 28-42.

Sanford, F. H. "The Use of a Projective Device in Attitude Surveying," Public Opinion Quarterly, Winter (1950-51), pp. 701-716.

Sigall, H., and R. Page. "Current Stereotypes: A Little Fading, a Little Faking," Journal of Personality and Social Psychology, 18 (1971), pp. 247-253.

Sigall, H., and R. Page. "Reducing Attenuation in the Expression of Interpersonal Affect Via the Bogus Pipeline," Sociometry, 35 (1972), pp. 629-642.

Staats, A. W., and C. K. Staats. "Attitudes Established by Classical Conditioning," Journal of Abnormal and Social Psychology, LVII (1958), pp. 37-40.

Staats, A. W., and C. K. Staats. "Meaning and M: Correlated but Separate," Psychological Review, LXVI (1959), pp. 136-144.

Szalay, L. B., and J. Brent. "The Analysis of Cultural Meanings Through Free Verbal Associations," Journal of Social Psychology, LXXII (1967), pp. 161-187.

Szalay, L. B., and J. A. Bryson. Measurement of Meaning Through Verbal Associations and Other Empirical Methods. Kensington, Md.: American Institutes for Research, 1972.

Szalay, L. B., and J. A. Bryson. "Measurement of Psychocultural Distance: A Comparison of American Blacks and Whites," Journal of Personality and Social Psychology, XXVI (May 1973), pp. 166-177.

Szalay, L. B., D. A. Lysne, and J. A. Bryson. "Designing and Testing Cogent Communications," Journal of Cross-Cultural Psychology, III (1972), pp. 247-258.

Szalay, L. B., C. Windle, and D. A. Lysne. "Attitude Measurement by Free Verbal Associations," Journal of Social Psychology, LXXXII (1970), pp. 43-55.

Vigotsky, L. C. Thought and Language. Cambridge, Mass.: MIT Press, 1962.

Vroom, V. H. "Ego-Involvement, Job Satisfaction, and Job Performance," Personnel Psychology, XV (1962), pp. 159-177.

Warner, L. G., and M. L. DeFleur. "Attitude as an Interactional Concept: Social Constraint and Social Distance as Intervening Variables Between Attitudes and Action," American Sociological Review, XXXIV (1969), pp. 153-169.

Weissberg, N. C. "On DeFleur and Westie's 'Attitude as a Scientific Concept,'" Social Forces, 43 (1965), pp. 422-425.

Weschler, I. R., and R. E. Bernberg. "Indirect Methods of Attitude Measurement," International Journal of Opinion and Attitude Research, IV (1950), pp. 209-228.

Wicker, A. W. "Attitudes Versus Actions: The Relationship of Verbal and Overt Behavioral Response to Attitude Objects," Journal of Social Issues, XXV (1969), pp. 41-78.

Wordworth, R. S., and H. Schlosberg. Experimental Psychology. New York: Henry Holt, 1956.

APPENDIX I

ASSESSMENT OF THE RELATIVE DOMINANCE OF THEMES AND DOMAINS

Various cultural groups are frequently characterized by their hierarchy of priorities. Americans are commonly described, for instance, as being preoccupied with material comfort, technical performance, and scientific progress; Spaniards are said to focus on family traditions, personal friendship, and spiritual values. These traditional stereotypes are fading in this age of rapid change and increased cross-cultural contacts, but the assessment of cultural priorities is still a timely and practical requirement.

The psychological priorities characteristic of a particular group or culture can be inferred from dominance scores. The dominance score is a modified version of Noble's (1952) "meaningfulness" measure.* The dominance score is based on the number of responses produced in common by the members of the group and weighted by the sequence in which they were produced. Responses in common are those associations that were given by at least two members of the group. The weighting factors are empirically determined for each response. The dominance scores indicate how meaningful and how important a theme (stimulus word) is for a particular group. The group dominance score of a word representing a problem or topic offers an empirical measure expressing the salience of the problem for a particular group. Such data become especially significant when dominance scores obtained for one group are compared with dominance scores obtained for another group. Previous data (Szalay, 1967) indicate that dominance scores vary greatly for different words and cultures and provide a sensitive measure of the group-specific or culture-specific meaningfulness or dominance of a particular word.

Group dominance scores can reveal group-specific priorities not only for single issues, but also for clusters of words making up larger domains. Since the scores vary with the particular words chosen, to obtain generalizable results a systematic selection of stimulus words from the domain to be studied is an important requirement (see Szalay and Maday, 1973).

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*Noble (1952) first demonstrated that the number of associations given by a person in a continued association task of one minute provides a measure of "meaningfulness" that is highly correlated with the person's familiarity with the word and its meaning.

Example. During the spring of 1968, AGA tasks were administered to a sample of Army recruits (N = 1,600). The administration of the association task took place before their military training had begun. The testing provided a U.S. baseline for cross-cultural comparisons with other nationalities, such as Koreans and Colombians. From this sample, which approximated the composition of the U.S. male population within the age bracket of 18-23, two blue-collar samples—one Black (N = 50) and one White (N = 50)--were drawn randomly. The two samples matched closely on some demographic variables such as age and education, but differed on others such as religion and average income. These sample characteristics were in general agreement with similar differences between the Black and White population found at national level.

The following table shows the dominance scores obtained for these two groups on a sample of sixty themes organized somewhat arbitrarily into fifteen problem domains. The table begins with those domains on which the White group had a higher average dominance score than the Black group and ends with those domains that have shown higher relative priority for the Black group (after an adjustment was made to make the dominance scores directly comparable).

The White group generally gave more responses than the Black group, and the average score difference was 93. The set of domains beginning with COMMUNITY seems to be more important to the Black group than to the White group. This is especially true for the domains "SOCIAL PROBLEMS" and "NEEDS." The domains "ISMS," and "NATION," represent areas in which the White group shows greater interest than does the Black group. This is not to say that these domains are the most dominant for the White group, but are those to which the White group assigns the greatest importance or priority, compared to the Black group.

