Group Effectiveness Research Laboratory

DEPARTMENT OF PSYCHOLOGY · UNIVERSITY OF ILLINOIS · URBANA, ILL.

THE MEASUREMENT OF IMPLICATIVE MEANING

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Communication, Cooperation, and Negotiation in Culturally Heterogeneous Groups
Project Supported by the Advanced Research Projects Agency, ARPA Order No. 454
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Principal Investigators

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Abstract

One hundred and three students responded to a version of the Implicative Meaning Instrument originally developed by Davis and Triandis (1965) for the measurement of the cognitive component of attitudes. In particular the students amended the probability that key concepts pertaining to minority group situations implied certain consequences or implicates. The subjects also evaluated these implicates.

Two scoring models for the Implicative Meaning Instrument were investigated. Both showed significant concurrent validity in predicting the subjects' stands on policy statements with regard to minority groups.

THE MEASUREMENT OF IMPLICATIVE MEANING[1]

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A number of theoretical treatments of the concept of attitudes utilize a three-partite structure consisting of cognitive, affective, and behavioral components. In a recent review of the literature, Triandis (1967) discussed procedures which may allow measurement of these components. Thus, the cognitive component may be measured by the Antecedent-Consequent Meaning procedure (Triandis, Kilty, Shanmugam, Tanaka & Vassiliou, 1968) and the Implicative Meaning Procedure (Davis & Triandis, 1965), and the affective component may be measured by the Semantic Differential (Osgood, Suci, & Tannenbaum, 1957) and the behavioral component by the Behavioral Differential (Triandis, 1964).

The present report focuses on one of the many procedures which measure some aspect of the cognitive component of attitudes. The Implicative Meaning Procedure is closely related to Fishbein's (1963) approach for the measurement of attitudes. Fishbein (1963) employed semantic differential, evaluative, and probability scales (Fishbein & Raven, 1962). The attitude of a S towards a stimulus was defined as the sum of the products of the probability that the stimulus has a

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certain characteristic and the evaluation of that characteristic. Thus,

$$\text{Attitude} = P_1E_1 + P_2E_2 + P_3E_3 + \ldots + P_iE_i$$

Where the stimulus has i characteristics, the probability of the relationship between the stimulus and each of the characteristics is symbolized by the letter P, and the evaluation of each of the characteristics is symbolized by the letter E. The Davis and Triandis approach to the measurement of implicative meaning utilized implicates instead of characteristics of the particular concept.

An implicate is a frequently used "fill-in" for sentences of the form "If you have X, then you have..." For example, "If you have JUSTICE, then you have _____". Such a sentence would allow a researcher to obtain implicates for the concept JUSTICE. Replacement of this concept with other concepts would lead to additional sets of implicates, appropriate for these other concepts.

When a set of implicates is available, the researcher may utilize probability scales to assess the implicative meaning of a concept. For example, if in response to the concept JUSTICE the researcher has obtained the implicate EQUALITY OF OPPORTUNITY, he can ask Ss to respond to an item such as this:

"If you have JUSTICE, then you have Equality of Opportunity"

improbable ___'___'___'___'___'___'___' probable

The Fishbein procedure also requires assessment of the evaluation of the implicate, e.g.

good ___'___'___'___'___'___'___'bad

The main purpose of the study by Davis and Triandis (1965), was to assess the relative contribution of the cognitive, affective, and behavioral component of attitudes in the prediction of the behavior of white Ss negotiating civil rights issues with Negro confederates of the experimenters. The implicative meanings procedure was employed in order to uncover the cognitive component. This experiment showed that the implicative meaning procedure had predictive validity, since it predicted the negotiation behavior of the Ss. However, that study left a number of questions unanswered. For example, we did not know the best way to score the implicative meaning instrument. The present study was undertaken to answer some of these questions.

In this report we will (a) review the development of the implicative meaning procedure and (b) present a study which was designed to probe the questions; "What aspects of this procedure have validity?" and "Which is the best way to score the implicative meaning instrument?"

The Development of the Instrument

In the Davis and Triandis (1965) study, the implicates for the key concepts were elicited in a two-stage process. First, 55 subjects from an introductory psychology course were presented with several concepts and asked to supply three concepts implied by each concept. This was done by utilizing the following format:

"If one has INTEGRATED SCHOOLS, then one has

1. _____"
2. _____"
3. _____"

During the second stage of this elicitation procedure, the obtained implicates or consequent terms occupied the place of the key concepts used in the first stage. The subjects were then asked to respond with another set of three terms to each of the implicates obtained in the first stage.

The final questionnaire consisted of 18 key concepts, each with the seven most frequently given implicates from the two-stage elicitation procedure. The arrangement of scales proceeded in the following fashion. The key-concept was printed on top of the page followed by seven implicates. Below each of the implicates were two 7-point graphic scales. The first scale was bounded by the words "improbable" and probable"; the second scale was bounded by the words "good" and "bad". The instrument had the following format:

1. If one has "INTEGRATED HOUSING" then one has

   a. Equality

      improbable ___:___:___:___:___:___:___:___: probable

      good ___:___:___:___:___:___:___:___: bad

   b. Forced Integration

      improbable:___:___:___:___:___:___:___:___: probable

      good :___:___:___:___:___:___:___:___: bad

      etc

Analysis: The implicative meaning scores were obtained as follows: The 7-point probability scale was converted to a range of zero to six, the evaluative scale was centered with a range of plus three assigned to the good end-pole and minus three to the bad end-pole. The subsequently formed products could then range from plus eighteen to minus

eighteen. The products for seven implicates were summated for each key concept and constituted a set of predictor variables for the negotiation experiment which was mentioned above. In this experiment, pairs of selected male white undergraduate students negotiated three civil-rights issues with pairs of male Negro students who were confederates of the experimenter. The outcome of these negotiations was recorded as one of ten pre-scaled policy statements for each issue. The outcome sheets for each of the three negotiation topics are exhibited in Appendix A.

The validities of several summated implicative meaning products for the prediction of negotiation outcomes on three issues were adapted from Davis and Triandis (1965) and are shown in Table 1.

