INCONSISTENT STATUS CHARACTERISTICS AND INFLUENCE PROCESSES: A REPLICATION AND REFORMULATION

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ABSTRACT

INCONSISTENT STATUS CHARACTERISTICS
AND INFLUENCE PROCESSES:
A REPLICATION AND REFORMULATION

By

Paul H. Tress

Theoretical and experimental social psychology in recent years has concentrated on how status variables affect the power and prestige orders of small groups. The chief finding of such investigations is that individuals who possess the higher state of a characteristic that differentiates members of a group are less prone to influence than individuals who possess low states of the characteristic.

Until recently, work has concentrated on the case of one characteristic, showing that the differences in acceptance of influence among group members is related to the status differential existing among the group members. Berger and Fisek (1970) have conducted an experiment with the intent of generalizing such a finding to the case of multiple characteristics. More specifically, Berger and Fisek used two characteristics in a dyad where the characteristics were relevant to the group's task. Our work was initially concerned with issues raised by the Berger and Fisek paper and resulted in a reformulation of the theory.

In order to do this we first show the relationship between status characteristics and the pattern of interaction a group undergoes in a two-step decision task. If one member of the group changes his decision between the first and second step, the member is said to be influenced.

Influence is related to possession of different states of status characteristics relevant to the group's task. Individuals can possess similar or dissimilar states of characteristics, that is, they can evaluate themselves according to whether or not they are univalent and possess the same state for each characteristic. We agree with Berger and Fisek that individuals who are univalent in the high state will be less prone to influence than individuals who are univalent in the low state. However, our major concern is the direction and nature of univalence in the multivalent or non-univalent case. Whereas Berger and Fisek argue an individual in such a case will combine the two characteristics or cognitively balance them, our opinion differs. Berger and Fisek fail to realize combining or balancing implies some univalent process that needs to be specified. Such a specification takes the form of inquiring into how information individuals have about each other on their differentiating characteristics is related to or maps onto some expected level of performance on the group's task.

An experiment was conducted to force disagreement among subjects in a problem-solving task. The only information subjects had about each other were the states of the characteristics they and their partner in the dyad process. The resolution of such disagreement provides an indirect measure of influence.

Despite some differences in the design of our experiment and Berger and Fisek's, the results are almost similar. Statistical analysis gives little insight into the nature of the univalent process. However, the process appears to be an independent trials process and reaches stability quite rapidly.

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INTRODUCTION

Within the last decade, researchers have shown how experimentally induced status variables affect the power and prestige order of small groups. This work has attempted to formalize well-known influence processes in human interaction. The main finding of these studies is that individuals who possess the higher of two different states of a status characteristic will be less prone to influence than individuals with a lower state of the characteristic.[1]

This process occurs whether the status characteristic is diffuse or specific. Diffuse characteristics are those that are not initially relevant to the group's task. As a diffuse characteristic, income level is not related to chess-playing ability. However, one would base his expectations of an individual's chess-playing ability on income level if no other basis of differentiation were present (Berger, Cohen, & Zelditch, 1966). Specific characteristics are those that are germane to the group's task throughout the task-focused activity of the group. High verbal ability would result in a high expectation for an individual possessing this ability, if the group's task were some type of word game, and if the relevance between the level of verbal

[1]This interpretation slightly contrasts with the statement that high status members exercise greater influence on the task than low status members. Our statement is more amenable to empirical verification. (See Berger & Fisek, 1970, p. 287, for an example of the above.)

ability and the expected performance on the word game were made explicit.

The details of such influence processes have been investigated. However, such studies have concentrated on only one differentiating dimension, i.e., either one diffuse or one specific status characteristic. A recent paper has tried to investigate such influence processes in the case of more than one characteristic. The work of Berger and Fisek (1970) was concerned with two characteristics in a dyad.[2] Berger and Fisek were concerned with two specific types of arrays of the characteristics: (a) a consistent state of exact opposites, with one person having a high state of each characteristic and the other person having a low state of each characteristic; and (b) an inconsistent state of polarized mirror images. (One person is high on one characteristic and low on the other, while the other person is respectively low and high on these characteristics.)

In the inconsistent case, each individual is faced with dissonant or incongruent information about himself and the other individual. Such inconsistency must be resolved. The bulk of the Berger and Fisek work was a concern with the resolution of such dissonance or incongruity.

Our study has two concerns, a specification of the resolution process and an attempt to replicate Berger and Fisek's experiment. We will first discuss general theoretical formulations and then detail

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[2]Most of the work done on the relationship of status characteristics and influence processes is in the dyad. Theoretical and methodological considerations with other size groups increase at an exponential rate. This is a limitation of work done on the formalization of influence processes.

the resolution of the influence process in the inconsistent case. This will be followed by a description of our experiment. The experiment was designed to replicate Berger and Fisek's work and to give us some insight into the nature of the resolution process.[3] Following this, our data analysis is given and conclusions about the nature of the influence process are drawn.

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[3]Our replication is not concerned with other possible arrays. Included in this is the "status edge case" where one individual has consistent and the other inconsistent states of the characteristics. In this case, the characteristics are not in a symmetric array as in the inconsistent case (Berger & Fisek, 1970, p. 301). Berger and Fisek neglect to investigate two other cases: individuals may be exactly the same and consistent or inconsistent. Our replication is concerned only with the inconsistent polarized mirror image case.

GENERAL THEORETICAL CONSIDERATIONS

A brief discussion of theoretical considerations common to the relationship of status characteristics and influence processes is needed before we detail the nature of the influence process in the multiple characteristic case.

In all cases we assume interaction takes place in a dyad. Such interaction is seen through the eyes of one actor whom we designate as p. The other actor is designated as o. P and o possess states of C_i, a status characteristic. This will be denoted as C_1 and C_2 in the case of two characteristics.

We will assume that interaction between p and o is task-focused and that p and o are oriented to each other. The interaction is task-focused in that p and o are oriented to successful completion of the task. The orientation of p and o to each other means that p and o evaluate each other's task performance and have expectations as to each other's future performance.

At the initial part of the interaction process p and o have no prior knowledge of which C_i is instrumental to successful completion of the group's task. However, we assume p and o know that possession of some state of some specific characteristic is necessary to successful completion of the group's task.

In order for some differentiating attribute of individuals to be considered a specific C_i, three conditions must hold:

(1) C_i must have different states or degrees which are recognized by p and o.

(2) P and o must associate each of these differentiated states with certain levels of expectations as to the future performance of himself and other on the task if task performance is related and relevant to possession of some state of C_i.

(3) Knowledge of the states of C_i possessed by p and o generates general expectations to p and o about the personal qualities of individuals who possess such states of C_i.

For simplicity of analysis, we further assume each C_i in the case of multiple C_is is equally relevant to the group's task and that the C_is are differentiated in a dichotomized sense of high and low degrees. These degrees are designated by H and L respectively. Thus, X:ab designates person X's state of C_1 and C_2. For example, p:HL, o:LL means p is high on C_1 and low on C_2 respectively. P:HH, o:LL and p:HL, o:LH are examples of consistent and inconsistent symmetric cases respectively.

Our major theoretical concern is the relationship between the C_is and influence processes within the group. It has been found that the rate at which p and o reject influence from each other in task performance activities is related to possession of high states of C_i, if C_i is relevant to the group's task (Berger, Conner, & McKeown, 1969; Berger & Conner, 1970; Moore, 1969). To paraphrase Moore, the argument in its most general form thus asserts that the influence differential between S and O is a direct function of the status differential existing between S and O (Moore, 1969, p. 147; Moore's S is our p).

In order to understand the nature of this "direct function," we need to detail the influence process.

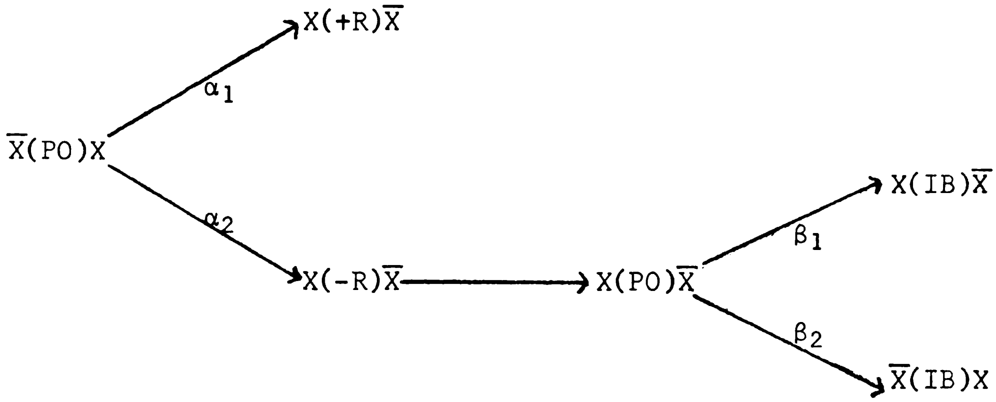
PROCESSUAL CONSIDERATIONS

Our analysis of the process will be seen through the eyes of p. Let us assume that the group's task involves a choice among a set of alternatives. More specifically, the task is binary with two alternatives, A and B. With this basis we state the following:

> Assumption 1: An alternative positively evaluated by p (or o) will be selected by p (or o). A negatively evaluated alternative will be rejected.

Let us further assume that p and o are differentiated on some C_is and that these C_is are relevant to the group's task. The C_is are specific and the only information p and o have about each other. If p gives a performance output to o in the form of an attempted solution to some task problem, and if o has a positive reaction to p's performance output (or vice versa), we say that p and o have agreed on a solution to a task problem. If one member of the dyad has a negative reaction to the performance output of another, the members of the dyad are said to be in disagreement. If the solution to a problem involves an initial and final choice of alternatives by p and o, initial and final agreement and disagreement are possible.

Obviously, we are interested in the case of initial disagreement. If one member's selection is in initial disagreement with another member's selection, a performance output has been given from one member to the other in the form of a negative reaction to selection of alternatives. This may result in an influence process, since p and o may change their evaluations of each other's initial performance output. Figure 1 illustrates this process.[4]



X and $\overline{X}$ are different actors.

α_1, α_2, β_1, β_2 are constants such that $\alpha_1 + \alpha_2 = 1$ and $\beta_1 + \beta_2 = 1$.

(PO) "gives a performance output to"

(+R) "positively reacts to" or "selects the performance output of"

(-R) "negatively reacts to" or "does not select the performance output of"

(IB) "is influenced by"

Fig. 1.--The influence process arising from initial disagreement.

Since the branches of Figure 1 are mutually exclusive and exhaustive, we may conceive of the αs and βs as rates or mathematical probabilities such that the αs and the βs sum to one. To preview our experimental design, it should seem clear that by fixing the αs such that α_2 is high, the βs will exist. The size of β_1 and β_2 will reflect the amount of influence. A comparison of the βs with the states of C_i possessed by p and o will operationalize our postulated direct function between the differential statuses of p and o and the influence

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[4]Our Figure 1 is a modification of Berger and Conner's (1970) figures.

differential between p and o. For example, in Figure 1 we would expect β_2 to be larger than β_1 if p, as X, possesses higher states of the C_is than o and the C_is are seen by p and o as being equally relevant to the group's task.