In the "ISMS" and "NATION" domains, there are only two themes for which the dominance score of the White group is above the overall average of 624. The themes SOCIALISM and CAPITALISM are far below average in dominance for the White group. Thus, the large difference in priorities given to these themes does not derive so much from the Whites' paying additional attention to these themes, but more from the Blacks' paying relatively less attention.

Both groups score higher than average on the "HEALTH" and "EMPLOYMENT" domains, and the source of difference between White and Black comes apparently from the White group s especially higher scoring. The Black group assigns a relatively higher priority than the White group to "RACIAL INTEGRATION" and especially to "NEEDS" and "SOCIAL PROBLEMS." This is not surprising, since these represent problem areas that affect the Blacks more directly than the Whites.

TABLE I-1

DOMINANCE SCORES BY URBAN WHITE (W) AND BLACK (B)* BLUE COLLAR SAMPLES

Domain	Stimulus	W	B*	Diff.	Domain	Stimulus	W	B*	Diff.
ISMS	Democracy	636	449		LGO	Me	685	780	
	Socialism	396	280			Mine	718	757	
	Capitalism	362	298			Ideal	598	496	
	Communism	733	502			Individuality	404	370	
		532	382	150			601	601	0
NATION	Nation	661	591		COM-	Neighborhood	789	789	
	U. S.	877	765		MUNITY	Community	647	573	
	Patriotism	508	222			Cooperation	465	411	
	Americans	605	648			Friendship	626	764	
		663	556	107			632	634	- 2
INDISPOSITION	Concern	443	468		RACIAL	Race	883	831	
	Doubt	303	337		INTEGRA-	Integration	371	393	
	Nervous	660	445		TION	Equality	438	512	
	Tired	712	619			Freedom	619	646	
		530	467	63			578	596	-18
EMPLOYMENT	Work	843	754		FAMILY	Father	785	770	
	Unemployment	657	614			Mother	834	910	
	Occupation	714	603			Family	1011	1134	
	Skill	624	693			Home	926	895	
		710	666	44			889	927	-38
HEALTH	Cure	623	576		EDUCATION	School	958	871	
	Drugs	895	841			Knowledge	639	802	
	Doctor	832	824			Educated	615	763	
	Hospital	1029	1018			To Learn	695	627	
		845	815	30			727	766	-39
WEALTH	The Rich	663	720		SOCIAL	Society (US)	316	342	
	The Poor	739	709		PROBLEMS	Social Class	402	475	
	Comfort	718	725			Social Justice	376	378	
	Prosperity	388	306			Social Progress	260	334	
		627	615	12			338	382	-44
HOSTILITY	Fear	474	577		NEEDS	Goal	514	581	
	Enemy	694	614			Expectation	236	298	
	Hostile	551	468			Desire	621	701	
	Revolution	522	555			Valuable	832	876	
		560	554	6			551	614	-63
GOVERNMENT	Government	624	601						
	The President	667	666						
	Authority	580	576						
	Govt Official	457	477						
		582	580	2					

*The dominance scores of the Black sample have been adjusted by 14.9%. This figure shows the average difference between the White and Black dominance scores expressed as the percentage of the average dominance score of the White group.

The above data have various shortcomings. The selection of themes and domains was not systematic, the samples did not include females, and the scope of the study was not broad enough to warrant generalizable conclusions. The data on dominance scores merely show the potential utility of the proposed approach in identifying the extent to which groups agree in their priorities on selected themes or domains in particular as well as in their order of priorities in general.

References

Noble, C. E. "An Analysis of Meaning," Psychological Review, 59 (1952), pp. 421-431.

Szalay, L. B., and J. Brent. "The Analysis of Cultural Meaning Through Free Verbal Associations," Journal of Social Psychology, 72 (1967), pp. 161-187.

Szalay, L. B., and B. C. Maday. "Verbal Associations in the Analysis of Subjective Culture," Current Anthropology, XIV (Feb-Apr 1973), pp. 33-50.

APPENDIX II

ASSESSMENT OF MEANING BY ITS MAIN COMPONENTS

The main meaning components characteristic for the groups studied can be identified by using the group response lists. The group response lists contain a rich variety of responses, each reflecting a different mosaic element of the total meaning. The responses are organized into a more manageable form by grouping responses with similar content together. Using these response categories helps to identify the main components of meaning and to express the group's meaning in a simple and concise form.

The method developed for the assessment of the primary meaning components relies on a content analysis of responses performed by two or more independent judges (Szalay and Brent, 1967). The inter-judge reliability calculated by correlations among four judges across categories averaged .70. In the process of categorization some oversimplifications and distortions are inescapable, but this technique does help to make the information inherent in the primary data more communicable. To establish procedures for categorization that minimize distortions and personal biases the coders who perform the categorization are selected from persons with a background and frame of reference by and large similar to that of the members of the group tested. If Korean and American groups are to be tested, the coders would be a Korean and an American. Independently from each other, they receive the list of all responses to the particular stimulus word (the Korean responses translated into English).

After the coders study the response list thoroughly, they choose the main clusters into which the responses fall by their more or less similar relationships to the stimulus word. They choose eight to sixteen categories that they feel subsume all the responses in meaningful groupings relevant to the stimulus word, and they assign the responses to these categories. In this way the coders produce a tentative set of categories that in their opinion would be suitable for the categorization of the responses.

The categories may be of lower or higher generality, more concrete or more abstract; but they should be simple, not very abstract, and should be at the same level of generality. It is important to choose clearly different, well-delimited categories that do not overlap. It is necessary to choose between alternative possible

categories: some will fit into the total system of categories better than others; some will lead to better communication than others. Responses that do not seem to fit into any of the categories are put into a miscellaneous category. Responses that may be assigned with equal justification to two or more categories are recorded for further discussion. The end result is a preliminary categorization for each cultural group tests.

In order to develop a single category system, the coders meet with a senior researcher to present their categories and to discuss their agreements and disagreements. The categories that are identical may be accepted as final. Where there are discrepant categories, three solutions are possible: new alternative categories, category combinations at a higher level of abstraction, or complementary categories. Although there is not always a close equivalence of categories, the final categories are selected to highlight the most characteristic aspects of the two (or more) cultural groups' responses to the stimulus word. This method maintains comparability of results in the analysis of the responses from the different cultural population samples. After the category system is final, a last check is required *to* make sure that all the responses are included and that they have their proper response scores.