In addition to the foregoing variables which significantly predicted negotiation outcomes, the Davis and Triandis (1965) study also employed implicative meaning variables with person classes, e.g., Negro physicians, Negro teachers, as key concepts. Prediction of negotiation outcome by means of these latter variables did not prove as successful as when the overall issue was stated.

Problem

In the original study the sum of seven implicative products for a given key concept showed satisfactory predictive validity as can be seen in Table 1. However, several of the validity coefficients of single products were low or even opposite in direction from the sign of the correlation between the summated variable and the criterion. In order to remedy this situation, certain aspects of the format in which the questions were asked, the characteristics of individual key concept-implicate pairs, and the scoring procedure used were scrutinized.

Table 1

Validities of Implicative Meaning of Different Concepts in Negotiation Experiment

Implicative Meaning of Concepts	Negotiation Issues		
	I Biracial Committee	II Housing	III Education
Integrated Housing	.27*	.26*	.42**
Segregated Housing	-.31*	-.24	-.27*
Integrated Schools	.27*	.17	.07
Segregated Schools	-.23*	-.16	-.28*
Integrated Hospitals	.24	.30*	.22
Segregated Hospitals	-.40*	-.27*	-.21
Biracial Committees	.29*	.35*	.31*
Negotiations	.25*	.29*	.25*

* $p < .05$

** $p < .01$

N = 45

From the sample of the format shown on page 4 can be seen that the subjects' task was such that the evaluation of the consequent term immediately followed the rating of the degree of implication. Although the general instructions emphasized that only the implicate was to be evaluated, the subjects could have, due to the spatial and temporal contiguity of the rating tasks, evaluated the whole assertion, i.e., If X then Y. This possibility was not investigated in the present study but rather eliminated by separating the two rating tasks. In particular, the evaluation of all implicative terms and key concepts preceded the ratings of degree of implication.

The implicate terms were selected on an empirical basis. Those implicates were taken from the Davis and Triandis (1965) study for which both the probability scale and the implicative product showed high validities in predicting the negotiation outcome. A few of the implicates were presented in balanced form, if, e.g., Integrated Housing-Equality was a highly valid key concept-implicate pair, then another pair Integrated Housing-Inequality was constructed in addition to the former. The resulting set of implicates was thought to be sufficiently general to be employed as possible consequences of various key concepts.

The question of how to score the implicative meaning instrument is not a trivial one since different assumptions about the relationship of cognitive elements are implicit in different scaling procedures. The problem to be discussed here is whether the relationship between cognitive elements is conceptualized as ranging on a continuum from absence of any relationship to a maximal positive relationship or as

involving a continuum from negative to positive relationship. The scoring procedure for the implicative meaning instrument consists of three stages.

The first stage is the assignment of numbers to the responses obtained on the probability and evaluation scales. As mentioned before, in the Davis and Triandis (1965) study the evaluative scale was scored from plus three to minus three and the probability scale ranged from zero to six. The assignment of numbers to the probability scale reflected the mathematical notion that all probabilities have a positive sign. The underlying assumption was that subjects will indicate the relationship between the two terms in the if-then statement on a continuum ranging from no relationship to maximal positive relationship. The probability ratings of the if-then assertions were somewhat similar to the task employed by McGuire (1960) in his syllogistic analysis of cognitive relationships. McGuire asked his subjects to indicate the probability of the truth of several universal propositions on a scale ranging from zero to hundred. In addition he obtained ratings of the desirability of the stated assertions which correlated, $r = .40$, $p < .01$, with the probability ratings (p. 77). Thus the belief in the truth of an assertion may be to some extent related to what McGuire called "wishful" tendencies.

The conceptualization of negative, positive, and neutral relationships between cognitive elements is contained under varying names in several theories of cognitive interaction (e.g., Festinger, 1957; Abelson and Rosenberg, 1958; Osgood, 1963; Fishbein, 1966). Also some functional theories of attitude organization (Peak, 1955;

Rosenberg, 1956; Vroom, 1964) have held that attitude objects may "lead to or block the attainment of.... goals" (Peak, 1955, p. 154), suggesting possible negative and positive relationships. The above formulations would be consistent with a measurement model that expresses the relationship between cognitive elements on a scale ranging from negative numbers via a neutral point to positive numbers. Fishbein made use of such a model to score his belief scales (Fishbein and Raven, 1962).

While in the first stage the two scoring models are obviously linear transformations of one another, their model character cannot be denied, since they result by manipulations other than linear transformations, into different consequences. Such manipulations are the essential feature of the second stage of the scoring of the implicative meaning procedure. There the evaluation rating of the consequent term is multiplied by the probability rating of the assertion. Some features of the two models, one with a probability scale ranging from zero to positive, the other with a probability scale ranging from negative numbers via zero to positive numbers, may now be considered. As far as the subject is concerned, he is given a seven-step scale, bounded by the words improbable and probable; the steps of the scale are neither numbered nor labelled in any way. After multiplication with the bipolar evaluative scale the placement of the same individual on the two resulting product continua will somewhat differ. With one model maximal positive or negative attitudes toward the key concept will be obtained if the probable end of the scale is checked for

implication and one of the end poles of the evaluative scale for the secondary term. In no instance will any probability rating cause the subject to be placed on the product continuum on the opposite side from the sign of the evaluation rating, as seen from the theoretical midpoint of the product continuum. When employing the other model the subsequent products would yield positive attitude scores towards key concepts when the subject's estimate of the probability of a positively evaluated consequent were high and when the probability of negatively evaluated consequent were low. Negative attitude scores toward key concepts would be obtained when a subject thought it unlikely that the key concept led to a favored implicate, and when the subjective probability was high that the key concept would lead to a negatively evaluated implicate.

One of the objectives of the study was to test these two models and their underlying assumptions by correlating the product variables derived from them with external criteria.

The third stage in scoring the implicative meaning instrument is concerned with the combination of the evaluated cognitive links between a given key concept and several implicates. An algebric summation of these products in accordance with Rosenberg (1956), and Fishbein and Raven (1962) has been found to be superior (Triandis and Fishbein, 1963; Anderson and Fishbein, 1965) to other methods of combination and shall be used here.