If p and o have negative reactions to each other's performance output, that is, initial selection of alternatives, the path α_2 will be followed. P and o's selection of available alternatives is assumed to occur after p and o differentially evaluate these alternatives. If p chooses alternative A and o chooses B, or vice versa, p must decide who is correct, himself or o.[5] Since the C_is that p and o possess are relevant to the task, the C_is inform p about his and o's ability to perform on the task. Since our interest is an initial disagreement of p and o, we make the following assumption:

> <u>Assumption 2</u>: P associates a negative reaction to his performance output as a difference in evaluation of alternatives by himself and o.

The critical part of the influence process is the relationship of the βs and p and o's states of the C_is. Let's diagram our process as discussed so far.[6] As indicated in Figure 2, p has differentially evaluated alternatives A and B. In Figure 3 p selects the alternative he has positively evaluated and rejects the alternative he has negatively evaluated.

Let's further assume o undergoes the same process as p. Since we are interested only in influence processes which occur if p and o

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[5] We are assuming p and o are collectively oriented towards the correct solution of the task. Our analysis is seen through the eyes of p.

[6] These figures were originally developed in Conner (1965) and presented in Berger, Cohen, Conner, & Zelditch (1966).

initially select different alternatives, we assume o has selected alternative B and rejected alternative A. We will assume p is able to be an object of orientation to himself, that is, p can reflect about his actions and develop attitudes and cognitions about himself, p'. Thus p is aware of his and o's evaluation and selection of alternatives. This is shown in Figure 4. Assumption 1 implies o's selection of his positively evaluated alternative.

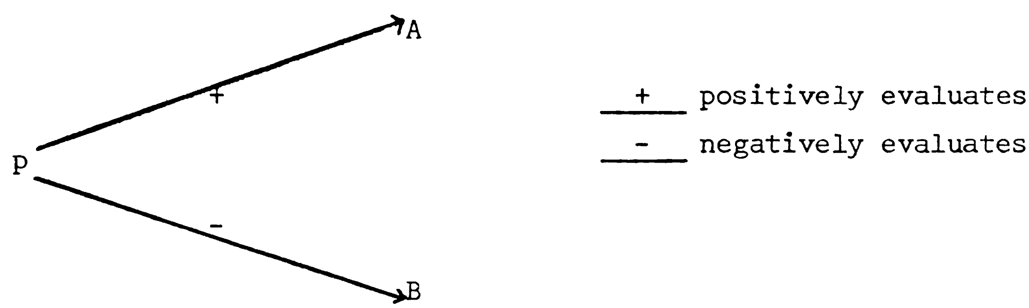


Fig. 2.--P's evaluation of alternatives.

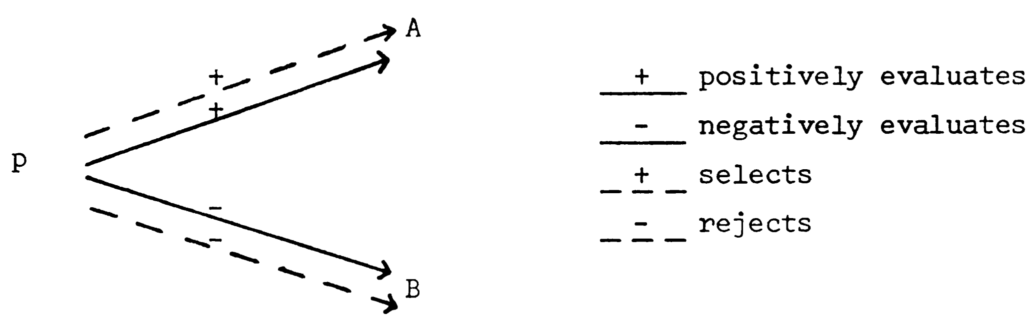
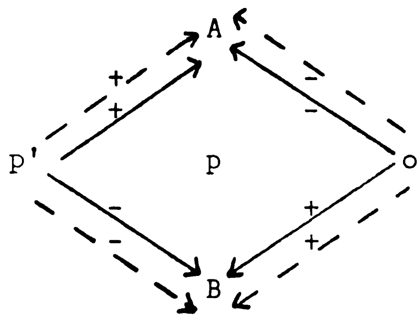


Fig. 3.--P's evaluation and selection of alternatives.

However, the only bases p has for an evaluation of his and o's present and future performances are the C_is. This is the only information p and o have about each other, and this information is relevant to successful completion of the task. This is shown by Figure 5.

On the basis of his self and other evaluation, p will make a final choice of alternative A or B. The final choice will be in balance with the initial choices made by p and o and with p's evaluation of p' and o.



p and o -- actors

A and B -- alternatives

p' -- p as object of orientation to self

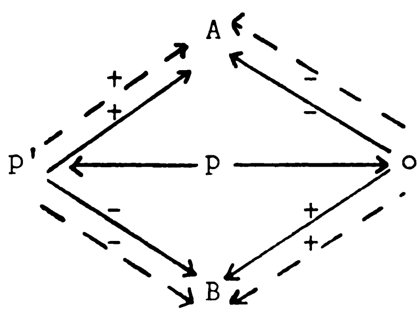
+ positively evaluates

- negatively evaluates

+ selects

- rejects

Fig. 4.--Initial evaluation and selection of alternatives.



p and o -- actors

A and B -- alternatives

p' -- p as object of orientation to self

+ positively evaluates

- negatively evaluates

+ selects

- rejects

Fig. 5.--Subsequent evaluation of self and other.

Let's look at the left-hand part of Figure 5. This concerns the relationship between actors p and p' over alternatives or objects A and B. Suppose p positively evaluates himself, p'. This relation of p with p' over alternatives or objects A and B is assumed to be balanced or to seek balance. According to formalized arguments about balance theory, the product of the signs in a relation among people and objects consisting of evaluations linking the people and objects must be positive for the relationship to be balanced (Berger, Cohen, Snell, & Zelditch, 1962). For example, if p positively evaluates himself after an initial selection of alternative A, p will stay with his initial choice and resist the influence of o's choice of alternative B if p and o initially disagree in their evaluation and selection of alternatives. If p had negatively evaluated himself and positively evaluated o in the same situation, p's final choice would be B. Balance theory would predict the same results in our example if p negatively evaluated o in the first case and positively evaluated o in the second case, <u>independent</u> of his evaluation of himself.

If, after initial disagreement of alternatives, p changes his choice of alternatives, p is influenced. Thus p's final choice indicates whether he is influenced by o if the final and initial choices are compared. Influence is a function of p and o's initial choice of alternatives and p's evaluation of p' and o based on possession of levels of the C_is relevant to the group's task. Therefore:

> <u>Proposition 1</u>: At the final stage of a two-step decision process, p will tend to select and positively evaluate alternatives A and B such that his selection is in balance with his initial evaluation of alternatives and his self-evaluation or evaluation of o.

This proposition is Moore's postulated direct relationship between an actor's possession of states of C_is and his propensity to be influenced.

It should be intuitive to the reader that p's selection of alternatives in the second part of the decision process is a binary process consisting of independent trials. If we assign a 1 to the event wherein the same alternative is selected at both stages of the decision process and a 0 to other selection conditions, we can conceive of a random variable X and $\sum_{i=1}^{n} \left(\frac{X_i}{n} \right)$, where n is the number of times p undergoes the two-step decision process and X_i = 1 or 0. This is the maximum likelihood estimator and the best estimator of

P(S), the probability of a self or stay response. Thus if P(S) is high, p undergoes little influence. P(O), the probability of an other response or of being influenced, is equal to 1 - P(S). P(S) and P(O) are the βs in Figure 1.

Our major concern is the relation of possession of states of C_is and the influence process. Therefore, we are concerned with a situation such that in Figure 1 α_2 equals unity. This is the situation where one actor negatively reacts to the initial selection of another, or Figure 4. If we can experimentally induce C_is relevant to the task, Figure 5, P(S) can be computed. If high states of the C_is are necessary to completion of the task and p possesses these high states, P(S) will be high.

The Berger and Fisek study concerned two specific characteristics. As implied in our introduction, these characteristics can be arranged in one of three types of sets: consistent, e.g., p:HH, o:LL; inconsistent symmetric, e.g., p:HL, o:LH; and inconsistent non-symmetric, e.g., p:HH, o:LH.[7]

Since we are concerned with the nature of the influence process, we need to explicate the nature of the process in the three types of sets. Two of the sets have one common factor: the characteristics of at least one of the members of the set are perceived by p as being of the same type, high or low. This occurs in the consistent and inconsistent non-symmetric set types and does not occur in the

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[7]Our use of terms is slightly different from Berger and Fisek's (1970). In general, there are 2^{2n} different types of arrays of the C_is in the dyad where n is the number of C_is. A complete test of the processes postulated above would involve sixteen studies in the Berger and Fisek case. Three C_is involve 64 studies and 4 C_is involve 256.

inconsistent symmetric case. Thus all possible arrays of specific characteristics can be categorized into one of two generic types--univalent (e.g., our consistent and inconsistent non-symmetric cases) or multivalent.

In the univalent case of two specific characteristics, one can easily predict the direction of influence. In the consistent set, p's evaluation of p' and o are univalent. As argued above, the nature of p's final choice indirectly measures the degree of influence. According to formalized balance theory, the three-way relationship consisting of p, p', and alternative A or B will be balanced and stable if and only if the product of the signs in the relationship is positive. Since each specific characteristic has some state that is preferred to be possessed by individuals over other states of the characteristic, and since one alternative has been preferred over another, we can predict the final preference of alternatives, our indirect measure of influence. For example, if p initially negatively evaluates alternative A while it is positively evaluated by o, and if p univalently evaluates himself since he possesses preferred states of the specific characteristics, p's final choice will be alternative B. This is a continued negative evaluation of alternative A and a rejection of o's influence. In the inconsistent non-symmetric case, p may evaluate either himself or o in a univalent manner. If p evaluates himself in a univalent manner, p will be influenced in a manner similar to the consistent case. If p evaluates o in a univalent manner, p will tend to balance the three-way relationship of himself, o, and alternative A or B.

If we refer again to Figure 5, we see there are four three-way relationships, each involving p with either o or p' and alternative A or B. Since selection of alternatives is a mutually exclusive event, we can predict the nature of influence by seeing p's final choice. P's final choice can be predicted by a knowledge of the univalent evaluation of p' or o by p and the initial alternative chosen by the individual p univalently evaluates.