The categories and category scores present a class or logical set of data from which the central meaning of the stimulus word may be deduced, either directly or through advisors or background literature on the culture. Certain response categories are directly informative. For example, the responses in the various food categories elicited by the stimulus words HUNGRY and TO EAT reflect the main items of the group's diet. The responses in the beverage categories elicited by THIRSTY and TO DRINK reflect the relative importance of the principal liquids imbibed. In other instances, the role of the stimulus word in providing the context for the responses becomes more important. In the context of the stimulus word POLITICS, responses of names of countries imply a concern with foreign policy, and the frequent mention of specific countries reflects the relative importance of these in foreign relations. In the context of the stimulus word ANCESTORS, the frequent mention of specific countries reflects the importance of these countries as main sources of immigration. For the stimulus word HUNGRY, a high score for responses in such categories as foreign countries and foreign geographic locations implies that the stimulus word represents a remote issue.

Other types of categories are less direct in their indications. High response scores in categories dealing with pain, sickness, or sufferings of various kinds are indications of a negative attitude or unpleasant experiences associated with the stimulus concept. Categories dealing with fun and entertainment or positive evaluative remarks may be considered as a sign of approval for, or attraction to, the stimulus concept.

Table II-1 presents the meaning of the stimulus word HUNGRY for three cultural groups. The list contains responses dealing with food, persons, nations, and the like. When the responses are grouped into relevant categories, the categories suggest the meaning composition of the stimulus word. The meaning of the stimulus word HUNGRY can then be explored in terms of the relevant categories of responses and their relative score proportions. For example, the U.S. group yields a total score of 327 for the FOOD, VARIETIES AND INGREDIENTS category; a score of 36 for the MEAL category; and a score of 76 for the POOR, BEGGAR category. The Korean group scores 250 for FOOD, VARIETIES AND INGREDIENTS; 7 on MEAL; and 193 for POOR, BEGGAR. The highest score for the U.S. group was on the FOOD, VARIETIES AND INGREDIENTS category; the same was true for the Korean group. The highest score for the Colombian group was on the DRIVE STATES category.

After reviewing the response scores to these words in terms of the main categories, attention may be given to finer breakdowns. The category FOOD, VARIETIES AND INGREDIENTS is composed of any type of food response and can be grouped into subcategories such as MEAT, DRINKS, and RICE. Cultural experts indicate that the proportions of responses reflect cultural priorities. In this case, the subcategories for the various cultural groups reflect the characteristic composition of the cultural groups' diet. For example, the Korean group receives a high score for RICE, the U.S. group a very much lower score, and the Colombian group has no responses in this subcategory at all.

The high level of correspondence found between associative data and cultural reality for such concrete stimulus words as HUNGRY makes it possible to accept the results obtained for such abstract stimuli as SOCIALISM or SOCIETY. The high culture-specificity and the consistency of patterns suggest that associative response material obtained from cultural groups and submitted to appropriate categorizations provides reliable information about the culture-specific associative meaning content of stimulus words.

TABLE II-1

RESPONSE CATEGORIES AND SCORES FOR THE STIMULUS WORD HUNGRY

Response Category	Score		
	U.S. Group	Korean Group	Colombian Group
Food, varieties and ingredients			
Food in general (food)*	226	51	77
Rice (cooked rice)	13	161	0
Meat (steak)	36	16	20
Dessert (cake)	18	0	13
Other nonrice foods (bread)	28	20	46
Drinks (water, milk)	6	2	9
Total	327	250	165
Meal, general and in particular (meal, dinner)	36	7	120
Persons, people (man, people)	85	192	42
Poor, beggar (poor)	76	193	175
Characteristics of beggars (ragged)	0	16	32
Compassionate characteristics (sympathy, pitiful)	13	49	0
Political, social, and economic situations (war)	54	110	95
Help, relief (CARE)	23	6	6
Places (orphanage)	8	65	41
Animals (dog, cow)		11	21
Countries (Hungary, Brazil)	39	0	6
Negative feelings (suffering, desperate)	113	115	161
Positive feelings (strength, satisfaction)	51	15	32
Drive states (famished, thirst)	168	63	177
Body and parts (mouth)	63	24	12
Eating and consumption (eat, swallow)	101	16	20
Time (always, new)	41	30	6
Miscellaneous	150	84	107
Total	1,348	1,240	1,218

*In this table examples of responses are in parentheses.

APPENDIX III

ASSESSMENT OF THE DEGREE OF SIMILARITIES AND DIFFERENCES

Without considering the actual nature of differences, one may ask a general question—to what extent do two groups (for example, Americans and Koreans) differ in their meaning of a particular theme (for example, SOCIETY)?

Free verbal associations may offer an empirical answer to this question, based on the principle that the closer the agreement between the associations of two groups on a particular theme, the more closely similar their meanings are. Close agreement in this context refers to close similarity in the distribution of associations: in other words, the responses obtained with high frequency from one group will also be obtained with high frequency from the other group; similarly, the responses produced with low frequency by one group will also have low frequency for the other group.

For a quantitative expression of this similarity, Pearson's product-moment correlation can be used. The scores for the same (translation equivalent) responses from the two groups represent the pairs of observations (x,y) used in this calculation. N represents the number of pairs of observations, that is, the number of word responses used in the calculation of a particular coefficient. This method requires literal agreement; it does not take into account semantically closely related responses such as home and homely or synonyms such as house and building. Consequently, this measure is bound to underestimate the actual level of similarity. Because this bias is likely to be the same regardless of the words used, it does not interfere with the utility of the coefficient to provide a valid estimate of the relative level of semantic differences. The coefficients give a global measure, expressing merely the level of similarities and differences without elaborating on the semantic components on which they are based.