Another aim of the present study was to investigate the validity of semantic differential scales relevant to intercultural negotiations. As pointed out by Triandis (1960) and Osgood (1962) semantic differential

factorial structures often depend on the nature of the concepts used. Davis (1966) analyzed 10 semantic differential scales correlated over 24 concepts. The concepts were taken from the domain of civil rights issues and some general domestic and foreign policy issues. For a white sample of subjects, he found an importance and a familiarity factor in addition to an evaluation factor. While the familiarity ratings were tested here for the first time, the rated importance of issues was found by Davis and Triandis (1965) to be a particularly promising predictor of negotiation outcome. The importance ratings were of considerable theoretical interest because of their crucual role in defining two types of prejudiced subjects: the race and belief prejudiced subjects (Triandis & Davis, 1965). The race prejudiced indicated that pro-civil rights issues (in particular integrated facilities and Negro stimuli) were unimportant and they evaluated integrated facilities negatively. The belief prejudiced subjects, on the other hand, focused on anti-civil rights issues (segregated facilities) which they rated as important, while they evaluated negatively pro-civil rights issues. These findings suggested the desirability of obtaining in the present study semantic differential ratings and the implicative meaning of both pro- and anti-civil rights concepts.

Method

Materials

Two questionnaires were used. The first contained the predictors, the second, the criterion variables.

Questionnaire 1.

Part 1 of the first questionnaire contained 5 key concepts relevant to intercultural negotiations, 8 implicative terms and 5 further concepts pertaining to general social issues. These 18 terms were presented in a fixed random order with 9 semantic differential scales per concept (3 each for the evaluative, importance, and familiarity factors from Davis' (1966) analysis.) The format of this part of the questionnaire is exemplified in Appendix B. The 5 key concepts were:

Integrated housing

Integrated schools

Negotiations

Segregated housing

Segregated schools

Part 2 of the first questionnaire contained the 5 key concepts interspersed with the 5 concepts pertaining to general social issues. The concept was printed on top of the page and below was a set of 8 implicates, each followed by a 7-point probability scale, bounded by "improbable" and "probable." The format is exemplified in Appendix C. While in the Davis and Triandis (1965) study each concept was matched to a different set of implicates which were most appropriate for it, in the present study, the set of implicates used was the same for all key concepts. The implicates were the following:

Equality

Fairness

Higher living standards

Injustice

Progress

Better society

Inequality

Lower living standards

These implicates were taken from Davis and Triandis (1965) with the following considerations: As implicates of one or more of the original key concepts, the item validities of the probability scale as well as of the implicative meaning product involving the implicate were high in predicting negotiation outcome. Since a common set of implicates was to be used for the different key concepts, they included for each concept some terms that were not amongst the originally elicited implicates of the particular key concept. For example, Progress was initially an implicate of Integrated Housing and Injustice one of Segregated Schools then both of these key concepts were presented with the two implicates, although Progress was not in the original list of implicates, for Segregated Schools nor was Injustice in the list of consequents of Integrated Housing. Thus whether an implicate that had shown a high validity in a given context would be a good predictor in a different key concept-consequent context was an open question. The final list made up of what were assumed to be sufficiently general implicates contained also the opposites for two of the terms. These were Equality and Inequality and Higher Living Standards and Lower

Living Standards. Since no estimate of re-test stability of the probability ratings was obtained in this study and the format of the questionnaire precluded the use of multiple probability scales for a single if-then assertion, the above pairs of terms could be employed to estimate the degree of equivalence.

The procedure thus departed in several aspects from the original implicative meaning procedure (Davis & Triandis, 1965). The evaluative aspect of the implicate term was assessed in the original study by means of one good-bad scale within the framework of the implicative relationship, whereas it was assessed here outside the context of such a relationship, by means of three evaluative scales. While in the original study the implicates were to a large degree specific to, and different from one issue to another, the same set of implicates was employed here for all key concepts.

Questionnaire 2. This booklet contained ten position statements, each pertaining to the three issues of Biracial Committee, Housing, and Education. (Appendix A) The instructions asked the subjects to respond to each statement by indicating whether they would accept (A) or reject (R) the statement as an outcome of a hypothetical civil rights negotiation in which they were representing the city council of a medium size Illinois city. Furthermore, they were asked to indicate the statement (P) they would most prefer as outcome of such a negotiation. The position statements were previously scaled by Davis and Triandis (1965).

Subjects and Administration

The subjects were male and female undergraduate students enrolled in an intermediary Social Psychology course. The tests were administered during two one-hour class periods, two days apart from each other. To preserve their anonymity, the subjects received a pre-numbered questionnaire 1 and were asked to preserve that number and print it on questionnaire 2 which they were invited to fill out during the next class period. These numbers then constituted our means for collating the responses from the two testing sessions. One hundred and sixty subjects filled questionnaire 1, but the attendance of the administration of questionnaire 2, which fell on a Friday afternoon, was only 112 students. Complete responses for both time 1 and time 2 could be obtained for 103 subjects only (80 male and 23 female students).

Analyses and Results

Semantic differential ratings of concepts.

Composite scores were computed by combining 3 scales for each of the three factors. These were:

Evaluation:	Importance:	Familiarity:
good-bad	interesting-boring	near-far
fair-unfair	profound-superficial	familiar-unfamiliar
valuable-worthless	important-unimportant	believable-unbelievable

The theoretical range of these scores was from 3 to 21. High scores meant positive evaluation, high importance, and great familiarity. The variables were correlated with the three criteria, the subjects' most preferred position statements for the issues: I Biracial Committee, II Housing, III Education. These concurrent validity coefficients for key-concepts and implicates are presented in Table 2.