In the inconsistent symmetric case p does not evaluate himself or o in a univalent manner, so we cannot predict the nature of influence via a balance argument. If p is forced to make a final decision, given initial disagreement with o, and if p sees himself and o as being non-univalent in their possession of specific characteristics, p will act in one of two ways depending on how p sees possession of specific characteristics in relation to his and o's capacity to complete the task before them. Specific characteristics determine p's evaluation of his and o's ability to complete the task before them via one of two types of relationship in the multi-specific characteristic case. The various characteristics may map onto the dimension of ability to complete the task in a non-isomorphic manner (similar to a map from n-space to one-space in linear algebra). Since this results in one bit of information for p about himself and o, and since the information is the only basis p has for evaluation of his and o's future performance of the task, the single bit of information is evaluated in a univalent manner as a single bit of information is evaluated in only one way.

Likewise, we can argue the map from information about possession of specific characteristics to possession of an evaluated state as to future task performance may be isomorphic (a map from n-space to n-space). This does not result in a univalent evaluation of p' and o unless p averages the individual projections of the specific characteristics into the future performance dimension. The average may be a simple average of the characteristics if they are equally relevant to the group's task, or a weighted average otherwise. A weighted average may result if different utilities are assigned to the contributions which possession of different specific characteristics makes to successful completion of the group's task. However, this is beyond the scope of this investigation, as we are assuming here that each of the characteristics is equally valued and subsequently given equal weight by p and o. Since such an averaging effect results in one bit of information, the result of the process is a univalent evaluation, an averaging out of the information possessed by p about himself and o.

The Berger and Fisek paper discussed two types of cognitive mechanisms that p may undergo in the inconsistent symmetric case, which are called combining and balancing mechanisms. In the first, p combines his information about himself and o (our map from n-space to one-space). In the case of two C_is, if both characteristics are seen as being equally relevant to the group's task, the result may be a characteristic that is a medium state for p and o. In the balancing mechanism, Berger and Fisek feel p will behave in a manner to balance his evaluation of himself and o by evaluating himself and o in a consistent manner. Unlike the single reflected evaluation in the combining mechanism, the balancing mechanism may be due to a reflection of multiple univalent characteristics.

In general, the knowledge of the existence of a univalent evaluation by p of p' or o and p and o's initial choice of alternatives provides us with enough information to predict p's final choice of alternatives. Final choice is always based on some univalent evaluation of p' or o by p. Berger and Fisek's failure to view the influence process in such a manner limits the fruitfulness of their analysis. Their postulated mechanisms are the same type of univalent mechanism, since they are based on a univalent evaluation of p' and o by p. In the case of the combining mechanism, the combination of states results in one bit of information about the states possessed by p' and o; and this must be univalent in the trivial sense. In the case of the balancing mechanism, p is faced with discrepant information about the characteristics possessed by himself and o. This is resolved by p seeing himself and o as possessors of only one type of characteristic, resulting in univalence.

We need to understand the dynamics of the influence process that result in the way the univalent evaluation is brought about, that is, we need to specify the type of mapping of the specific characteristic dimension to the future performance evaluation dimension.

All influence processes involve a univalent evaluation by p of p' and o. The direction of such influence is of little theoretical interest to us in the consistent and inconsistent non-symmetric cases, since it can readily be predicted. Since the means by which influence occurs cannot be predicted in the inconsistent symmetric case, the direction of influence similarly cannot be predicted in such a case.

The Berger and Fisek experiment is the first reported work of influence processes in the case of multiple status characteristics.

We decided to conduct a replication of their experiment in order to examine two questions:

(1) Do similar results occur if the experiment is replicated in a modified manner; that is, can we reproduce Berger and Fisek's results?[8]

(2) Does further data analysis shed light on the theoretical questions raised in our discussion of the nature of influence in the inconsistent symmetric case? More specifically, can we specify the means by which the influence mechanism occurs?

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[8]There were some changes made in the experimental procedure which are described in the following section.

THE EXPERIMENT

The last section of this thesis has argued that a situation like that depicted in Figure 5 would provide us with the information needed to measure the influence process between p and o. This would involve three types of manipulations:

(1) We would need to force p to differentially evaluate p' and o only on the basis of C_is relevant to the group's task. That is, we need to induce states of C_i to p and o.

(2) It must appear that p and o select different alternatives for their initial choice in the two-step decision process. That is, we need to force subjects to follow the path of α_2 in Figure 1.

(3) P and o must be oriented towards each other and must be individually oriented towards successful completion of the group's task.

The study was conducted in two parts or phases.[9] Phase I consisted of the creation of two C_is. In Phase II, the C_is were made relevant to the task, the subjects were forced to be oriented towards each other and towards successful completion of the task, and subjects were forced to make evaluations of their own and their partner's performance outputs.

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[9] The actual instructions given to subjects in the two phases are found in Appendix A.

Phase I

Subjects were run in pairs to set up the dyad. After a brief introduction in a waiting room, the subjects were led to a small-groups laboratory. Each of the subjects was randomly assigned to sit at one of the two tables in the room. The tables and subjects were separated from each other by a screen.

Two tests were administered to subjects to establish degrees of fictitious abilities. The tests consisted of subjects making a binary choice about a series of stimuli. The stimuli were series of slides presented to subjects on a screen in front of them. All of our subjects saw these slides in the same order.

Subjects were told that these tests would measure their levels on each of the two abilities. They were also told that these abilities were unrelated to other skills or abilities an individual may possess and were unique attributes of individuals. The first test measured "Meaning Insight Ability," the ability of an individual to "intuitively understand or grasp the overall meaning or significance" of unfamiliar objects or events. The second test measured "Relational Insight Ability," a "unique attribute of individuals" which, subjects were told, refers to the ability of an individual to "understand the relationship between unfamiliar objects or events."

In the first test, subjects were given five seconds to choose which of two non-English words or phrases, which were phonetically spelled from a "primitive language," meant the same as an English word or phrase. All the words were presented on slides. Subjects recorded their responses on panels in front of them.[10] The "Meaning Insight Ability" test consisted of twenty decisions or trials. The test for "Relational Insight Ability" was conducted in much the same manner. Subjects were asked to make a binary choice after five seconds on each of twenty slides. The stimuli presented in the "Relational Insight Ability" test were different from that presented by Berger and Fisek. However, we presented the same stimuli in the "Meaning Insight Ability" test.

The Berger and Fisek stimuli were unavailable. Their stimuli consisted of a series of slides asking subjects to match the phonetic spelling of a Japanese word with one of two "ancient Japanese ideographs" which had the same pronunciation as the phonetic spelling. Our task involved asking subjects whether or not they thought a standard figure drawn on a card that was held in front of them could be contained in the slide shown on a screen. Subjects were told that each of the slides was quite complex and might contain more than one standard. The same set of five slides, in the same order, were shown four times, with a different standard each time, making a total of twenty trials.

Having completed the two tests in Phase I, subjects were told the scores were being standardized by an experimenter assistant, and the host experimenter proceeded to describe Phase II.

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[10]In both tests in Phase I, there was no communication between subjects. In Phase II, subjects only communicated their initial choice. This will be described below.

Phase II

Subjects were told they would be working in a "critical choice situation," a situation where the most important thing was for each of the subjects to get the "correct final answer" to a problem. This set the needed orientation towards successful completion of the task. Due to the difficulties of such a situation, subjects were told they would be working together and would be allowed to exchange information with each other as to their initial decision on a two-step problem. This set up the collective orientation of subjects to each other.

Subjects were told the "critical choice" situation would be simulated by the "Contrast Sensitivity Task." This consisted of a series of slides which contained two rectangles. Each of the rectangles was composed of various arrangements of white and black areas. Subjects were instructed to make a binary choice as to which of the two rectangles had the greater degree of white area. In actuality, the test was constructed to be ambiguous. Following the Berger and Fisek procedure, the order of presentation of slides was randomized to control for lack of homogeneity between slides. However, like Berger and Fisek, the actual sequence of the slides was maintained.

P and o were told to communicate their choices to each other only by means of the panel in front of them. Subjects were told they would see a slide for five seconds and then be asked to make an initial choice as to which of the two rectangles contained the larger white area. Subjects were told they would then see their partner's choice. Five seconds after this, they were told, they would make their final choice. All communicated information was done by use of the panels. To clarify this procedure, subjects were given two demonstration slides.

In the actual experiment, the exchange of initial choice information was controlled. That is, we were able to control the αs of Figure 1, forcing agreement or disagreement between subjects, a necessity of our experiment. Since we were interested in the relation of influence patterns to the C_is, we needed to force a situation that followed the path of α_2 in Figure 1, that is, a situation that forced subjects to use information about their and their partner's state of the C_is relevant to the group task. Therefore, the majority of our manipulated feedback took the form of controlled disagreement. These were called critical trials. In all, twenty-five trials were run; that is, the subjects saw twenty-five "Contrast Sensitivity" slides. Twenty of these twenty-five trials were critical trials; the five non-critical trials, called agreement or neutral trials, took place on the second, seventh, thirteenth, nineteenth, and twenty-fifth trials.[11] It was necessary to introduce these controlled agreement trials to allay the possible suspicion of subjects of continual disagreement, given equal amounts of information about each other in the p:HL, o:LH and p:LH, o:HL cases.

Before the actual presentation of the "Contrast Sensitivity" task, the crucial manipulation of the experiment took place: subjects were given information about their and their partner's levels of the two abilities tested in Phase I. Subjects were told they would be

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[11] This is slightly different from the Berger and Fisek procedure of randomly placing an agreement trial in each block of five trials. Such a procedure may have as little as none or as many as eight critical trials before an agreement trial.

given their and their partner's scores on the tests. The scores, they were told, were standardized on a scale of zero to twenty such that zero to ten correct is a low individual score and a low state of the tested ability; eleven to fifteen is an average score, an average state of the ability most subjects would score; and sixteen to twenty a high individual score which "clearly reflects" a high degree of the ability.

When the scores were presented, subjects were told to pay attention to each other's score, since the scores would be the information they had about each other and they should know about each other for working together in the "Contrast Sensitivity" task. In order to establish the direct relevance of the "Meaning Insight Ability" and "Relational Insight Ability" as specific characteristics to the "Contrast Sensitivity" task, subjects were told that both of these abilities somehow contribute to solving "Contrast Sensitivity" problems.

Our relevance is less explicit than Berger and Fisek's. In their study, subjects were told high levels of "Meaning Insight Ability" and "Relational Insight Ability" were highly correlated with each other and with successful performance on the "Contrast Sensitivity" task.[12]

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[12]We originally thought this would force the Berger and Fisek results to indicate a combining mechanism, since the subjects are told the abilities are associated with each other. This would tend to make subjects view these abilities as part of a common set. However, the processual section of this paper indicates the crucial question is the nature of the univalent evaluation, not the difference between the similar combining and balancing mechanisms. The Berger and Fisek Phase II instructions can be found in Appendix D.