Example. Using the results obtained in the comparison of a Black and a White group, Table III-1 presents similarity data obtained on the sixty themes and fifteen domains used in that study. The problem areas or domains are presented in descending order of degree of agreement. "EDUCATION," "FAMILY," "HEALTH," and "EMPLOYMENT" appear to be areas most common to human experiences. The least agreement exists on "SOCIAL PROBLEMS," "NEEDS," and "RACIAL INTEGRATION." These last three areas were also those on which the difference in dominance was in the direction of more concern among the Black group. The "ISMS" and "NATION" domains, on which the White group had the broadest

TABLE III-1

CORRELATIONS BETWEEN WHITE AND BLACK BLUE-COLLAR SAMPLES*

Domain	Stimulus	r	mean r	Domain	Stimulus	r	mean r
EDUCATION	School	.9038	.8790	NATION	Nation	.7830	.7105
	Knowledge	.8773			U. S.	.8389	
	Educated	.9157			Patriotism	.3298	ns
	To Learn	.7936			Americans	.7484	
FAMILY	Father	.7972	.8437	INDISPOSITION	Concern	.6872	.7075
	Mother	.9154			Doubt	.6837	
	Family	.8361			Nervous	.6852	
	Home	.7929			Tired	.7702	
HEALTH	Cure	.7025	.8390	GOVT	Government	.6535	.6930
	Drugs	.7474			The President	.8499	
	Doctor	.7934			Authority	.6484	
	Hospital	.9559			Govt Official	.5435	
EMPLOYMENT	Work	.8264	.7885	EGO	Me	.6831	.6420
	Unemployment	.7825			Mine	.7413	
	Occupation	.8614			Ideal	.4536	
	Skill	.6356			Individuality	.6529	
HOSTILITY	Fear	.7666	.7435	RACIAL	Race	.6543	.5310
	Enemy	.7622		INTEGRATION	Integration	.1900	ns
	Hostile	.6443			Equality	.6663	
	Revolution	.7823			Freedom	.5296	
WEALTH	The Rich	.8608	.7310	NEEDS	Goal	.3794	.5260
	The Poor	.5643			Expectation	.4725	
	Comfort	.8945			Desire	.7656	
	Prosperity	.3876			Valuable	.8979	
ISMS	Democracy	.8626	.7170	SOCIAL	Society (U. S.)	.3836	.2547
	Socialism	.3762	ns	PROBLEMS	Social Class	.4958	ns
	Capitalism	.3038	ns		Social Justice	.1543	ns
	Communism	.9242			Social Progress	.0416	ns
COMMUNITY	Neighborhood	.8708	.7165				
	Community	.6940					
	Cooperation	.5352			Mean for 60 Stimulus Words		.7125
	Friendship	.6818					

* Pearson's product-moment coefficient of correlation (r) was used to measure the degree of similarity or agreement between two selected groups on 60 stimulus words representing 15 domains. The domains are presented in decreasing sequence beginning the highest mean of r. The mean of r was calculated by z transformation and is shown for each of the domains. Since the average N = 44, r = .376 (< .01).

margin of dominance differences over the Black group, occupy a middle position in this list of relative agreement. This indicates that, although the two groups differ in the amount of importance they assign to these areas of concern, they both generally agree on their meanings.

Whether the distance of groups is conceived in terms of their agreement on covert perceptions and meanings or in terms of their agreement on overt responses and behavior, the above approach offers a practical, empirically founded measure for the quantification of psychocultural distance.

APPENDIX IV

RELIABILITY AND VALIDITY OF MEASURES

The continued verbal association task used in the Associative Group Analysis method produced extensive response distributions characterized by contrasts of high and low response frequencies. Analysis of these response distributions (represented by group response lists) produces various categories of information, some on selected dimensions of the group's frame of reference (e.g., hierarchy of priorities, the dominance scores), others on selected psychological variables (e.g., attitudes, the Evaluative Dominance Indices). The reliability and validity of measures focusing on various dimensions and variables naturally require individual consideration.

Meaning Elements Represented by Single Responses

Even though conclusions are rarely based on a single response, the specific responses are the fundamental mosaic elements of information obtained in continued association tasks and thus it is necessary to determine how much reliable information exists in a single response.

The answer to this question depends naturally on the number of people who gave the particular response and on the score the response has accumulated based on its rank places of emission. The use of continued associations required the development of a weighting procedure which allows to account for the differences in information value between first responses and the responses produced later at lower rankings. An empirically founded weighting system has been derived using the differential stability of responses observed in test-retest results. The following reliability scores were obtained as a function of the rank place (Table IV-1).

TABLE IV-1

STABILITY OF RESPONSES DEPENDING ON THEIR RANK PLACE

Stability and Weights	Rank of Response									
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th
Stability, percent of recurrence in retest	.60	.48	.42	.34	.32	.30	.25	.20	.15	.11
Weighting score based on the stability	6	5	4	3	3	3	3	2	2	1

This suggests that the average stability of a single response in continued association tasks is .32. This mean value represents the stability of an average response for an average person. The mean stability substantially increases when calculated on group basis. The increase becomes explicable by the observation that while a particular person may fail in retest to give the same response he gave in the first test, it frequently happens that other subjects will use the word

as a response in the retest although they may not have given it in the first test. Thus, particularly the common responses substantially increase this stability on group basis.

As the Associative Group Analysis method draws inferences on groups rather than on single individuals, the stability of responses on group basis requires particular attention. The group response lists representing response frequencies weighted by their individual rank places serve as the data base for such inferences. With focus on the shared responses of the group, responses given by only one person are disregarded as idiosyncratic. To assess the stability of group responses, split-half comparisons were made of a group of 100 subjects split randomly. Comparing the group response lists of the two groups of 50 subjects, an average stability of .61 was obtained. Interestingly, this stability increased gradually when split-half groups of larger sizes were compared (N=100, N=200). This phenomenon bears apparently on the cultural sharing phenomenon, which has been described by several authors (Roberts, 1951; D'Andrade, 1959), but its implications go beyond our present concern with stability.