Table 2

Correlations between Evaluation, Importance, and Familiarity-Ratings of Concepts with Three Criteria; Thurstone Scaled Statements for the Issues: I Biracial Committee, II Housing, III Education

(N = 103)

	Evaluation			Importance			Familiarity		
Key-concepts:	I	II	III	I	II	III	I	II	III
Integrated housing	.41	.55	.50	.39	.51	.52	-.12	.04	.03
Segregated housing	-.55	-.62	-.41	.11	.13	.17	-.09	-.01	-.04
Integrated schools	.39	.32	.28	.45	.38	.36	.00	-.04	-.03
Segregated schools	-.51	-.48	-.43	-.02	-.06	.08	-.19	-.00	-.09
Negotiations	.02	-.01	.04	.08	-.02	.02	-.02	-.16	-.09
Implicates:									
Equality	.49	.32	.31	.44	.32	.30	-.05	-.04	-.02
Inequality	-.32	-.29	-.17	.15	.22	.24	.09	.18	.26
Unfairness	-.13	-.09	-.05	-.14	-.06	.12	.07	.05	.09
Higher living standards	.08	-.03	.09	.12	-.12	-.01	.01	-.11	-.14
Lower living standards	-.05	-.02	.11	-.03	.02	.07	-.12	-.01	.01
Injustice	.03	.00	.05	.15	.07	.22	-.01	.05	.13
Progress	.01	-.11	.01	.14	-.16	-.01	-.03	-.08	-.11
Better Society	.13	-.04	.05	.12	-.06	-.02	-.20	-.19	-.25

$r = .20$ $p < .05$ $r = .25$ $p < .01$ $r = .32$ $p < .001$

Implicative meaning variables.

Implicative meaning products were computed in two different ways: (A) The evaluative composite score for any implicate could range from 3 to 21. By subtracting 12 from the composite scores, their theoretical range was transformed from -9 to +9. The 7-step probability scale for the implicative relationship between key-concepts was transformed to range from -3 to +3. Multiplication of the two scores yielded implicative meaning products with a theoretical range from -27 to +27. Products with a positive sign could thus be brought about by affirming the probability of implication from a key concept to a positively evaluated implicate, or denying the probability of implication from a key concept to a negatively evaluated consequent term. And, products with a negative sign would be expected if a subject affirms the probability of implication from a key concept to a negatively evaluated implicate or if he denies the probability of implication from a key term to a positively evaluated implicate.

(B) The evaluative composite scores for the implicate were treated as under (A). The probability score, however, was transformed to a range between 0 and 6, which yielded a range from -54 to +54 for the subsequently computed products. The sign of these products was then the sole function of the evaluation of the implicate term and the magnitude was the joint function of degree of evaluation and the variable weight contributed by the degree of probability of implication. (This model corresponds to the original Davis and Triandis scoring procedure.)

Validity coefficients of implicative meaning products for scoring systems (A) and (B) and for the prediction of the most preferred

position statements for the three issues, I Bi-racial Committee, II Housing, and III Education are presented in Table 3.

For each of the two scoring models, the 8 individual implicative meaning products pertaining to a given key concept were summed. The resulting implicative meaning product sums (IMPS) obtained from the scoring models (A) and (B) were correlated with the three criteria. Validity coefficients are exhibited in Table 4.

Discussion

Semantic Differential ratings of key concepts and implicates.

Table 2 shows that the evaluation ratings of all key concepts, except Negotiations, were significantly related to the criteria. The evaluations of the terms Equality and Inequality were the only ones among the implicate-terms to correlate significantly with the individuals' stands on issues. Whenever the coefficients reached significant levels of association, the sign of the relation was consistent with the general meaning of the term. Integrated concepts showed a positive, segregated concepts a negative relation to the criteria.

As to the importance ratings, only integrated concepts, as well as the terms Equality, Inequality and Injustice had significant correlations. The sign of these relations was positive for integrated concepts as well as for Inequality, Injustice and Segregated Housing (the latter not significantly so), i.e., opposite in sign to those obtained from the evaluation ratings of some of the concepts.

None of the familiarity ratings of key terms was significantly related to the criteria. Among the implicates, only two terms, Better Society and Inequality had significant correlations with the individuals'

Table 3

Correlations between Implicative Meaning Products Derived from Scoring Models (A) and (B) with 3 Criteria; Most Preferred Position Statement on the Issues: I Biracial Committee, II Housing, III Education (N = 103)

	(A)			(B)		
	I	II	III	I	II	III
Integrated Housing						
Equality	.25	.31	.39	.42	.39	.44
Inequality	.25	.16	.21	-.09	-.14	.02
Unfairness	.32	.41	.26	.19	.30	.19
Higher living standards	.24	.50	.30	.27	.44	.33
Lower living standards	.15	.23	.19	.09	.17	.22
Injustice	.16	.28	.19	.17	.26	.21
Progress	.39	.42	.31	.32	.30	.26
Better society	.47	.48	.36	.45	.38	.33
Segregated Housing						
Equality	-.39	-.31	-.33	-.07	-.11	-.14
Inequality	-.30	-.29	-.29	-.34	-.31	-.25
Unfairness	-.34	-.25	-.22	-.30	-.22	-.18
Higher living standards	-.38	-.45	-.37	-.29	-.41	-.27
Lower living standards	-.13	-.18	-.17	-.13	-.14	-.05
Injustice	-.45	-.37	-.36	-.34	-.29	-.26
Progress	-.44	-.40	-.35	-.42	-.44	-.34
Better society	-.47	-.38	-.33	-.37	-.37	-.27

$r = .20$ $p < .05$ $r = .25$ $p < .01$ $r = .32$ $p < .001$

Table 3 (Continued)

	(C)			(B)		
	I	II	III	I	II	III
Integrated Schools						
Equality	.35	.32	.33	.45	.34	.35
Inequality	.31	.26	.23	-.07	-.08	.02
Unfairness	.39	.35	.31	.30	.30	.29
Higher living standards	.23	.31	.34	.23	.22	.32
Lower living standards	.15	.25	.23	.09	.20	.23
Injustice	.40	.37	.13	.41	.35	.16
Progress	.46	.43	.41	.36	.29	.32
Better society	.49	.46	.44	.44	.35	.38
Segregated Schools						
Equality	-.35	-.27	-.37	-.04	-.07	-.19
Inequality	-.36	-.38	-.38	-.37	-.36	-.29
Unfairness	-.43	-.42	-.34	-.37	-.34	-.27
Higher living standards	-.31	-.36	-.34	-.22	-.32	-.24
Lower living standards	-.10	-.08	-.15	-.11	-.07	-.05
Injustice	-.34	-.22	-.24	-.25	-.17	-.16
Progress	-.42	-.39	-.38	-.41	-.44	-.37
Better society	-.47	-.36	-.41	-.38	-.36	-.36