After the manipulation took place, the actual experiment was conducted. After seeing the twenty-five slides, subjects were interviewed and debriefed.[13]

With the exceptions noted above, the Berger and Fisek experiment and our experiment were the same. However, the Berger and Fisek experiment was concerned with three conditions: (a) p:HH, o:LL; (b) p:LL, o:HH; and (c) p:HL, o:LH. The first and second conditions were simultaneously run, randomly assigning subjects to each of the conditions on the basis of assignment of fictitious scores. High manipulations were represented by a nineteen out of twenty on C_1, "Meaning Insight," and an eighteen out of twenty on C_2, "Relational Insight." A nine on C_1 and an eight on C_2 represented low manipulations. In the third condition, scores were randomly assigned. Such scores were reported as being unusual.

In our replication, we were interested only in the third condition, the inconsistent symmetric condition. For practical purposes two subjects were run at a time, so we actually have two sub-conditions: p:HL, o:LH and p:LH, o:HL. In both our sub-conditions a score of eighteen out of twenty is a high manipulation and nine a low manipulation. Thus, unlike the Berger and Fisek study, our subjects received symmetric scores on the zero to twenty scale. Subjects were told that being high on one characteristic and low on another was an unusual condition.

Before we present our results, we should remember that our experimental replication differs from that of Berger and Fisek in the following manner:

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[13]Copies of the interview form and debriefing appear in Appendix B.

(1) We removed what we thought would be a "bias" towards a combining mechanism in the Phase II manipulation.

(2) Our agreement trials were not randomly interspersed with our critical trials in Phase II.

(3) The Phase I scores used in our experimental manipulation were mirror images of each other.

(4) Our "Relational Insight Ability" task was different.

(5) Our subjects were females at a midwest university, whereas Berger and Fisek's subjects were males at junior colleges in the San Francisco Bay area.[14]

[14] It has recently come to our attention that our experiment differs from Berger and Fisek's in one other major way. Berger and Fisek administered the Phase I tests via paper and pencil technique, where we used slides and subjects recorded their responses on panels.

RESULTS

Subjects

Subjects were all female undergraduates recruited from an introductory social problems course. We used only one sex to minimize the basis of differentiation between subjects. Thirty-four subjects took part in the study. One subject was eliminated due to failure to use the information given about her partner's states of the C_is. Three pairs of subjects were eliminated since one member of each pair was black; it was felt this would provide an extraneous basis of differentiation for subject's formation of performance output expectations.[15]

In all, twenty-seven subjects remained. Fourteen were in the p:HL, o:LH condition; and thirteen in the p:LH, o:HL condition.

Comparison of the Original Experiment and the Replication

Before we investigate the nature of the influence process in the inconsistent symmetric case, we need to see if our procedure results in findings different from Berger and Fisek's. If our findings are similar, we can combine the sets of data.

Our chief concern is a measure of the influence process. This can be measured as the probability of changing one's decision on a binary task from the initial to the final part of a two-step decision

[15] A list of the criteria used for inclusion or exclusion from the sample is found in Appendix C.

process. This is the P(S) we discussed in our section about processual considerations. Table 1 presents our data in our two conditions, and the Berger and Fisek data for the inconsistent symmetric condition. More explicitly, the data show the mean and variance of the number of self-responses over the twenty critical trials and the P(S)s.

TABLE 1

P(S), MEAN, AND VARIANCE FOR INCONSISTENT SYMMETRIC STUDIES*

Study	Number of Subjects	Number of Critical Trials	Condition	P(S)	Mean	Variance
Berger & Fisek	26	20	p:HL, o:LH	.661	13.23	(4.46)** 5.62
Tress	14	20	p:HL, o:LH	.658	13.14	4.51
Tress	13	20	p:LH, o:HL	.650	13.00	4.55

*The mean is equal to np and the variance equal to npq, where n is the number of critical trials, p is P(S), and q is 1 - P(S) or P(0).

**Use of npq gives a figure of 4.46.

Our two conditions should not be significantly different if each C_i is equally relevant to the group's task. If our conditions are not different, they can be combined and our combined result compared to the Berger and Fisek finding for the p:HL, o:LH condition. If the combined Tress data and the Berger and Fisek data are similar, both sets of data can be pooled for further analysis.

The most direct way to see if data can be combined is to compute a critical ratio, that is, a standard Z-score to compare two probabilities. An alternative method is to compare the variances in the number of self-responses, since these variances are direct transformations of the P(S) parameters for our various conditions.

Table 2 shows that our two conditions can be combined and that this combination can be further pooled with the Berger and Fisek condition.

TABLE 2

TESTS FOR COMBINING OF DATA

Condition	Score/Ratio	Significance Level*
	Z-Test	
Tress condition	.1759	n.s.**
Tress pool versus Berger & Fisek	.2430	n.s.
	F Ratio	
Tress condition	1.01	n.s.
Tress pool versus Berger & Fisek	1.24 1.01***	n.s. n.s.

*Two-tailed tests.

**Not Significant.

***Results if we use the Berger & Fisek variance as 4.46. F = 1.24 if their reported variance is used.

The Nature of Univalence

If we pool the Tress with the Berger and Fisek data we arrive at a P(S) = .658. If we can somehow compare this probability with other probabilities found in studies using specific characteristics, we can arrive at some indication of the nature of the process of univalence:

is it a function of one or two P(S)s due to one or two C_is? Table 3 lists previous studies that have involved specific characteristics.

TABLE 3

PREVIOUS STUDIES OF SPECIFIC CHARACTERISTICS

Study	Number of C_is	Number of Critical Trials	Number of Subjects	Condition	P(S) for p
Berger & Conner	1	22	28	p:H, o:L	.79
			32	p:H, o:H	.66
			31	p:L, o:L	.67
			28	p:L, o:H	.43
Berger & Fisek	2	20	26	p:HH, o:LL	.821
			26	p:HL, o:LH	.661
			24	p:LL, o:HH	.533
			Simulation Parameters		
Berger, Conner, & McKeown*	1	20	5	p:H, o:L	.846
				p:L, o:H	.320
			4	p:H, o:L	.846
				p:L, o:H	.320
			3	p:H, o:L	.782

*The Berger, Conner, & McKeown study differs from the Berger & Conner and the Berger & Fisek studies in two respects:

(1) The parameter estimations in the simulation are not based on a fixed performance expectation state. That is, the parameters are based on a changing P(S).

(2) The study did not concern dyads. P and o form a three-member group such that o consists of two people.

Note that our pooled P(S) of .658 is very near the results found by Berger and Conner in the p:H, o:H and p:L, o:L conditions. This would seem to imply that inconsistent symmetric characteristics act like a single characteristic. However, as a consequence of the need for a univalent evaluation of the C_is of either p' or o by p, the influence process should be based on one or two C_is.

We can conduct such an analysis by use of a chi-square goodness of fit. We need only compare our observed frequency of subjects making zero to twenty stay responses with the expected number of responses based on one or two P(S) values. Our observed frequency can be viewed as an empirical probability distribution and our distribution based on the P(S)s will be a Bernoulli distribution in the case of one P(S) and a joint distribution in the case of two P(S)s. Comparison of expected and observed distributions will give us some insight into the nature of the univalence process, the βs in Figure 1. Figure 6 gives the number of stay responses for the pooled data over twenty trials.

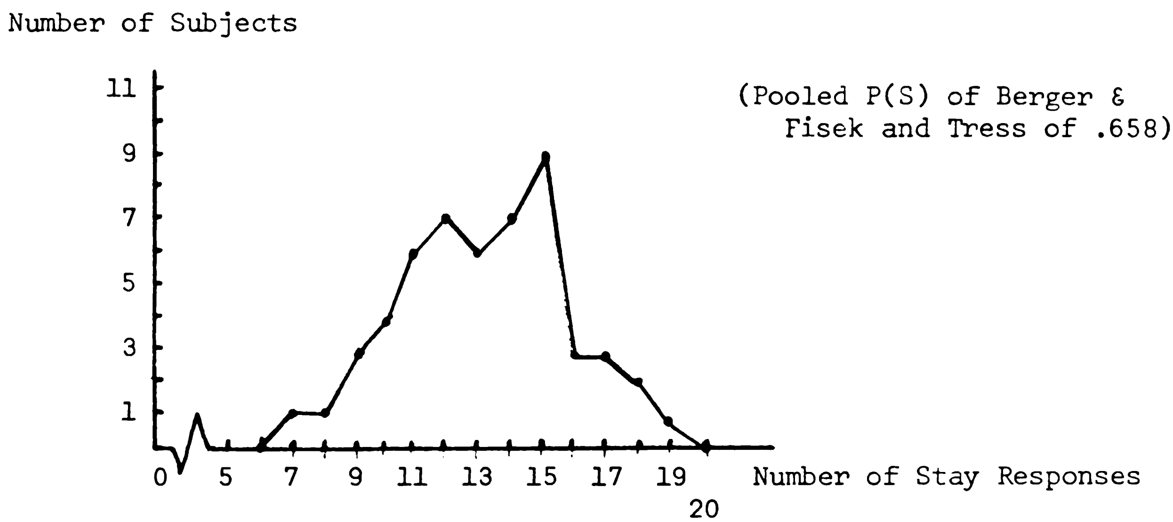

Fig. 6.--Observed frequency of stay responses.

Since the process seems to be unimodal, we might expect the theoretical process to be the result of a joint distribution of two probability values which overlap or a simple Bernoulli distribution.

The former case could still result in the unimodality of Figure 6, as the majority of the masses of the distribution functions are located near each other.

Thus the argument that the unimodality of Figure 6 might be due to the combined effects of two specific characteristics cannot be denied. To complete such an analysis, a family of joint distribution curves needs to be generated. Even if we computed such distributions at increments of .10, 100 computations would be required. This is beyond the scope of this thesis. Obviously, a joint distribution takes on the properties of a simple binomial distribution in the trivial case of the two parameters having near identical values.

Let's suppose the limits of the univalent values occur when p and o are polarized on both of the C_is. For example, a survey of Table 3 reveals extremes of P(S) occur in these cases. Using the Berger and Fisek results, we can compare our distribution given in Figure 6 with that expected given the joint operation of P(S) = .821 and P(S) = .533. Figure 7 compares these distributions.