In connection with the problem of stability of response lists and the average stability of particular responses, it should be pointed out that this stability is also a function of particular stimulus words. Certain stimulus words are specific and produce steep response distributions focusing on a definite set of responses. Others are less definite and produce responses with great intragroup variations. This definiteness depends partially on the characteristics of the stimulus theme such as concreteness and specificity. Furthermore, it depends on the homogeneity of the group's experiences in respect to the stimulus.

These different variables cause considerable variations in the stability of responses. Thus, the average response stability value reported above is a rough estimate. When more precise data are needed, as in the case of the evaluation of changes, learning and training effects, it is desirable to obtain stability data on the relevant themes in separate split-half stability tests. The stability of specific responses as a function of the size of responses will be considered in the next appendix in relationship to the problem of statistical significance.

The validity of the information requires separate individual answers depending on the category of information under consideration—perceptual, attitudinal, behavioral, etc. Although the Associative Group Analysis method is used to derive information on diverse categories of variables, the inferences are usually based on entire response distributions or clusters of responses rather than on single individual responses. Thus, although the measures are based on responses, the problem of validity can be examined more meaningfully in the context of the particular measures rather than single responses.

Meaning Components Inferred From Response Categories

While the similarity coefficient measures the overall similarity of two groups about their global meaning reaction to a particular theme (Appendix III), the relative saliences of clusters of homogeneous responses are used to indicate the similarities on particular components of meaning. For instance, a

similarity coefficient of .62 between two groups on socialism expresses the overall degree of agreement, but it does not tell on which components of meaning the groups agree and on which they do not. It will not reveal, for instance, that the groups agree that socialism implies strong government control but disagree that socialism would require a shift from free to controlled economy or doing away with private initiative.

As described in more detail in Appendix II, a method of assessing cultural meanings in terms of salient components uses a content analytic approach which relies on categorization of responses performed independently by two or more judges. This approach is especially important because it is the main method of assessing salient meaning components, their cultural similarities and differences, as shown by the semantographs. The reliability of this content analytic method was tested by comparing the performance of five judges working independently from each other. The interjudge reliability measured by product-moment correlation across 76 categories was .7.

The validity of such inferences on particular single meaning components cannot be directly assessed because simple criterion measures are not available. There are, however, findings which show, for instance, that the salience of these meaning components provides valid predictions on the meaningfulness of messages in intercultural communications. Communication material that capitalized on salient components of cultural meanings was judged by members of this culture as relatively more meaningful than comparable communication material produced by cultural experts (Szalay, Lysne, and Bryson, 1972).

Intergroup Similarity of Themes Inferred from the Total Response Distribution

The extent two groups agree on the meaning of a particular theme is measured by the coefficient of similarity (Appendix III). This coefficient is a Pearson product-moment correlation calculated between the response distributions produced by the two groups to the same stimulus theme. Correlation is used to assess the extent to which the two groups are similar in their response distributions; that is, in producing the same high frequency and the same low frequency responses.

The reliability of this measure may be approached by comparing two groups of similar composition obtained by splitting a larger group randomly into two halves. The coefficients produced by the two groups on a sample of themes may be then averaged. Using this approach and comparing two split-half groups on 26 themes, a correlation of .73 was obtained recently. In a previous comparison an r of .82 was obtained calculated over 40 themes. A closer examination reveals that the coefficient depends a great deal on the particular theme under consideration. Themes that are specific and concrete produce steep response distributions characterized by a few widely shared responses, or meaning elements. The theme family, for example, is specific and concrete and for everybody to a certain extent it involves father and mother. The themes concern and anxiety are less definite, and instead of everybody agreeing on a few particularly salient responses, people produce a broad diversity of responses. In this situation, low correlation does not necessarily mean low reliability of the measure but may be a consequence of the characteristics of the theme, of its indeterminate nature. In such a situation, the stability of the measure may be better estimated by considering how stable a coefficient is within particular themes rather than across all themes.

To assess this stability, the coefficients obtained on the same themes for the two split-half groups were correlated over the 26 themes and produced an r of .89.

Dominance hierarchy. The importance groups assign to themes and domains may be inferred from the number of associations produced in one-minute continued association tasks—a measure of meaningfulness introduced and validated by Noble (1952). The associative dominance score is a weighted variant of Noble's m. At an individual level, it is based on the weighted frequency of responses given to a particular stimulus theme. At group level, it is based on the number of responses produced in common by the members of the group and weighted by the sequence in which they are produced. Responses in common are those associations that were given by at least two members of the group. Group associative dominance scores have been found to be highly culture-specific (Szalay, Moon, Lysne, and Bryson, 1971) and have a reliability of .93 calculated from a test-retest comparison on 40 themes. The dominance scores express how important themes and domains are for each group.

Affinity structure. The affinity structure as shown by the relatedness of themes can be measured by the overlap of associative response distributions. The associative affinity index is a modified relatedness measure, similar to those reviewed by Marshall and Cofer (1963). The index of associative affinity has been developed for use with continued associations. To calculate the extent to which theme A is related to theme B, the sum of the scores of the associations in common to A and B, plus the direct elicitations of theme B to A, is divided by the total score of associations elicited by A; the fraction is multiplied by 1,000. The reliability of this index in split-half comparisons was in the range of .90 (Szalay and Windle, 1968). The validity of this measure may be estimated based on the correlations of this measure with other independent measures. In a recent comparative study (Szalay and Bryson, in press), the affinity index produced the following correlations: similarity judgment .73; judgment of relationship .77; grouping task .84. The calculations were based on 66 index pairs.

References

Marshall, G. R., and C. N. Cofer. "Associative Indices as Measures of Word-Relatedness: A Summary and Comparison of Ten Methods," Journal of Verbal Leaning and Verbal Behavior, 1 (1963), pp. 408-421.

Noble, C. E. "An Analysis of Meaning," Psychological Review, 54 (1952), pp. 421-430.

Szalay, L. B., and J. A. Bryson. "Psychological Meaning: Comparative Analyses and Theoretical Implications," Journal of Personality and Social Psychology, in press.

