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CONCEPTUAL COMPLEXITY, ENVIRONMENTAL COMPLEXITY,  
COMMUNICATION SALIENCE AND ATTITUDE CHANGE

by



DAVID S. HEWITT

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES  
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UNIVERSITY OF ALBERTA  
FACULTY OF GRADUATE STUDIES.

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Conceptual Complexity, Environmental Complexity, Communication Salience and Attitude Change" submitted by David S. Hewitt in partial fulfilment of the requirements for the degree of Doctor of Philosophy.

Brendan Gail Peale  
Supervisor

Arthur J. B. Haugh

Walter Penzance

J. Paul Johnston

John H. Adair  
External Examiner

Date July 22, 1970

## ABSTRACT

Research on attitude change has found the characteristics of the communicator, the nature of the communication, the situation in which the influence attempt takes place and the individual characteristics of the receiver of the influence communication to be relevant factors affecting change. The general system of personality organization developed by Harvey, Hunt and Schroder (1961) and Schroder, Driver and Streufert (1967) has provided specifications for how these factors combine to determine an individual's susceptibility to influence. The purpose of the present study was to test some of these specifications. Female subjects selected from the extreme ends of the concrete-abstract conceptual structure dimension and for having a negative attitude toward the equality of women, were subjected to a sensory deprivation, a normal control, or an overstimulation environment. A high salience or a low salience communication was presented in an effort to change the individual's attitude toward the equality of women. The main prediction of a three way interaction between conceptual structure, communication salience and environmental complexity received some support. Concrete individuals who received the high salience communication showed significantly more change than concrete individuals who received the low salience communication. The expected reversal of this effect for abstract individuals, was not found. It was suggested that the conceptual structure effect may have been

mitigated by the instrument employed to measure structure and by the use of female subject population. The high salience communication produced significantly greater attitude change than the low salience communication, and this difference was significantly related to the complexity of the environment. These findings were discussed in terms of McGuire's (1968, 1969) proposals concerning the effect of comprehension and yielding on attitude change and Berlyne's (1963) proposals regarding the reinforcing properties of arousal reduction.

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## INTRODUCTION

The specification of factors involved in an individual's susceptibility to influence has been the subject of many experimental investigations in social psychology. A number of recent reviews of susceptibility to influence and attitude change (Sherif & Sherif, 1967; Sears & Abels, 1969; Cohen, 1964; McGuire, 1969; Insko, 1967) have delineated several relevant factors. The characteristics of the communicator, the nature of the communication and its general persuasiveness, the situation in which the influence attempt takes place and the individual characteristics of the person on whom the influence attempt is being made, have all affected attitude change. Very little information, however, is available on the way in which these various factors may be jointly involved in producing attitude change. Harvey, Hunt and Schroder (1961) and Schroder, Driver and Streufert (1967) have developed a general system of personality organization incorporating cognitive, environmental and behavioural dimensions as central concepts. Such a system has provided specifications for how these factors combine to determine an individual's susceptibility to influence.

### Conceptual Complexity

In the system of personality organization or conceptual complexity proposed by Harvey, Hunt and Schroder (1961) and Schroder, Driver and Streufert (1967) organismic and environmental variables are ordered along a dimension of complexity which is viewed as structural.

Emphasis in their system is placed upon the individual differences in mediating processes which link environmental inputs to behavioural outputs. The significant individual difference aspect of personality which mediates between input and output is conceptual complexity. Conceptual complexity is conceived of as a structural rather than a content variable and is defined in terms of differentiation and interpretation of information.

Conceptual structure refers to mediating cognitive links which an individual uses to map his environment and to generate optimally adaptive courses of action. Conceptual structure determines the kind and diversity of information an individual can generate about his environment and the number of ways in which he can organize and interpret that information. In addition conceptual structure determines how an individual deals with new information, that is, his ability to integrate conflicting information into a previously established organization.

The terms "concrete" and "abstract" have been used by Harvey, Hunt and Schroder (1961) to identify the ends of the continuum of conceptual complexity: concrete functioning is associated with low complexity, abstract functioning with high complexity. Four specific points on the concrete-abstract continuum have been identified as modal stages of conceptual development.

At the concrete end of the conceptual complexity continuum is System 1 functioning. This system is relatively rigid and is not open to change neither in response to new information nor to consideration of other aspects of the stimulus situation. The individual is able to

categorize stimuli into dimensions but lacks organizational rules to establish relationships among these dimensions. The individual tends to move information along a single dimension, making conflict and ambiguity difficult to resolve except by excluding some of the available information. The major concern of such a system is the development of specific rules for categorizing stimuli and for the maintenance of order and of clear structure. Behaviour is controlled by extreme dependence upon external anchors. Ambiguity and conflict are warded off as long as possible. When this defense fails, the stimulus is abruptly recategorized in an all-or-nothing rather than a gradual fashion.

System 2 functioning is somewhat less concrete, having developed some differentiation of dimensions for categorizing the same stimuli. However, these dimensions are used as alternatives, that is, if two are available, one may be primarily utilized in one given type of situation and the other, in other types of situations. There is no possibility in this type of organization for using interrelationships between the dimensions. This system does allow a greater degree of choice and indeterminacy than was possible in System 1 where no great complexity in organizing information is possible. The discrimination of any stimulus within any dimension still tends to be categorical and not significantly affected by its position on other dimensions. Within a particular dimension, however, there exists a larger number of finer discriminations than could be generated at the more concrete level of functioning. The dependence upon external referents becomes less absolute with the emergence of internal referents. Decision making and behaviour tend to be somewhat inconsistent due to the lack of both the

absolutistic rules of System 1 and the ability to utilize all possible information for the generation of strategies, as in more abstract systems.