$r = .20$ $p < .05$ $r = .25$ $p < .01$ $r = .32$ $p < .001$

Table 3 (Continued)

	(A)			(B)		
	I	II	III	I	II	III
Negotiations						
Equality	.16	.00	.11	.35	.17	.22
Inequality	.17	.07	.05	-.21	-.24	-.13
Unfairness	.01	-.04	-.06	-.12	-.13	-.11
Higher standards of living	.05	.06	.07	.08	.02	.11
Lower standards of living	.00	-.03	-.11	-.04	-.03	.02
Injustice	-.04	-.08	.01	-.01	-.08	.05
Progress	-.06	-.11	.00	-.03	-.13	.00
Better society	-.05	-.06	.08	.05	-.04	.10

$r = .20$ $p < .05$ $r = .25$ $p < .01$ $r = .32$ $p < .001$

Table 4

Correlations between Implicative Meaning Products (IMPS)
Summed Over 8 Implicates with Three Criteria; for Two Scoring Models (A,B).
Preferred Position Statements for the Issues:
I Biracial Committee, II Housing, III Education

N = 103)

IMPS:	(A) I	(A) II	(A) III	(B) I	(B) II	(B) III
1. Integrated Housing	.46	.57	.46	.45	.50	.48
2. Segregated Housing	-.53	-.48	-.44	-.45	-.45	-.34
3. Negotiations	.05	-.04	.03	.05	-.09	.08
4. Integrated Schools	.52	.51	.45	.50	.43	.47
5. Segregated Schools	-.51	-.46	-.48	-.45	-.45	-.39

$r = .20$ $p < .05$
$r = .25$ $p < .01$
$r = .32$ $p < .001$

stands on the issues.

It will be recalled that Triandis and Davis (1965) found two types of Ss whom they called Race- and Belief- prejudiced subjects. The race-prejudiced were characterized, in part, by ratings suggesting low importance of integrated concepts. The belief-prejudiced were characterized, in part, by ratings of segregated concepts as important. Table 5 shows the correlations between the evaluation and importance composites of the key concepts employed in the present study. Inspection shows that the importance ratings of integrated facilities are more highly related to the evaluations of integrated facilities (r's of .69, .50, .52, .68) than to the importance ratings of segregated facilities (r's of .23, .27, .37, .28).

The importance ratings of segregated facilities, however, did not correlate significantly with the evaluation ratings of any of the four key concepts (r's of .03, .03, .14, .16, .12, .08, .00, .00), while the intercorrelation between importance of segregated housing and importance of segregated schools was found to be .64. These results suggested the existence of two importance factors, one for integrated concepts and the other for segregated concepts, and some of the preconditions for the Davis and Triandis (1965) analysis appeared to be replicated.

Implicative Meaning Variables.

Inspection of the correlations between implicative meaning products and the three criteria (Table 3) showed little discriminant validity. In this connection it must be pointed out that the relationship among the three criteria was rather high, r(I, II) = .57, r (I, III) = .50, and r (II, III) = .65. It is possible that the use of a common list of

Table 5

Correlations between Evaluation and Importance

Composites of Key-Concepts (N = 103)

	Evaluation				Importance			
	1	2	3	4	5	6	7	8
1. Integrated schools (E)								
2. Integrated housing (E)	.44							
3. Segregated schools (E)	-.55	-.49						
4. Segregated housing (E)	-.52	-.57	.72					
5. Integrated schools (I)	.69	.50	-.45	-.52				
6. Integrated housing (I)	.52	.68	-.45	-.43	.63			
7. Segregated schools (I)	.03	.03	.14	.16	.28	.27		
8. Segregated housing (I)	.12	.08	.00	.00	.37	.23	.64	

$r = .20$ $p < .05$
$r = .25$ $p < .01$
$r = .32$ $p < .001$

implicates for all key concepts contributed to the lack of discriminant validity. This might be avoidable by employing standard lists of implicates elicited specifically for given key concepts.

Table 3 also showed only four significant correlations between products for the key concept Negotiations from model B (probability: 0 to 6) and the three criteria. Since the single products for a key concept were algebraically summed in the third stage of the scoring procedure of the implicative meaning instrument, it should be noted that two of the four significant coefficients showed a positive and two a negative relationship with the criteria. Thus unlike in the Davis and Triandis (1965) investigation, implicative meaning products for Negotiations did not consistently predict the subjects' preferred policy stands. As was seen before, (Table 2), the semantic differential ratings of that concept were also not found to be valid predictors of the criteria. A possible explanation would be that the context of the item in the previous questionnaire suggested interracial negotiations more so than did the present questionnaire and it is also possible that the present subjects, two-thirds of whom were commerce students perceived the item as relating to other types of negotiations.

Excluding the concept Negotiations, Table 3 contains 96 correlations between the eight products from the four remaining concepts and the three criteria, for each of the two scaling models. Within each block of correlations corresponding to a key concept the coefficients were homogeneous in directionality. Integrated concepts showed a positive, segregated concepts a negative relation to the criteria. Thus one of the aims of the present study, a consistent directionality of the

validity coefficients of single products appeared to be fairly well achieved. An exception to this occurred only in four instances where coefficients from model B exhibited a sign reversal from the dominant directionality. The key concept-implicate pairs: Integrated Housing-Inequality and Integrated Schools-Inequality showed these reversals of sign of the coefficients. Interestingly when Integrated Housing was paired with Equality and Integrated Schools with Equality, the highest validity coefficients in the absolute sense were achieved with model B. On the other hand, when the same implicate term Equality was given with Segregated concepts, the difference between models A and B can be seen from Table 3 to be rather substantial.