Szalay, L. B., D. A. Lysne, and J. A. Bryson. "Designing and Testing Cogent Communications," Journal of Cross-Cultural Psychology, III (1972), pp. 247-258.

Szalay, L. B., W. T. Moon, and J. A. Bryson. Communication Lexicon on Three South Korean Audiences: Social, National, and Motivational Domains. Kensington, Md.: American Institutes for Research, 1971.

Szalay, L. B., and C. Windle. "Relative Influence of Linguistic Versus Cultural Factors on Free Verbal Associations," Psychological Reports, XXII (1968), pp. 43-51.

APPENDIX V

STATISTICAL SIGNIFICANCE OF ASSOCIATION DATA

Although the Associative Group Analysis method relies on response trends observable in groups of responses rather than on single responses, it is desirable to consider the significance of single elements of observations as well as significance of various measures founded on associations as elementary units.

The question of significance may be meaningfully posed in various contexts, and depending on the context, on the nature of the comparison, the answer may call for different approaches, solutions. Generally, the probability problem inherent in associations is a complex one particularly in the case of continued association tasks because individual responses cannot be treated as representing independent observations.

Significance of a Single Response

As the inferences are based on responses and response scores as the basic units of information, the first question to ask is how do we know whether a particular response obtained with a particular score from a particular group is a significant response. We would like to know, for instance, whether the response Blacks with a score of 33 obtained from a group of 50 subjects to the stimulus EQUALITY may be considered a significant response. Can we consider this a reaction characteristic of the group rather than one determined merely by chance?

As subjects do not give the same response twice, in this case we can be reasonably sure that the score was produced by separate individuals. As the average score value of a response is 3, we may assume that 11 different subjects (33/3) out of the 50 have given this response. To determine the significance of this reaction, we may compare this group with a reference group of 50 subjects who did not give this response at all. The contingency tables offer a simple way to evaluate the probability of such a difference. The fourfold table in this case takes the following form:

TABLE V-1

NUMBER OF SUBJECTS USING (YES) AND NOT USING (NO) THE RESPONSE BLACKS

	Group 1	Reference Group	Total
Yes	11	0	11
No	39	50	89
Total	50	50	100

Using the fourfold contingency table offered by Mainland and Murray (1952), we find that in a situation where the comparison is between two groups of equal sample size (n=50) and the smallest cell frequency is 0, a frequency of 6 represents a significant difference at the .05 level and a frequency of 8 amounts to a significant difference at the .01 level. Considering these significance limits, the score value of 33 equated with a frequency of 11 suggests a significant response at the .01 level.

This approach requires a transformation of score values into frequencies, a step which involves some occasional inaccuracies as it relies on a mean. Responses with above-average weights lead to an overestimation of frequency. However, as the experimental results on the development of the weighting system have shown, higher than average weight is founded on higher stability, which is likely to compensate for the lower frequency.

By equating a score of 3 with a frequency of 1 and using the above significance limits suggested by the contingency tables, any response accumulating a score of 18 or above may be considered significant at the .05 probability level; responses with scores of 24 and above are considered statistically significant at the .01 level.

Significance of Response Score Differences Between Two Groups

The above rationale of testing significance may be extended to assessing the significance of a particular response produced by two groups with a different score value. Two groups (N=50) responding to the stimulus EQUALITY, for instance, respond with Blacks with scores of 14 and 38, respectively. The significance of this difference can again be explored by using the contingency table after transforming the scores into frequencies of 5 and 13.

TABLE V-2
NUMBER OF SUBJECTS USING (YES) AND NOT USING (NO) THE RESPONSE BLACKS

	Group 1	Group 2	Total
Yes	5	13	18
No	45	37	82
Total	50	50	100

In this case the smallest cell frequency is 5 and the parallel frequency of 13 falls short of the 14 required at the .05 or 17 required at the .01 probability level.

As the standard group size is 50 and the significance estimates depend both on the smallest frequency and the difference, that is, the frequency observed in the parallel cell, the following table (Table V-3) is offered for estimating the level of significance of observed differences in score values for the same response by two groups.

TABLE V-3

SCORE VALUES REQUIRED FOR SIGNIFICANT DIFFERENCE WHEN COMPARING TWO GROUPS ON THE SAME RESPONSE TO A PARTICULAR STIMULUS THEME

Score Values Required from Higher Scoring Group for Significant Difference	Score Values (and Corresponding Frequencies) for Group Giving the Response with a Lower Score																								
	0	1-4	5-7	8-10	11-13	14-16	17-19	20-22	23-25	26-28	29-31	32-34	35-37	38-40	41-43	44-46	47-49	50-52	53-55	56-58	59-61	62-64	65-67	68-70	71-73	74-76
	(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
Significant Score Values at .05 level	18	24	30	33	39	42	45	51	54	57	60	66	69	72	75	78	81	84	87	90	93	96	99	102	105	108
Corresponding Frequency from Contingency Table	(6)	(8)	(10)	(11)	(13)	(14)	(15)	(17)	(18)	(19)	(20)	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)
Significant Score Values at .01 level	24	30	36	42	45	51	54	60	63	66	72	75	78	81	84	87	90	93	96	99	102	105	108	111	114	117
Corresponding Frequency from Contingency Table	(8)	(10)	(12)	(14)	(15)	(17)	(18)	(20)	(21)	(22)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)	(32)	(33)	(34)	(35)	(36)	(37)	(38)	(39)

The above table was constructed for comparing the scores of two groups on a particular response to determine whether there is a significant difference in emphasis. The frequency values given in parenthesis were taken from the chi square tables of Mainland and Murray (1952). The corresponding score values were calculated under the assumption that a frequency of 1 may be equated with an average score value of 3. The score values across the top of the table are those observed for the group with the lower score. The rows indicate the corresponding score values required from the higher scoring group to reach a significant score difference at the .05 and .01 levels.

These estimates are based on the assumption that with a tolerable margin of error, scores may be used to estimate frequencies and that the probability estimates developed for chi squares may be applied to the problem at hand, where two groups are compared in respect to one particular response.