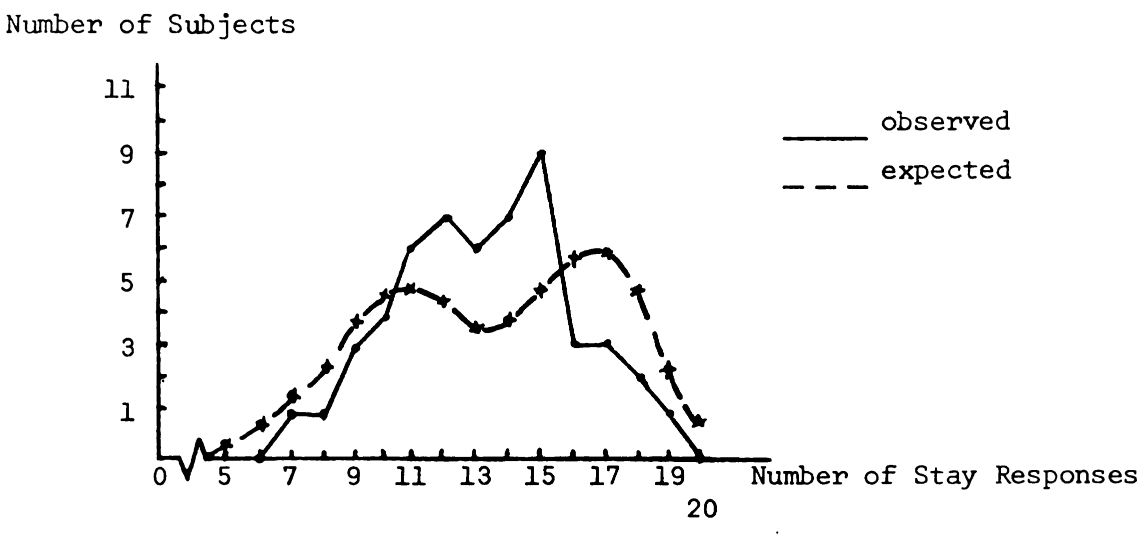

Fig. 7.--Observed and expected frequency of stay responses, given two parameters.

If we consider the joint case an expected distribution, we can compare this to our observed data via a chi-square goodness of fit. If the chi-square value is significant, we would assume our observations do not conform to the specific extreme limits given by Berger and Fisek for polarized cases. After lumping categories to get a frequency of at least five in each category, we are left with four cells. Since our chi-square is based on two a priori parameters, we do not subtract a degree of freedom for each parameter. Our computed χ^2 with 3 degrees of freedom equals 17.019. This is highly significant, implying that if the univalent process involves two P(S)s, the P(S)s fall within the limits of .533 and .821. As shown in Figure 7, if the 2 parameters moved nearer to .66 our χ^2 value would be lower and imply a better fit. The nearer the means of the postulated parameters are to the mean of our observation, the better the fit should be. A trivial case occurs if the three means or parameter values overlap. This would involve a one-parameter test, the simple binomial distribution. However, we have no way of knowing if our observations are due to the effects of two parameters that are very close to each other in value.

If we remember our pooled estimate of P(S) as .658, we can use a similar reasoning to compare this distribution with other distributions due to 1 or 2 specific characteristics. Our value of .658 could reflect a binomial with P(S) = .66 or the joint effects of the Berger and Conner p:H, o:H and p:L, o:L distributions. Such analysis gives a χ^2 value of 5.344. In the test of one theoretical parameter, P(S) estimated as .66, we take away a degree of freedom for parameter estimation. In the case of the two a priori P(S)s due to the Berger and Conner work, we do not take away any degrees of freedom. Combining our categories to get five or more in each category, we have five degrees of freedom in the first test and six degrees of freedom in the second. Both these X^2s are not significant.

Unfortunately, our limited analysis does not allow us to specify the number of C_is used by p in forming his evaluation of self and other.

Processual Observations[16]

The above analysis does not investigate the nature of the influence process. Until now, such analysis has been used only in the case of one specific characteristic. Our discussion of the univalent process involving inconsistent and symmetric specific status characteristics and influence processes interpreted the univalent process as involving P(S)s. This implies two major questions:

(1) Is a response made on trial n+1 independent of a response made on trial n?

(2) As the number of trials increases, does the pattern of responses in the influence process reach a fixed value for P(S)? In short, we are asking if the influence process in the case of two C_is is an independent trials process.

The simplest way to test the independent trial question is to make a contingency table analysis. Such a table would take the following form:

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[16]Data analysis in this section involves knowledge of the actual sequence of responses. Since we were unable to obtain this information for the Berger and Fisek data, our analysis is restricted to the data collected in the Tress experiment.

$$
\begin{array}{lll}
 & & \text{Number of Responses on Trial } n{+}1 \text{ of Type} \\
 & & \begin{array}{cc} \text{Self} & \text{Other} \end{array} \\
\text{Number of Responses on Trial } n \text{ of Type} & \begin{array}{l} \text{Self} \\ \text{Other} \end{array} & \begin{bmatrix} A & B \\ C & D \end{bmatrix}_N
\end{array}
$$

Notice A + B + C + D = 19N where N is the number of subjects, since twenty critical trials implies nineteen possible transitions from one trial to the next. By examining responses for subjects from one trial to the next, we can fill in the cells of the table.

We can also conceive of the table as a probability matrix. Since a self or other response must be followed by some kind of response, the rows of such a matrix must sum to one. The matrix would take the following form:

$$
\begin{array}{lll}
 & & \text{Type of Response on Trial } n{+}1 \\
 & & \begin{array}{cc} \text{Self} & \text{Other} \end{array} \\
\text{Type of Response on Trial } n & \begin{array}{l} \text{Self} \\ \text{Other} \end{array} & \begin{bmatrix} \lambda_1 & 1-\lambda_1 \\ \lambda_2 & 1-\lambda_2 \end{bmatrix}
\end{array}
$$

A significant χ^2 value on our contingency tables would imply that an independent trial process does not take place. Figure 8 shows us the contingency tables, probability transition matrices, and χ^2 values when we subject our data to such analysis. Surprisingly, our p:HL, o:LH condition is not an independent trial process. We have no explanation for this occurrence, since both conditions have similar P(S)s.

By interpreting our pooled transition matrix as a simple two-state Markov chain, the states being a self- or an other-response, we can predict P(S) for any step of the influence process. Let π_k designate the probability distribution vector on the k+1 step of the process. More specifically, π_k is made up of two elements, the proportion of subjects who make other responses on the k+1 trial and the proportion of subjects who make stay responses on the k+1 trial. π_k is designated (P(S), 1-P(S)).

Condition	Contingency Table: Trial n+1 Self	Contingency Table: Trial n+1 Other	Trial n	Transition Matrix: Trial n+1 Self	Transition Matrix: Trial n+1 Other	
p:HL, o:LH	105	70	175	.600	.400	
	65	26	91	.714	.286	
		N = 14	266			χ^2 = 2.9127 .10>p>.05
p:LH, o:HL	103	58	161	.640	.360	
	55	31	86	.640	.360	
		N = 13	247			χ^2 = 0.0183 n.s.*
pooled	208	128	336	.619	.381	
	120	57	177	.678	.322	
		N = 27	513			χ^2 = 1.499 n.s.

*Not Significant.

Fig. 8.--Processual matrices.

On the first trial, 92.6 per cent of the subjects made stay responses. That is, π_0 = (.926, .074). By post-multiplying powers of our pooled transition matrix, the aggregate stochastic matrix, by π_0, we can predict P(S) for any trial of the process. In general, π_k gives the predicted distribution of P(S) and 1-P(S) on the k+1 trial such that $\pi_k = P^k \pi_0$, where P is the pooled transition matrix. Table 4 presents our predicted and observed values for P(S).

TABLE 4

DISTRIBUTION VECTOR AND OBSERVED VALUES FOR CRITICAL TRIALS UNTIL THEORETICAL STABILITY

Critical Trial	Distribution Vector	Observed P(S)
1	(.926, .074)	.926
2	(.623, .377)	.630
3	(.641, .359)	.630
4	(.640, .360)	.630
4+	(.640, .360)	--

P, the pooled transition matrix, reaches a limit of (.640, .360). That is, π_∞, the equilibrium vector, is (.640, .360). However, Table 4 indicates that this value occurs on the fourth and subsequent trials. Theoretically, this means the influence process stabilizes quite rapidly, with a stable value of P(S) = .640.

In general, how does this projected stable value of P(S) = .640 compare to our observations? We can compare our sets of data by using a chi-square goodness of fit test. After combining categories we end up with a chi-square of 1 degree of freedom equal to 4.175. This is significant at the .05 level. This implies our observed data do not fit our expected distribution. This may indicate that the influence process is <u>not</u> a process with 1 P(S), more specifically a P(S) of .640. However, this conclusion is not necessarily warranted, since the sample size is small. The value of .640 is not significantly different from the pooled Tress value of P(S) = .654. Comparison of the two P(S)s via a critical ratio gives a Z-score of .4750.

If we plot the observed values of P(S) on each of the critical trials, we can see if the process tends to stabilize as time goes on. This curve is plotted in Figure 9. The dotted line in Figure 9 represents the values for the distribution vector presented in Table 4.

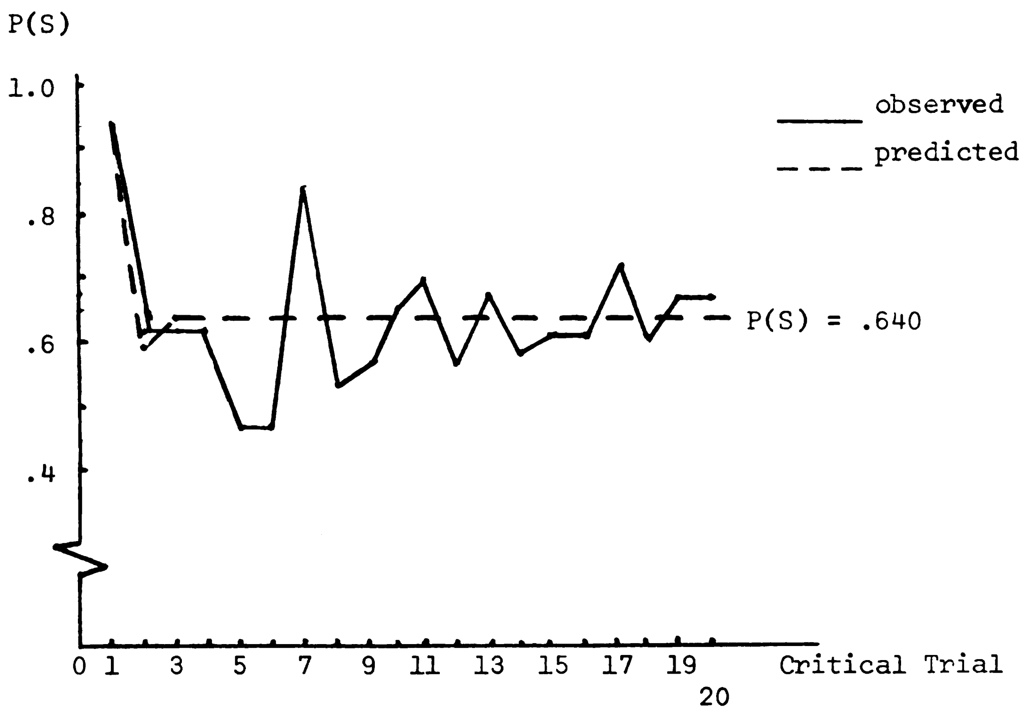

Fig. 9.--Observed and predicted values of P(S) for each critical trial.