In comparing the two sets of 96 coefficients derived from the two models pair by pair, it can be seen that the correlations were identical in three instances. Of the remaining 93 pairs there were 72 instances in which model A (probability: -3 to +3) showed a higher correlation with the criteria than model B (probability: 0 to 6) and 21 instances where the reverse was true. Among the significant correlations ($p < .05$), model A showed a higher validity than model B in 64 cases, while the reverse was true in 18 cases. Since only one-third of the 96 coefficients involved independent estimates of probability of implication, the latter frequencies could be reduced to 27 paired observations, 21 of which showed model A to be superior and 6 of which showed model B as more valid. The normal approximation for the sign test yielded a z-value of 2.69 with $p = .0072$ for a two-tail test of that comparison.

Inspection of the correlations between the algebraic sums of implicative meaning products of key concepts and the three criteria (Table 4) showed scoring model A again to be slightly superior to model B in predicting the criteria in 10 out of the 12 significant coefficients.

While the observed differences between the scoring models were small, they are probably reliable under certain conditions. If one assumes a hypothetical value for the relationship between the summed product variables derived from the two models for a given key concept, then one can determine how large a difference between correlation coefficients is required for stable results in thethree variable case. Assuming a correlation of r = .90 between product sums of key concepts derived from the two models, then formula 10.7 suggested by McNemar (1963, p. 140) for the three variable case, would show 6 coefficients from model A (Table 4) to be significantly higher than the corresponding coefficients from model B ($p < .1$) in a two-tail test. These comparisons would be located in the intersections of the following rows and columns in Table 4: 1, II; 2, I; 2, III; 4, II; 5, I; and 5, III. Four of these 6 comparisons would be significant beyond the .05 level on a two-tail test (2, I; 2, III; 4, II; and 5, III), while in the two instances in which model B was superior, the .1 level of significance would not be reached in the comparisons (1, III; and 4, III). It must be emphasized that the validity of these inferences would however depend on the validity of the assumption made above.

In weighing the evidence it should be recalled that the product continuum under model B, as used here, had a higher theoretical range (-54 to +54) than that of model A (-27 to +27). Thus the data would tend to favor the notion that subjects may perceive the relationship between concepts on a continuum embracing both negative and positive, i.e., both dissociative and associative relationships which, of course, includes the continuum ranging from absence of any relationship to positive relationship.

The observed differences between the two scaling procedures may be of theoretical interest, yet for empirical prediction the two models might be considered as practically equivalent approaches for the scoring of the implicative meaning instrument. The results may be generalizable only to other standardized instruments that use a common set of implicates but not to approaches in which the subjects generate their own implicates. Again the absence of discriminant validity must be mentioned.

Before concluding this report, the degree of equivalence of the probability of implication between balanced consequent terms can be seen from Table 6. The correlations between the probability that a key concept was seen to lead to Equality and the probability that it led to Inequality ranged from -.47 to -.70 indicating a rather high degree of equivalence. For the implicates Higher Living Standards and Lower Living Standards the correlations ranged from -.14 to -.53. In both instances the lowest coefficients were observed in connection with the key concept

Table 6

Correlations between Probability Scales for some Key Concept-Implicate Pairs

(N = 103)

	Integrated Housing			Segregated Housing			Integrated Schools			Segregated Schools			Negotiations		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
1. Equality	.			.			.			.					
2. Inequality	-.55			-.63			-.50			-.70			-.47		
3. Higher living standards	.24	-.12		.30	-.30		.35	-.42	.	.15	-.20		.41	-.35	
4. Lower living standards	-.11	.20	-.43	-.29	.31	-.53	-.13	.38	-.40	-.13	.29	-.53	-.11	.45	-.14

Negotiations and the highest with the key concept Segregated Schools. More than half of the cross-correlations between different implicate pairs were significant.

The implicates for the present investigation were chosen from the original list of implicates employed by Davis and Triandis (1965) because their probabilistic connection with a key concept as well as their implicative product showed high validity in predicting negotiation outcome. Since the products have already been discussed, the 8 probability ratings for each concept were combined into a single score. The measures of equivalence presented in Table 6 suggested that simple summation would not be appropriate. Therefore the polarity ratings for the implicates (Table 7) were consulted to determine the weights to be employed before summation. When the mean of the evaluative rating for a consequent fell below the theoretical midpoint of the continuum, a weight of -1 was assigned to the probability rating; when it fell above the theoretical midpoint the probability rating was given a weight of +1. The validities of these summed probability ratings are exhibited in Table 8. When compared to the coefficients under block (A) in Table 4, only one of the 12 significant correlations in Table 8 was numerically smaller than its counterpart in Table 4. Thus, the high predictive validity of some of the probability scales from the Davis and Triandis (1965) list appeared to be replicated.

Table 7

Means and Standard Deviations of Evaluative Composite Ratings* of Implicative Terms

(N = 103)

	$\bar{X}$	S.D.
Equality	18.3	2.8
Inequality	8.1	4.3
Unfairness	6.3	3.2
Higher standards of living	18.0	2.9
Lower standards of living	7.4	2.6
Injustice	5.6	2.5
Progress	18.7	1.9
Better society	18.5	2.4

*The theoretical range of these composites, being made up of 3 seven-point evaluative scales, is from 3 to 21. A value of 12 would correspond to a neutral rating.

Table 8

Correlations between Implicative Meaning Probabilities (Summated Over 8 Implicates) and Three Criteria; Preferred Position Statements for the Issues: I Biracial Committee, II Housing, III Education

	I	II	III
Integrated housing	.49	.57	.46
Segregated housing	-.57	-.49	-.46
Integrated schools	.56	.51	.45
Segregated schools	-.53	-.47	-.47
Negotiations	-.07	-.12	-.01

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APPENDIX A

APPENDIX A

INSTRUCTIONS

Imagine yourself in the following situation: you are a representative of the community's City Council and, together with other representatives of the City Council and the Board of Education, you are meeting with representatives of a civil rights organization to negotiate points of dispute concerning inter-racial relations in the community. The civil rights group is demanding sweeping and effective legislation and other measures to rectify what they regard as serious injustices in the treatment of Negroes and other minorities in the community. In the past, the City Council has shown opposition to many of the civil rights group's demands, but has indicated a willingness to compromise in some areas. The members of the City Council differ widely, however, in their positions on these issues. Some are more in favor of civil rights measures and others are more opposed to them.