Significance of Score Differences Within Groups

The above reasoning does not apply when comparing responses produced by the same group. Several different types of comparisons fall into this category and all have in common that the two group response scores to be compared cannot be treated as independent as they may have come from the same person.

For instance, the response Blacks and the response woman obtained from a particular group to the stimulus word EQUALITY cannot be treated as two independent responses from a statistical point of view. By statistical criteria, they can be considered independent only if the people who gave the response Blacks were not the same as those who gave the response woman. In some instances this may be true; in others, not. The group response list does not tell us whether the scores for Blacks and for woman came from the same or from different people. Because the contingency tables were derived for the comparison of independent observations, they are not applicable to intragroup comparisons where the associative responses may come from the same subjects. In search for a method applicable to this situation of intragroup comparisons, we explored the distribution of score differences based on chance and used these chance-determined distributions to estimate the probability of particular differences or ranges of differences which are significant at various probability levels.

To assess the parameters of chance-determined differences, the method of test-retest comparisons was used. If the association task is administered to a group at one particular time (t_1) and again a few weeks or months later (t_2) (granted that the group did not go through some drastic changes during this period), it is assumed that the responses will be generally the same. The differences observable between the response distributions obtained at t_1 and t_2 will be the results of mere chance. Assessing the size of these chance-determined differences provides us with an empirical base for comparison, for estimating the probability of other differences.

Response distributions obtained before and after a three-month period from a group of 50 subjects on 18 words have been compared. As a measure of the range of variance, the standard deviation (SD=7) was obtained. This finding is based on the analysis of over 1500 pairs of observations, excluding from consideration the broad variety of idiosyncratic responses. Because of this exclusion, the above standard deviation values may be considered a conservative estimate. Assuming a normal distribution of differences, these two measures allow to calculate significance limits, score values that are unlikely to occur by chance. Based on characteristics of the normal distributions, we know that 1.9 x SD = 14 represents the significance limit at the .05 probability level. Score differences of 14 and larger have a 5% or less probability (one in twenty) to occur on the basis of chance; that is, they have 95% probability to reflect genuine, significant, not-chance-determined differences.

Following the same rationale, we expect score differences of 2.5 x SD = 18 to be significant at the .01 level of probability. A score difference of this size or larger will be very significant in the sense that out of 100 instances, 99 will be founded on more than chance. In the case of the preceding example where woman scored 16 and Blacks scored 39 as responses to EQUALITY, the score difference is 23. Compared with the significance limits ($p < .01 = 18$), this larger score difference suggests that the two responses genuinely differ in their intensity: the group is apparently more concerned with the unequal status of Blacks than that of women.

It may be mentioned that these significance limits ($p < .05 = 14$; $p < .01 = 18$) are also applicable when comparing the same response given by a particular group at two different times. Taking for instance, the word EQUALITY as a stimulus in association tasks administered before and after a "human awareness" training program, we may find that before the training the group gave the response Blacks with a score of 39 and after the training with a score of 68. The score difference in this instance is 29, which is greater than the 18 needed for significance at the .01 level. The difference in this case suggests that there was a significantly greater emphasis on Blacks after training and supports the conclusion that the training experience has produced an increased awareness of the unequal position of Blacks. Generally, this second type of application of the previously derived significance limits helps to determine the progress and significance of change processes—socialization, learning effects—as these changes are reflected by association data in particular dimensions.

A third type of comparison involves the scores obtained from the same group on the same response in two different contexts—i.e., in the context of two different stimulus words. We may reverse the previous example and consider the words BLACKS and WOMAN as stimulus words and compare them with regard to the response equality. That the response equality was given by the same group with a score of 8 to WOMAN and with a score of 39 to BLACKS apparently indicates a strong difference in emphasis as reflected by the score difference of 31. Using the previously obtained significance estimate of 18 for .01 level of probability, we can conclude that the score difference of 31 is highly significant, that is, the group assigns significantly greater salience to the problem of equality in respect to Blacks than in respect to women.

Significance of Domain Response Score Differences Between Groups

The domain response scores are sums of scores accumulated by a particular response across a number of stimulus themes used in the representation of a particular semantic domain. Domain response scores emerge from a type of global analysis which focuses on an entire semantic domain rather than on a single stimulus. The domain SOCIAL ENVIRONMENT, for example, may be represented by such stimulus themes as FAMILY, FRIENDS, and COMMUNITY. The group response lists obtained to the representative themes form the columns of a matrix; the rows of the matrix are formed of responses and their score values obtained in the context of the stimulus themes. The total score accumulated by a particular response across all, say, 16 stimulus themes used in the representation of this domain constitutes a domain response score. It shows the sum of scores for this particular response for the domain and is analogous to the group response score. As these domain response scores represent the units of a more global

analysis for comparing groups at the level of entire semantic domains, their stability and the significance of their differences represent questions of practical importance.

To assess the significance of differences, a group of 100 subjects were split into two equal groups of 50. Two split-half matrices were constructed and the differences of their domain response scores compared. A comparison of 600 such score values showed a standard deviation of 6.1. Based on this, the following significance estimates were calculated. At the .05 probability level, domain response score differences of 12 and above are considered significant; at the .01 level, domain score differences of 16 or larger are considered to be highly significant.

Next, we may explore the application of the above significance limits to the following example of Black and White comparisons. An analysis of the responses of 50 Black and 50 White students to 16 stimuli representing units of the social environment has produced the following responses and domain response scores within a particular selected category.

TABLE V-4

COMPONENT EGO, INDIVIDUALISM OF THE "SOCIAL ENVIRONMENT" DOMAIN

Response	Domain Response Scores		Significance of Difference
	Black Group	White Group	
self, self image	9	24	*
myself	23	55	**
mine	16	13	
me	47	82	**
individual, -ism	31	23	
personal	3	11	
impersonal	0	20	**
ego	5	13	
I	17	59	**
personality	14	0	*
person	25	13	*
human being	3	0	
Total Component Score	192	313	

*p< .05
**p< .01

Significance of Category Score Differences

As was discussed in the context of the content analysis of group response lists (Appendix II), the category scores represent sums of the response scores of responses assigned by the judges to a particular category. While these category scores show the salience of selected meaning components and represent particularly important information, the significance of their scores and score differences constitutes a particularly difficult problem for two major reasons. First, as category scores are based on several responses, some of which may come from the same subjects, we cannot treat the scores as representing

independent frequencies. Furthermore, decisions in the grouping of the responses obviously influences the score values, and as this grouping depends on a few (two or three) judges, the accumulated score values cannot be treated as sums emerging from a spontaneous process of accumulation. Consequently, we do not have any exact, high power significance test applicable to category scores. Instead, we have two possible approaches.