Since our sample is small, Figure 9's plot of P(S) on a trial by trial basis yields too great a variance. As Moore indicates, a plot of a cumulative P(S) curve will obscure trends, especially if they occur towards the end of the process (Moore, 1969, p. 149). Following Moore, we reach the following compromise: P(S) is plotted in blocks of seven trials. This is presented in Figures 10 and 11. Specifically, each point in the curve represents the proportion of stay responses made by subjects in a sequence of seven trials. For example, the first point represents trials 1 to 7; the second, trials 2 to 8; the ith, trials i-6 to i; and the last point, trials 14 to 20.[17]

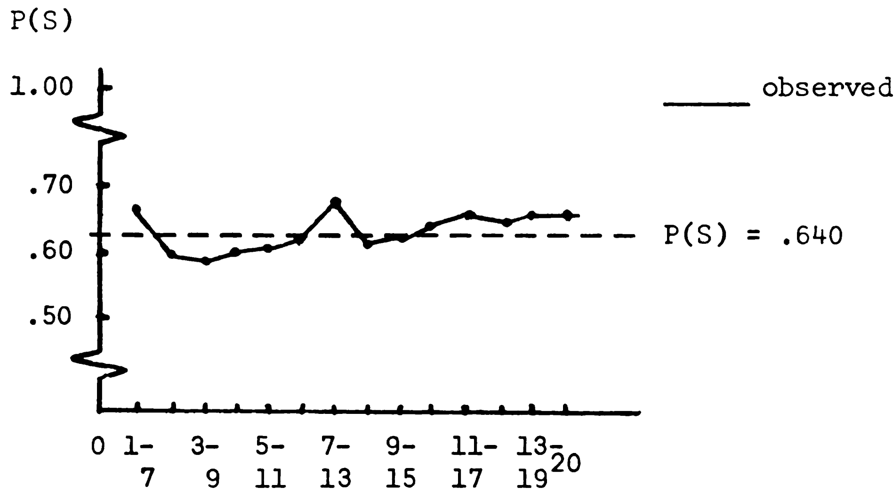

Fig. 10.--Plot of trial blocks.

Figures 10 and 11 represent the reduced variance of the process. This is seen if Figures 9 and 10 are compared. In addition, the variance reduction implies a stabilization of P(S). However, the asymptotic value reached by P(S) seems to be larger than our hypothesized value of .640.

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[17]Figure 10 is in the same scale as Figure 9. Figure 11 is a more detailed plot of the same process, such that the X axis, the trial blocks, is in the same scale as Figures 9 and 10, but the Y axis, P(S), is five times larger in scale than the Y axis in Figures 9 and 10.

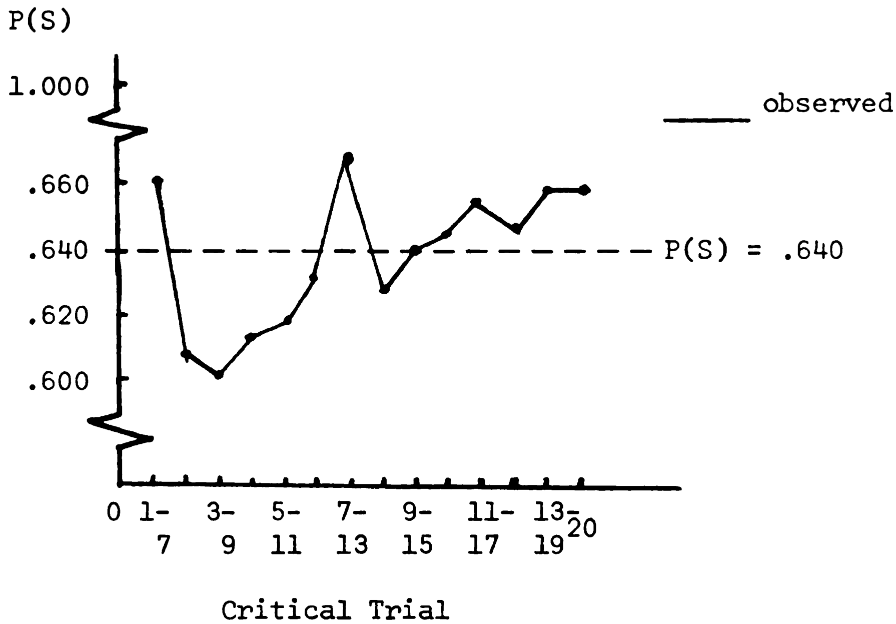

Fig. 11.--Detail of plot of trial blocks.

SUMMARY AND CONCLUSIONS

The general process that occurs in the event of two inconsistent status characteristics seems to be universal. Such inconsistent evaluations reflect themselves in the same type of influence process in the group. Specifically, if conditions of less relevance of the characteristics to the task of the group are made, the process will still be of the same form.

This process is due to a member's evaluation of specific status characteristics possessed by members of a group. At least one member of the dyad evaluates himself or his partner in a consistent or univalent manner. Thus we are concerned with the nature of a univalence process. The nature of the process is a direct function of group members' possession of states of status characteristics.

Unlike Berger and Fisek's initial investigation into this process, we were not concerned with whether or not group members combined or balanced their inconsistent characteristics. Balancing results in univalence along the basis of one or two characteristics in our example, and combining results in one univalent characteristic or the creation of a new univalent level of the characteristics. Such an interpretation ignores the idea that the combining mechanism can be considered a special case of the balancing mechanism. Berger and Fisek have ignored this and failed to investigate the nature of the influence process in the case of inconsistent specific status characteristics.

We conducted a partial replication of the Berger and Fisek experiment. The general form of the experiment is to assign states of fictitious abilities to subjects, the statuses, and then see the influence pattern between subjects by controlling feedback between subjects so that it appears they disagree. Resolution of the disagreement in one direction or the other will measure the amount or lack of influence of one subject towards another. By assigning fictitious scores on the abilities to subjects, we can set up cases of inconsistent statuses.

Our data analysis showed our results to be strikingly similar to those found by Berger and Fisek. Initially we thought the influence process would have the form of a simple Bernoulli process. That is, the univalent process would consist of one probability parameter. However, we argued that the joint effects of two parameters in a joint distribution might confound the nature of the influence process. Our limited data did not allow us to specify the number or actual values of the parameters involved. In conclusion, we cannot state with assurance the number of status characteristics involved in the univalence process in the case of more than one specific status characteristic.

The data in our replication showed the influence process is independent from one trial to the next. In addition, the process theoretically becomes stable quite rapidly. However, the theoretical process did not conform to our observed data. Analysis shows the asymptotic value of the process is slightly greater than the theoretical value.

Our analysis is inconclusive about the exact nature of the influence process. We can only say the process is an independent trials process. However, this process is univalent and cannot be conceived of as a balancing or combining of inconsistent states of status characteristics.

Specification of the exact nature of the process is beyond the scope of the thesis. Specification of a mathematical distribution representing the process may allow us to extend our work to more than two characteristics. At the same time, work should be done on multiple diffuse characteristics. It is felt that work done along these lines would be most fruitful, since such experimental work could be extended to other areas of sociology, notably the issue of status inconsistency in stratification.

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APPENDICES

APPENDIX A

INSTRUCTIONS GIVEN TO SUBJECTS

Phase I

Good morning. Thank you for joining us. I'm ______________ and this is __________________. We are members of a team of social scientists who are interested in studying the way in which individuals and groups solve certain kinds of problems. We are also interested in how these problems are solved in different situations. So our work today will be divided into two phases or parts, Phase I and Phase II. In each of these phases you will be asked to solve problems, but under different conditions. I will explain the nature of these problems as we go along.

Will you please sit here. You will be number one, and you will be number two. Let's turn now to Phase I.

Within the last few years, social scientists have found that individuals differ in their intuitive ability (pause) to perceive and understand a set of objects or events. More simply, when some people are presented with a group of unfamiliar events or objects they are quickly able to intuitively understand or grasp the overall meaning or significance of these events or objects. Other people do not seem to have this ability to the same extent. (from memory, with emphasis) Social scientists call this ability to intuitively

grasp or understand the meaning of apparently unrelated things "Meaning Insight Ability."

(begin from memory, switch gradually to reading) At this time, we don't know all the answers as to why some people have this ability more than others, although it may be related to background, training, and possibly innate capacities. One thing we do know is that this general ability is unrelated to most of the specialized skills a person may have. This means that a person with high mathematical skill, for example, does not necessarily possess high Meaning Insight Ability. We have also found that whatever amount of Meaning Insight Ability a person has, it is not affected by conscious effort. That is, the amount of ability possessed by an individual improves very little as a result of practice, and decreases hardly at all as a result of fatigue. Consequently, a person's performance at Meaning Insight Ability tasks remains very constant throughout his lifetime.

What we are going to do in this part of our work is to administer a specially prepared test which is extremely accurate in measuring an individual's Meaning Insight Ability. That is, this test distinguishes those who have a great deal of this ability (pause) from those who do not.

In order to solve the problems in the test, you must make use of the Meaning Insight Ability that each of you possesses. The test consists of a series of well-known English words, and a series of words taken from a very primitive language studied by anthropologists. (present slide, gesture with pointer) We will present on the screen in front of you a slide containing one of the English words or phrases and two non-English words marked A and B.

For the purposes of this test, the non-English words have been written in simple phonetic form, using English script. One and only one of the two non-English words has the same meaning as the English word presented.

Your task will be to determine which one of the non-English words or phrases, A or B, in fact has the same meaning as the English word. After presenting a slide such as this, I will give you five seconds to study it.

(slowly) We suggest that you first study the non-English words-- A and B-- (pause) sound them to yourself, (pause) and try to associate whatever meanings they call to your mind. Then, study the English word or phrase (pause) and try to associate whatever meanings it calls to your mind. Then decide which non-English word, A or B, has the same meaning as the English word. (long pause)

In general, we have found that people with high Meaning Insight Ability consistently make correct decisions. Those with low Meaning Insight Ability usually make incorrect decisions.

During the actual test, you will indicate which is the correct answer by pressing the appropriate button on your panels. For this phase you will push either the button labelled A or the button labelled B on the bottom left side of the panels. (pause) (point) Your decisions will be recorded by a member of our study staff in the next room. At the end of this phase of our work, we will report to you how well you have performed on the test; that is, on what your level of Meaning Insight Ability is.

(start from memory) Before beginning the series of slides, let me review the things you should keep in mind:

(1) You are about to take a specially designed test, which has been shown to be an excellent indicator of Meaning Insight Ability.

(2) The test will consist of a series of twenty slides, each slide containing one English word and two non-English words marked A and B.

(3) Your task is to decide in each case which of the two non-English words has the same meaning as the English word. You will indicate this choice by pressing the appropriate button on your panels.

(4) Some of the slides may seem difficult to you, but there is a correct answer to each and every slide. Persons with high Meaning Insight Ability consistently make correct choices; persons with low Meaning Insight Ability usually make incorrect choices. However, be careful: guesses based on first impressions may often be incorrect.