The positions that can be taken on the several issues under dispute vary over a wide range. Some position statements are extremely favorable with respect to the demands of the civil rights group, and others are very unfavorable with respect to their demands. Still other statements represent positions intermediate between these two extremes.

We would like to find out what your position as a representative of the City Council would be with respect to these issues. There are three issues involved, namely: 1) the establishment of a bi-racial committee, 2) discrimination in housing and 3) segregation in the schools. On the following pages you will find ten statements for each of these three issues, representing various positions that might be taken on these issues. The ten statements are listed in order on a

ten-point scale, ranging from unfavorable (1.00) to favorable (10.00) with respect to demands of the civil rights groups. These scale values were obtained from a group of judges in a previous study. Remembering your role now as a member of the City Council negotiating with representatives of the civil rights organization, please rate each of these statements according to whether you would accept or reject it in a negotiating situation. If you would accept the statement in the negotiating situation, place an "A" directly to the right of the statement; if you would reject the statement in the negotiating situation, place an "R" to the right of the statement. After you have done this, go back and look at the statements which you have marked as acceptable and decide which one of them is your most preferred statement, that is which statement you would like to see as the outcome of the negotiating situation; mark this statement with a "P" for the preferred statement. In addition, decide how far you might be willing to go in order to arrive at a compromise solution with the representatives of the civil rights group. Draw a line underneath the scale value of the statement which represents the limit to which you would be willing to go in the negotiation.

Mark the statements below according to the following code:

P - Most preferred
A - Accept
R - Reject

ISSUE I BI-RACIAL COMMITTEE

STATEMENT	Scale Value	Your Judgment
1. The City Council should irrevocably reject the establishment of a bi-racial committee.	1.00	_____
2. The City Council should place on its future agenda the possibility of establishing a bi-racial committee.	2.00	_____
3. The City Council should establish a bi-racial committee limited to discussing questions of inter-racial relations.	3.00	_____
4. The City Council should conduct hearings on the establishment of a bi-racial committee.	4.00	_____
5. The City Council should establish a bi-racial committee whose authority would be limited to advising the Council.	5.00	_____
6. The City Council should establish a bi-racial committee to investigate and report on matters of inter-racial relations.	6.00	_____
7. The City Council should establish a bi-racial committee to make recommendations to it on questions involving inter-racial relations.	7.00	_____
8. The City Council should establish a bi-racial committee to help plan future city programs in order to prevent discriminatory practices and situations from arising.	8.00	_____
9. The City Council should establish a bi-racial committee whose approval on all measures pertaining to inter-racial relations is necessary.	9.00	_____
10. The City Council should establish a bi-racial committee nominated by civil rights groups with the power to legislate and enforce non-discriminatory policies.	10.00	_____

Mark the statements below according to the following code:

P - Most preferred
A - Accept
R - Reject

ISSUE II HOUSING

STATEMENT	Scale Value	Your Judgment
1. Discrimination in housing is strictly a private affair and no action should be taken by the City Council or other government body which would interfere with private property rights in any way.	1.00	_____
2. The City Council should not interfere with the right of private homeowners to sell or lease their homes only to members of their own race.	2.00	_____
3. The City Council should not have the power to regulate the sale of homes by individuals.	3.00	_____
4. The City Council should make a study of alleged discriminatory practices in housing.	4.00	_____
5. The City Council should recommend non-discriminatory practices in the renting or selling of housing.	5.00	_____
6. The City Council should pass a law prohibiting discrimination on the basis of race, religion, or ethnic background in the rental of rooms, except in the case of private dwellings in which the owner resides.	6.00	_____
7. The City Council should pass a law prohibiting discrimination on the basis of race, religion, or ethnic background in the sale of newly built homes.		
8. The City Council should pass a law prohibiting discrimination on the basis of race, religion, or ethnic background in the rentals of all apartments.	8.00	_____
9. The City Council should not issue licenses to realtors or other agents who practice discrimination against members of minority groups in sales or rentals of housing.	9.00	_____
10. The City Council should pass a law prohibiting discrimination on the basis of race, religion, or ethnic background in any and all housing.	10.00	_____

Mark the statements below according to the following code:

P - Most preferred
A - Accept
R - Reject

ISSUE III EDUCATION

	STATEMENT	Scale Value	Your Judgment
1.	Integration in the schools should not be pushed any further and changes already brought about should be re-examined for possible reversal.	1.00	_____
2.	Instead of pushing integration policies, the Board of Education should provide separate but equal educational facilities.	2.00	_____
3.	The Board of Education should evaluate the effect of present integration measures before proceeding with further integration in the public schools.	3.00	_____
4.	The Board of Education should attempt to avoid future segregation in the city schools without disturbing the status quo.	4.00	_____
5.	The Board of Education should recommend but not enforce integration in the city schools.	5.00	_____
6.	The Board of Education should provide transportation for students where necessary so that all public schools have students of different races approximately proportional to their numbers in the community.	6.00	_____
7.	The Board of Education should bring about integration in the city schools by promoting school registrations which would bring about a racial balance.	7.00	_____
8.	The Board of Education should rezone school districts to eliminate de facto segregation.	8.00	_____
9.	The Board of Education should bring about immediate desegregation in the city schools by transporting as many children as necessary to bring about complete racial balance.	9.00	_____
10.	The Board of Education should bring about complete and immediate integration of all schools at all age levels.	10.00	_____

APPENDIX B

APPENDIX B

TERMS AND ISSUES

INSTRUCTIONS

The purpose of this part of the questionnaire is to measure the meanings which certain terms and issues have for you. On each page of this booklet you will find three different concepts to be judged, and beneath them a set of scales. You are to rate the concepts on each of these scales in order.