The simplest way to determine the significance of category score differences is to explore the significance of score differences of some of the largest underlying responses. If some of these are significant, then there is little doubt that the global category scores bear on significant differences.

The second approach requires the use of information drawn from the chance distribution of category score differences derived from a test-retest comparison. Analyzing the differences in 142 category scores observed between test and retest results separated by three months, a standard deviation of 23 was obtained. This standard deviation multiplied by 1.9 gives a score difference of 45 significant at the .05 level of probability and 59 at the .01 level.

These significance estimates are equally applicable to category score differences obtained between or within groups. An example of comparing differences across groups can be illustrated by Table V-5, using Black, White, and Spanish-American groups (N=50).

TABLE V-5

COMPONENT POSITIVE CHARACTERISTICS OF THE THEME BLACKS

Responses	Group Response Scores		
	Blacks	Whites	Spanish
beautiful	48	9	7
good	10	6	16
nice	0	9	0
understanding	7	3	0
happy	0	0	8
determined	9	0	0
hardworking	13	0	0
Total Scores	87	27	31

As previously indicated, first we may examine the significance of differences in single responses. The response beautiful differentiates the Black group from the two others at the .01 probability level. The response hardworking comes close to being significant at the .05 probability level. The differences in the other responses do not reach the level of significance. The category scores support similar conclusions at a more generic level. They suggest that Blacks attribute significantly more positive characteristics to themselves than Whites or Spanish Americans attribute to them. The total difference between Blacks and Whites for this component (60) is significant at the .01 level of probability; the difference between Blacks and Spanish Americans (56) is significant at the .05 probability level (45) and does come close to the .01 probability level (59). Whites and

Spanish Americans did not show any significant difference in the salience they give to the positive characteristics of Blacks.

Significance of Differences in Coefficients of Intergroup Similarity

After single responses and response categories, we may compare total group response lists and search for criteria for identifying differences at various significance levels. The measure introduced to assess the overall similarity of response distributions is product-moment correlation calculated across the responses obtained to the same stimulus word (e.g., BLACKS) from two groups (e.g., Blacks and Whites) or from the same White group tested at two different occasions, such as before and after a "human awareness" training. This coefficient, called the Coefficient of Intergroup Similarity, is based on the assumption that the greater the similarity between groups, the more similar is the distribution of their responses: the same responses scoring high and the same responses scoring low to a particular stimulus word (see Appendix III).

As has been discussed in more detail under stability (Appendix IV), coefficients show distinct variations in their stability depending on the specificity and level of determination characteristic of a particular stimulus theme. As this level varies from theme to theme, it is desirable to assess it individually for each theme. This assessment may be readily made by splitting the group randomly into two halves, producing two independent response lists, and calculating a coefficient of similarity between the two response lists. The coefficient so obtained may then be used as a reference point with which the coefficients calculated on the same word may be compared and their differences evaluated.

In order to obtain an empirically founded base for such decisions, we have again used a chance determined distribution of differences. This time a split-half method was used to obtain two sets of similarity coefficients, which we could assume differed from each other merely by chance. The calculations were based on 52 pairs of similarity coefficients producing a SD of .028. Using this standard deviation, differences of .056 are significant at the .05 level and differences of .072 are significant at the .01 level.

Applying these significance estimates we can decide to what extent similarity coefficients of a particular size can be considered as reflecting an overall difference that is significant at the selected level of probability. Thus, for instance, on the stimulus BLACKS we have obtained originally a similarity coefficient of .881. Based on the previously discussed significance limit of .072 obtained by split-half comparison as representing a highly significant difference at the .01 level of probability, we may conclude that coefficients of $.881 \pm .072$ suggest response distributions not significantly dissimilar from the originally responding White group. The previously given similarity coefficient of .23 on the comparison of the Black and White groups and .64 obtained by comparing the White group's responses before and after training suggest significant differences. This difference is not particular surprising in the case of the Black-White comparison. It is more informative, however, in the case of the comparison of before-and-after training responses. It suggests significant changes in the Black image as a probable result of training effects.

Significance of Differences in Indexes of Interword Associative Affinity (IIAA)

The Index of Interword Affinity measures the relationship between two stimulus themes, such as UNEMPLOYMENT and POOR, based on the relative number of responses produced in common by a particular group to these stimulus themes. These indexes reflect on the network of relationships in terms of which particular groups perceive their environment—physical and social.

For instance, on the relationship of POOR to UNEMPLOYMENT, an affinity index of 204 has been obtained for the White group and an index of 313 for the Black group. The question of whether the difference can be considered significant was again approached by using information developed on the distribution of differences based on chance. To obtain such a distribution, members of a larger group (N=100) were assigned randomly to two groups (N=50), splitting the original group into two halves. Index matrices were independently calculated for each group. Each matrix included 225 indexes on the relationship of the same set of 16 words. Next, the differences of each of the matrix cells were assessed and their standard deviation was calculated at .019. Using this SD value and multiplying it by 1.96, the significance limit of .038 was obtained at the .05 level of probability. Multiplying SD by 2.58, the significance value of .050 was obtained at the .01 level.

These significance limits allow to assess whether any particular index difference reaches the level of significance. Applying these significance estimates to the Interword Affinity Indexes obtained on the relationship UNEMPLOYMENT-POOR for the White group (204) and for the Black group (313), the difference of 109 is highly significant at the .01 level of probability.

References

Mainland, D., and I. M. Murray. "Tables for Use in Fourfold Contingency Tables," Science, 116 (1952), pp. 591-594.