(5) These choices which you make will enable us to measure the level of your Meaning Insight Ability. At the end of this phase of our work, we will report the correctness of your choices to you on the scoreboard.

We are now ready to begin the series of slides. When the slide appears on the screen, you will be given five seconds to study it, at the end of which time I will call for you to make your decisions. Please make your choice <u>as</u> <u>soon</u> <u>as</u> I call for them. Not before (pause) and not long after. Is everything clear?

(show twenty slides)

This part of Phase I concerns your "<u>Relational Insight Ability</u>." This refers to the ability of an individual to <u>understand</u> the <u>relationship</u> between <u>unfamiliar</u> objects or events. Social scientists have recently found out some people have more of this ability than others. Some people, when faced with objects or events that appear on the surface to be unrelated, see a hidden relationship between these objects more easily than others.

We don't know why this is so, but we do know that Relational Insight Ability is unrelated to most specialized skills. This ability is a unique attribute of individuals.

As you can see, there are many problems and questions posed by this recently discovered property of individuals. What we are going to do is to administer a test which is very accurate in indicating a person's Relational Insight Ability. The results of this test show if a person does or does not have a great deal of this ability.

This test also consists of a series of slides. However, in this test some of the slides are repeated. Each slide will consist of a geometric figure. In front of you, while you see the slide, will be a standard. Your task will be to determine whether or not the standard is contained in the slide shown on the screen.

Please look at the standard we are now giving you. (show sample slide) As you can see, each slide is complex and contains numerous patterns. After presenting a slide, you will have five seconds to decide if the standard figure you are using is contained in the slide. Is this clear?

We suggest you first try to move or rotate the standard around in front of you or in your mind, and then do the same with the slide, or imagine putting the standard on top of the slide and moving it around to see if the slide and the standard overlap.

We have found that people with high Relational Insight Ability consistently make correct decisions about whether or not a slide contains a standard and those with a low state of this ability usually make incorrect decisions.

During the actual test we will give you a standard drawn on a piece of paper at the beginning of each set of slides. There are four sets of slides, with the same number of slides, five, and the same types of slides in each set. The slides are repeated since each slide is complex and may contain more than one standard pattern.

During the test you will push either the button labelled "yes" if the standard is contained in the slide, or the button labelled "no" if the standard isn't contained in the slide. The buttons are located at the same place on your panel as the A or B buttons you used before. Your choice will be recorded by a member of our study staff in another room. After this test, we will tell you how you performed; that is, what your level of Relational Insight Ability is. At the same time you will receive your scores on the test you took before so you will also know your level of Meaning Insight Ability.

Before we begin to test your Relational Insight Ability, let's review some key things:

(1) This test is specially designed to measure a unique attribute of individuals, Relational Insight Ability.

(2) The test consists of groups of five slides repeated four times, a total of twenty slides. There is a different standard for each of the repeated sets of slides.

(3) Your task is to determine if the standard is contained in the slide. Some of the times it will be difficult to decide this, but there is an answer in each case.

(4) Guesses based on first impressions may be false. Remember, you have five seconds to study each slide, after which I will ask you for your choice. Please make your choice as soon as I call for it, not before and not long after.

(5) Your choices will be a measure of your level of Relational Insight Ability. To repeat, persons with a high state of this ability consistently are correct in their choices, and persons with a low state are usually wrong.

Are there any questions before we begin our test? If not, let's start.

(show twenty slides)

We are now ready to begin Phase II of our work.

Phase II

This is a study of decision-making. More specifically, this is a study in how individuals work together as a group to solve problems, and how different types of organization affect the efficiency of problem-solving. Today the two of you will be working together as a team to make decisions about problems that we will give you. This is a common yet important kind of situation, sometimes referred to as a Critical Choice situation. The most important thing about a Critical Choice situation is to make the right decision. For example, when a doctor has to make a difficult diagnosis, the patient may die if he does not make the right decision. But it is often difficult for the doctor to recognize at first what is the correct decision. When confronted with such a situation, the doctor will study the problem carefully, and, because the most important thing in a critical choice situation is to get the right answer, he will usually seek advice from others. Only then will he decide. He will not care whether he originally thought of the answer himself, or was assisted by someone else in recognizing the right answer. The important thing is that he made the right decision.

Today we are interested in studying how people make decisions in Critical Choice situations when they have advice from others. Let me tell you something about the task you will be working on.

This perceptual task, which social scientists have labelled Contrast Sensitivity, has been developed in recent years, and because of its importance is currently being used in an extensive set of studies in this part of the country and elsewhere. This Contrast Sensitivity task involves judging color contrasts in figures or objects. Today you will be judging a series of slides like the one now on the screen.

(put demo slide on the screen) Each slide has two patterns, which are made of smaller black and white rectangles. One of these two patterns--either the top one or the bottom one--has more white area than the other. Your task is to determine which of the two patterns--the top one or the bottom one--has the greater area of white.

(retract and advance slide) You may find that some of the slides will seem difficult to judge as the difference in the area covered by black and white rectangles is sometimes very small. However, previous studies have shown that some individuals are able to make correct judgments on the basis of very slight, almost intuitive clues and feelings. That is, this is a fairly difficult task on which individuals do differ markedly in their performances.

There are two things which make this task very important to social scientists. First, we know from previous studies that the capacity to make correct Contrast Sensitivity judgments is not necessarily related to specialized skills the individual might possess, such as mathematical or artistic skills. That is, those people with high mathematical or artistic skills are not necessarily more accurate in their Contrast Sensitivity judgments. Those people with low mathematical or artistic skills may in fact be quite accurate at making Contrast Sensitivity judgments.

The second important finding is that the way individuals solve Contrast Sensitivity problems strongly depends upon the kind of situation they are in.

We know from previous studies that most individuals do considerably better on these problems when they are working in a group situation than they do when they are working alone. Since we are interested in your making as many correct judgments as possible, you will be working in a group situation today.

That is, because this is a study of how people make decisions in a Critical Choice situation, the two of you will be allowed to exchange information with each other as to what you think is the correct answer before you make final decisions. Only your final decisions will be recorded for your scores.

This is how it will work. First, I will present a slide on the screen. After you have studied the slide for five seconds, I will ask each of you to make an initial choice as to which pattern

contains the greater area of white, top or bottom. Five seconds after you make your initial choices, I will ask you to make your final choices.

____________________ will demonstrate how the equipment works.

(Boardman, equipment demonstration)

[Boardman: We'd like to go through one more practice trial exactly the way it will be during the study.]

I will present a second demonstration slide so that you can practice with this procedure. This will not count on your score; this is just for practice.

You will have five seconds to study the slide before I call for your initial choice.

(show slide for five seconds)

Now make your initial choice.

(pause five seconds after both have chosen)

Now make your final choice.

(turn off projector)

(advance slide)

(press relay release)

(check off trial number on sheet)

In today's study there will be twenty trials exactly like this one. For each of these trials we are interested solely in your making the correct final decision. Therefore, you should not hesitate for any reason to change your initial choice in order to make the correct final decision.

During the slide series you may recognize certain similarities between a rectangle that you are studying and one you have already seen. This is due to the fact that some of the shapes which compose the rectangles are repeated. It is the case, however, that within each rectangle, these shapes are combined in a new fashion so that no two rectangles are identical. Therefore, you should treat each pair of rectangles as a new problem which requires its own study and its own decision. Is everything clear?

Since you will be working together and helping each other, it is important that you know about each other. This is the reason for the two tests you took earlier. These tests measure two special distinct abilities--Relational Insight Ability and Meaning Insight Ability. As we mentioned, the Meaning Insight Ability is the ability to understand the meaning of unfamiliar events or objects. The Relational Insight Ability is the ability to understand the relationship between unfamiliar objects or events. These abilities are quite different, but both contribute to solving Contrast Sensitivity problems.

(pause) Mr. ____________________ will now give you your scores on the tests you took previously.

(Boardman Part II) (Boardman leaves)

Before we begin the series, I would like to summarize a few points.

(1) You will be shown a series of twenty slides and be asked to decide which pattern has the greater area of white.

(2) Only your final decision on each slide will count towards your score.

(3) Each time you make the correct final decision, that adds one point to your score; if you make the incorrect final decision, that adds nothing to your score.

(4) We are interested in your making as many correct final decisions as you can; therefore, you should not hesitate for any reason to change your initial choice, if that helps you to make the correct final decision.

(5) At the end of the study I will report to you how many correct decisions you each made.

Finally, please hold your choices until I call for them, but make them as soon as possible thereafter.

(show slide series)

This completes the series of slides.

We would now like to discuss your scores with you, and to talk with each of you individually in order to get a further elaboration of your feelings and opinions about the study. I will talk with you, Number 1, and Mr. ____________________ will talk with you, Number 2.

Boardman: Part II

The Relational Insight Ability test and the Meaning Insight Ability test have been given to many college students of your level in this part of the country and elsewhere. The standardized scores presented here are based on these previous studies. It was found that:

(Boardman points at scores)

11 through 15 correct of a possible 20 is the average individual score. That is, most people will get 11 to 15 answers correct.

16 through 20 correct is a high individual score and clearly reflects a high degree of ability.

0 through 10 correct is a low individual score and reflects a low degree of ability.

Previous studies have shown both abilities contribute to solving Contrast Sensitivity problems.

(pause) I have scored your tests.

Number 1, you made nine correct answers on the Meaning Insight Ability test. You made eighteen correct answers on the Relational Insight Ability test.

Number 2, you made eighteen correct answers on the Meaning Insight Ability test. You made nine correct answers on the Relational Insight Ability test.

You can see how you've done by comparing your scores with the national standards in the center column. (pause)

As you can see, we've had some unusual scores today.

Are the scores and standards clear?

APPENDIX B

INTERVIEW SCHEDULE

Before we discuss the results of the study, I'd like to get your reactions to it. There are a number of things that affect the results and I want to talk with you about some of them.

Your first name is? (pause) And what is your major field of study, ____________________? And your age? (general background, probe in all cases)

(1) In general, what are your feelings about the study?

(2) (a) Have you ever participated in a study like this one before?

(b) Have you ever read or heard about a study like this one?

(if yes to 2a or 2b, probe for a description of the study)

Phase I

(1) When the Meaning Insight Ability test was first described to you, how well did you expect to do on it? Why?

(2) At the same time, how well did you think your partner would do? Why is that?

(3) How did you go about trying to get the correct answer on the test?

(4) In general, how confident were you of your choices on this test? Why (not)?

(5) Did you think the first test was a good measure of your Meaning Insight Ability? Why (not)?

(continue Phase I for Relational Insight Ability, the second test)

Phase II

Now, let's talk about the second part of the study, Phase II.

(1) How well did you expect to do on the Contrast Sensitivity task before you actually began taking it; that is, how well did you expect to do after you received your scores on the two tests we just talked about? Why?