Here is how you are to use these scales:

If you feel that the concept at the top of the page is very closely related to one end of the scale, you should place your X as follows:

ISSUE: The Federal Minimum Wage Law

fair : X : ___ : ___ : ___ : ___ : ___ : ___ : ___ : unfair

or

fair : ___ : ___ : ___ : ___ : ___ : ___ : ___ : X : unfair

If you feel that the concept is quite closely related to one or the other end of the scale (but not extremely), you should place your X as follows:

strong : ___ : X : ___ : ___ : ___ : ___ : ___ : ___ : weak

or

strong : ___ : ___ : ___ : ___ : ___ : ___ : X : ___ : weak

If the concept seems only slightly related to one side as opposed to the other side (but is not really neutral), then you should place your X as follows:

active : ___ : ___ : X : ___ : ___ : ___ : ___ : ___ . passive

or

active : ___ : ___ : ___ : ___ : ___ : X : ___ : ___ : passive

The direction toward which you mark, of course, depends upon which of the two ends of the scale seem most characteristic of the thing you're judging.

If you consider the concept to be neutral on the scale, both sides of the scale equally associated with the concept, or if the scale is completely irrelevant, unrelated to the concept, then you should place your X in the middle space:

safe : ___ : ___ : ___ : X : ___ : ___ : ___ : ___ : dangerous

Work at fairly high speed through this test. Do not worry or puzzle over individual items. It is your first impressions, the immediate "feelings" about the items, that we want. On the other hand, please do not be careless, because we want your true impressions.

1. EQUALITY

good	:____:____:____:____:____:____:___:	bad
unfamiliar	:____:____:____:____:____:____:____:	familiar
important	:____:____:____:____:____:____:____:	unimportant
unfair	:____:____:____:____:____:____:____:	fair
believable	:____:____:____:____:____:____:____:	unbelievable
far	:____:____:____:____:____:____:____:	near
valuable	:____:____:____:____:____:____:____:	worthless
profound	:____:____:____:____:____:____:____:	superficial
interesting	:____:____:____:____:____:____:____:	boring

2. SEGREGATED SCHOOLS

good	:____:____:____:____:____:____:____:	bad
unfamiliar	:____:____:____:____:____:____:____:	familiar
important	:____:____:____:____:____:____:____:	unimportant
unfair	:____:____:____:____:____:____:____:	fair
believable	:____:____:____:____:____:____:____:	unbelievable
far	:____:____:____:____:____:____:____:	near
valuable	:____:____:____:____:____:____:____:	worthless
profound	:____:____:____:____:____:____:____:	superficial
interesting	:____:____:____:____:____:____:____:	boring

3. NEGOTIATIONS

good	:____:____:____:____:____:____:____:	bad
unfamiliar	:____:____:____:____:____:____:____:	familiar
important	:____:____:____:____:____:____:____:	unimportant
unfair	:____:____:____:____:____:____:____:	fair
believable	:____:____:____:____:____:____:____:	unbelievable
far	:____:____:____:____:____:____:____:	near
valuable	:____:____:____:____:____:____:____:	worthless
profound	:____:____:____:____:____:____:____:	superficial
interesting	:____:____:____:____:____:____:____:	boring

APPENDIX C

APPENDIX C

IMPLICATIVE MEANING

INSTRUCTIONS

On the following pages, you will find KEY CONCEPTS followed, in each case, by eight secondary concepts which are related in some way to the KEY CONCEPT. We would like to find out how probable you think it is that the KEY CONCEPT implies, or leads to the secondary concepts. We would like you to indicate the degree to which you think this is probable by placing a mark at the appropriate place on a seven-point scale, ranging from imporbable to probable.

EXAMPLE:

If one has REDUCED TAXES, then one has .....

a. HEALTHIER ECONOMY improbable :___:___:___:___:___:___:___: probable

If you think it highly probable that the key concept, REDUCED TAXES, would lead to the secondary concept HEALTHIER ECONOMY, then you would mark the first scale as follows:

improbable :___:___:___:___:___:___:_X_: probable

On the other hand, if you think it highly improbable that the key concept would lead to the secondary concept, then you would mark the scale thusly:

improbable :_X_:___:___:___:___:___:___: probable

If you felt that the degree of probability were somewhere between these two extremes, you would mark the scale accordingly somewhere between the first and the last scale.

On the following pages you will find KEY CONCEPTS, followed in each case by eight secondary concepts each with a scale as illustrated above. Please place one mark on each of the scales, after reading the concepts carefully, expressing your judgment of the meanings of these terms.

1. If one has INTEGRATED HOUSING, then one has .....

a. EQUALITY	improbable:___:___:___:___:___:___:___:probable
b. UNFAIRNESS	improbable:___:___:___:___:___:___:___:probable
c. HIGHER LIVING STANDARDS	improbable:___:___:___:___:___:___:___:probable
d. INJUSTICE	improbable:___:___:___:___:___:___:___:probable
e. PROGRESS	improbable:___:___:___:__ :___:___:___:probable
f. BETTER SOCIETY	improbable:___:___:___:___:___:___:___:probable
g. INEQUALITY	improbable:___:___:___:___:___:___:___:probable
h. LOWER LIVING STANDARDS	improbable:___:___:___:___:___:___:___:probable

2. If one has COMPLETE AND TOTAL DISARMAMENT, then one has .....

a. EQUALITY	improbable:___:___:___:___:___:___:___:probable
b. FAIRNESS	improbable:___:___:___:___:___:___:___:probable
c. HIGHER LIVING STANDARDS	improbable:___:___:___:___:___:___:___:probable
d. INJUSTICE	improbable:___:___:___:___:___:___:___:probable
e. PROGRESS	improbable:___:___:___:___:___:___:___:probable
f. BETTER SOCIETY	improbable:___:___:___:___:___:___:___:probable
g. INEQUALITY	improbable:___:___:___:___:___:___:___:probable
h. LOWER LIVING STANDARDS	improbable:___:___:___:___:___:___:___:probable

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13. ABSTRACT

One hundred and three students responded to a version of the Implicative Meaning Instrument originally developed by Davis and Triandis (1965) for the measurement of the cognitive component of attitudes. In particular the students amended the probability that key concepts pertaining to minority group situations implied certain consequences or implicates. The subjects also evaluated these implicates.

Two scoring models for the Implicative Meaning Instrument were investigated. Both showed significant concurrent validity in predicting the subjects' stands on policy statements with regard to minority groups.

14. KEY WORDS

implicative meaning
attitude measurement
cognitive interaction