(2) At the same time, how well did you expect your partner to do? Why?

(in 1 and 2 probe for combining versus balancing mechanism)

(3) Let's look at your initial choices on the test.

- (a) Do you happen to remember how many times you agreed and disagreed with your partner on your initial choice?
- (b) What did you think and feel when your partner disagreed with you? Why?
- (c) Do you have any ideas why you were disagreeing with your partner?

(4) Let's look at your final choices.

- (a) Did you begin to feel that either you or your partner was usually right or wrong? Who? Why?
- (b) In those cases where you thought you were right on your initial decision, what did you do? Did you ever change your mind in these cases? Why?
- (c) What about the times you thought you were wrong on your initial choice?

(d) How confident were you of your final decisions on the test? Why?

Debriefing

Now, __________________, I would briefly like to explain in a little more detail what we were trying to study in today's test. We are studying the relationships between a person's abilities and the way he behaves in a group, especially the decisions he makes. That is, we are studying the effect upon a person's changing his decision if another person with more, less, or equal abilities disagrees with him on a decision. So as you can see, we were not testing Contrast Sensitivity as such. Have I made sense so far? (give example of people with different abilities interacting--e.g., a doctor and an intern.)

To set up this type of situation there were two things we needed to arrange: your abilities and your agreement with your partner. Concerning your abilities, in Phase I of the study all of the slides you saw were ambiguous and had no correct answer. For example, in the test for Meaning Insight Ability each foreign word was a fiction. The odds of picking each word was 50-50. By telling you your scores on the tests, which were all fictions, we hoped you would naturally assume that you had more or less of these abilities than your partner. But really we know nothing about your abilities. I'm not even sure there is such a thing as Relational Insight or Meaning Insight Ability. Do you understand so far? (pause)

In Phase II, the Contrast Sensitivity test, we were interested in a situation where you disagreed with your partner on your initial decisions. The information you received about your partner's initial decision was arranged so that you would disagree with him most of the time. Each slide has equal amounts of black and white area in the rectangles on the slide. Is this clear? For these reasons, there are no scores on the tests. As in the first part of this study, Contrast Sensitivity Ability is a fiction and doesn't exist.

This briefly is the reason we had to arrange the things we were testing. Since the study involves some fictions, we would greatly appreciate it if you didn't tell anybody about it. They might be tested later and such information might change the way they perform. Can I have your word that you won't disclose this information? (pause) If anyone asks you about the test, it's all right to tell them it was a test concerning whether or not there were more black or white squares on some pictures; but don't tell them about the rest. Okay? Thank you very much.

We will pay you at the rate of two dollars an hour for your participation today.

If you are interested in our results, please leave your name and address on this sheet of paper so we can send you a brief report of our findings. (give cash, cash receipt, and sheet)

APPENDIX C

REASONS FOR ELIMINATING SUBJECTS FROM SAMPLE

(1) Deliberately making wrong initial choices.

(2) Misunderstanding instructions.

(3) Prior acquaintance with other subject.

(4) Status differences based on physical characteristics, e.g., sex, color.

(5) Suspicion (see below).

We used necessary and sufficient criteria in deciding the suspicion of a subject in our post-experimental interview.

(1) Necessary criteria: The subject must have mentioned one of the following:

  (a) The scores on the abilities were false.

  (b) There is no such thing as Meaning or Relational Insight Ability.

  (c) The stated purpose of the study was not its real purpose.

Given one of these necessary criteria, a subject was classified as suspicious if one of the following sufficient criteria is also true (referring to a through a of the necessary criteria).

(2) Sufficient criteria:

  (a) The belief is stated firmly and early in the interview.

  (b) The belief is mentioned frequently in the interview.

(c) Such information is volunteered with little or no probing.

(d) The belief is based on one of the following:

(1) prior experience in a deception study;

(2) prior knowledge about deception studies;

(3) having been told that this study involves deceptions.

(e) The subject behaved in an unusual manner during the interview.

Our necessary and sufficient criteria mean there must be positive evidence of suspicion rather than positive evidence the subject was not suspicious. It is not sufficient to say a subject is suspicious if:

(1) the subject mentions suspicion late in the interview or during the debriefing;

(2) the subject indicates suspicion after intensive probing.

APPENDIX D

BERGER-FISEK HOST PROCEDURE: PHASE II

Good ____________________. Let me introduce myself. I am ____________________ and this is ____________________. We would like to thank you for joining us today.

This is a study of decision-making. More specifically, this is a study of how individuals work together as a group to solve problems, and how different types of organization affect the efficiency of problem-solving. Today the two of you will be working together as a team to make decisions about problems that we will give you. This is a common yet important kind of situation, sometimes referred to as a Critical Choice situation. The most important thing about a Critical Choice situation is to <u>make the right decision</u>. For example, when a doctor has to make a difficult diagnosis, the patient may die if he does not make the right decision. But it is often difficult for the doctor to recognize at first what is the correct decision. When confronted with such a situation, the doctor will study the problem carefully, and, because the most important thing in a Critical Choice situation is to get the <u>right</u> answer, he will usually seek advice from others. Only then will he decide. <u>He will not care whether he originally thought of the answer himself, or was assisted by someone else in recognizing the right answer</u>. The important thing is that he make the right decision.

Today we are interested in studying how people make decisions in Critical Choice situations when they have advice from others. Let me tell you something about the task you will be working on.

This perceptual task, which social scientists have labelled Contrast Sensitivity, has been developed in recent years, and because of its importance is currently being used in an extensive set of studies in this part of the country and elsewhere. This Contrast Sensitivity task involves judging color contrasts in figures or objects. Today you will be judging a series of slides like the one now on the screen.

(put demo slide on the screen)

Each slide has two patterns, which are made of smaller black and white rectangles. One of these two patterns--either the top one or the bottom one-- has more white area than the other. Your task is to determine which of the two patterns--the top one or the bottom one--has the greater area of white.

(retract and advance slide)

You may find that some of the slides will seem difficult to judge as the difference in the area covered by black and white rectangles is sometimes quite small. However, previous studies have shown that some individuals are able to make correct judgments on the basis of very slight, almost intuitive cues and feelings. That is, this is a fairly difficult task on which individuals do differ markedly in their performances.

There are two things which make this task very important to social scientists. First, we know from previous studies that the capacity to make correct Contrast Sensitivity judgments is not necessarily related to specialized skills the individual might possess, such as mathematical or artistic skills. That is, those people with high mathematical or artistic skills are not necessarily more accurate in their Contrast Sensitivity judgments. Those people with low mathematical or artistic skills may in fact be quite accurate at making Contrast Sensitivity judgments.

The second important finding is that the way individuals solve Contrast Sensitivity problems strongly depends upon the kind of situation they are in.

We know from previous studies that most individuals do considerably better on these problems when they are working in a group situation than they do when they are working alone. Since we are interested in your making as many correct judgments as possible, you will be working in a <u>group</u> situation today.

That is, because this is a study of how people make decisions in a Critical Choice situation, the two of you will be allowed to exchange information with each other as to what you think is the correct answer before you make final decisions. Only your final decisions will be recorded for your scores.

This is how it will work. First, I will present a slide on the screen. After you have studied the slide for five seconds, I will ask each of you to make an initial choice as to which pattern contains the greater area of <u>white</u>, top or bottom. Five seconds after you make your initial choices, I will ask you to make your final choices.

____________________ will demonstrate how the equipment works.

(Boardman, equipment demonstration)

[Boardman: We'd like to go through one more practice trial exactly the way it will be during the study.]

I will present a second demonstration slide so that you can practice with this procedure. This will not count on your score; this is just for practice.

You will have five seconds to study the slide before I call for your initial choice.

(show slide for five seconds)

Now make your initial choice.

(pause five seconds after both have chosen)

Now make your final choice.

(turn off projector)

(advance slide)

(press relay release)

(check off trial number on sheet)

In today's study there will be twenty trials exactly like this one. For each of these trials we are interested solely in your making the correct final decision. Therefore, you should not hesitate for any reason to change your initial choice in order to make the correct final decision.

During the slide series you may recognize certain similarities between a rectangle that you are studying and one you have already seen. This is due to the fact that some of the shapes which compose the rectangles are repeated. It is the case, however, that within each rectangle, these shapes are combined in a new fashion so that no two rectangles are identical. Therefore, you should treat each pair of rectangles as a new problem which requires its own study and its own decision.

Since you will be working together and helping each other, it is important that you know as much as possible about each other. This is the reason for the two tests you took earlier. These tests measure two special distinct abilities--the Relational Insight Ability and the Meaning Insight Ability. We have found that the results of these tests are very accurate indicators of a person's performance on the Contrast Sensitivity task. As we mentioned, the Meaning Insight Ability is the ability to understand the meaning of unfamiliar events or objects. The Relational Insight Ability is the ability to understand the relationship between unfamiliar objects or events.

Meaning Insight Ability and Relational Insight Ability are two quite distinct abilities since they involve different thought patterns. Although these abilities are quite different, previous studies have found that these two abilities are usually closely associated with each other. That is, an individual possessing high Relational Insight Ability will almost always have high Meaning Insight Ability. If a person has a low degree of Meaning Insight Ability, he will usually have low Relational Insight Ability as well.

As mentioned before, one of the particularly interesting things we have found in our studies is that the capacity to make correct Contrast Sensitivity judgments is very closely related to the possession of these two abilities. It has been found that those individuals with high Meaning Insight Ability and high Relational Insight Ability usually make correct Contrast Sensitivity judgments; those individuals with low Meaning Insight Ability and low Relational Insight Ability

usually make incorrect judgments. That is, individuals who possess these special and distinct abilities are also likely to be good at the Contrast Sensitivity task and so usually make a high number of correct judgments.

____________________ will explain in more detail what this means.

(Boardman, Part II) (Boardman leaves)

Before we begin the series, I would like to summarize a few points.

(1) You will be shown a series of twenty slides and be asked to decide which pattern has the greater area of white.

(2) Only your final decision on each slide will count towards your score.

(3) Each time you make the correct final decision, that adds one point to your score; if you make the incorrect final decision, that adds nothing to your score.

(4) We are interested in your making as many correct final decisions as you can; therefore, you should not hesitate for any reason to change your initial choice, if that helps you to make the correct final decision.

(5) At the end of the study I will report to you how many correct decisions you each made.

Finally, please hold your choices until I call for them, but make them as soon as possible thereafter.

(show slide series)

This completes the series of slides. Now we would like you to fill out a questionnaire. The questionnaire is an important part of our work. Please read the questions carefully, and take your time in

answering them. If there is something you do not understand, raise your hand and I will come around and help you.

(hand out questionnaires) (erase the board)

(Boardman returns and collects them, checking for correct desk number and completeness)

We would now like to discuss your scores with you, and to talk with each of you individually in order to get a further elaboration of your feelings and opinions about the study. Mr. ___________________ will talk with you, Number 1; and I will talk with you, Number 2.