Further toward the abstract end of the conceptual complexity continuum lies System 3 functioning. The primary characteristic of this system is the use of combinations of dimensions. Matching and comparing small numbers of dimensions at one time is accomplished by the development of superordinate rules. The individual functioning at the System 3 level is able to put himself in the place of others and to see himself as others see him. Internally derived rules, to a great extent, determine the individual's functioning. These rules enable the individual to consider present stimuli in terms of both past and present evaluations and to project into the future.

System 4 functioning forms the extreme abstract end of the continuum. Complex higher-level rules have been evolved at this stage which greatly increase the number of dimensions which can be considered at one time. There exists here the possibility for making complex alternate combinations as well as alternate comparisons as in System 3. Alternate patterns of complex interactions can be generated and a greater diversity of information can be handled. Alternate organizations of dimensions can be produced by internal processes, regardless of external conditions. Uncertainty and lack of external structure, rather than being disruptive as in concrete systems, may be rewarding if they offer novelty and information. A relative lack of environmental information, while possibly unpleasant, is not distressing because of the ability of the individual to utilize to the utmost any

information which is given and to make use of a larger number of internal referents which have been developed. The more abstract individual is also able to cope better with an excess of environmental information because he has the capacity to selectively search and adaptively integrate a wide range of information.

Harvey et al. have described further the relationship between environmental and behavioural characteristics and conceptual complexity. The most important characteristic of the environment is information complexity. This is an attribute composed of the combination of three variables: informational load, informational diversity, and rate of information change. Specifically these variables refer to such factors as the amount of information available, the variability of the situation, the familiarity or novelty of the situation and the nature of the goal.

Behaviour can be characterized by similar variables. The major dimensions along which behaviour is viewed are differentiation and integration. This refers to the number of units of information generated by the individual in any given situation, and the extent to which this information is organized in the production of new information and strategies.

In general the relationship between environmental and behavioural complexity, with conceptual structure held constant is that of a curvilinear function. As the environment becomes simpler (restricted as in sensory deprivation) or becomes overly complex (as in an over-stimulation environment where sensory bombardment occurs) structural regression tends to occur. Simple environments do not contain enough

information to generate the required high levels of integrative complexity and very complex environments contain too much information. Thus, when the information flow is either restrictive or excessive, the conceptual complexity of the individual's cognitive system is reduced with a consequent reduction in the complexity of the response.

An elaboration of this curvilinear function allows representation of the comparative curves of individuals at different points along the abstract-concrete dimension. It is hypothesized that as the conceptual structure of the individual becomes increasingly abstract, the function is affected in three ways: (a) optimal structural complexity is reached at a higher level of stimulus complexity; (b) the absolute level of information processing complexity is higher at all but the most extreme levels of stimulus complexity; and (c) the slope of the curve becomes less steep.

In general, this theory has suggested that conceptually simple individuals because of their reliance on external referents are relatively easily influenced by new information provided under either very low or very high environmental complexity conditions. Conceptually complex individuals under the same environmental conditions are presumably much less influenced by new information because of their ability to continue to utilize internally generated information unless that information is of a very special nature, such as information of low salience.

#### Conceptual Complexity and Attitude Change

The conceptual complexity system proposed by Harvey and his colleagues has been tested in only a few influence experiments. Suedfeld (1964) selected male Ss on the basis of their level of conceptual com-



plexity as assessed by the sentence completion and impression formation tests, and having a neutral attitude toward Turks. These Ss were confined to a sensory deprivation environment for a period of 24 hours and then presented with a strong pro-Turkey argument followed by a weaker counter-argument. Suedfeld predicted that the reduced environmental complexity of the sensory deprivation situation leads to a reduction in response complexity resulting in a failure to integrate the opposing arguments. This results in a tendency on the part of Ss to completely accept or completely reject the communication. Suedfeld expected this effect to be largest for concrete and smallest for more abstract Ss. As predicted, attitude change occurred in the concrete Ss but to a lesser degree in abstract Ss, and in the deprived but not in the control group.

Suedfeld and Vernon (1966), following a procedure similar to Suedfeld (1964), investigated the effect of conceptual complexity as assessed by the sentence completion test on the internalization of, and compliance to, propaganda. Toward the end of either 24 hours of sensory deprivation or nonconfinement, conceptually complex or simple Ss were asked to evaluate each of seven passages which presented two-sided information about Turkey. If S responded by indicating the passage was pro-Turk, he was rewarded by the presentation of the next passage, otherwise the question was repeated. This constituted a test of compliance. Internalization was measured by changes in attitude toward Turks on the pre and post-experimental administration of Turk attitude scale. Abstract, sensory deprivation Ss showed a greater degree of compliance than abstract, control Ss and concrete, sensory deprivation Ss. Concrete Ss evidenced

more internalization (attitude change) than abstract Ss; in sensory deprivation the abstract Ss were less influenced and the concrete Ss were more influenced than in the control condition where the two groups were about equal.

Hewitt and Rule (1968) confined both abstract and concrete male Ss (categorized by means of the sentence completion test) to four hours of sensory deprivation or to a control condition of nonconfinement. A four minute communication aimed at improving the self-concept was presented one half hour before the end of the experimental period. Concrete Ss showed significantly more positive self-concept change in the sensory deprivation than in the control condition, while abstract Ss reacted similarly under both conditions.

An earlier study by Crutchfield (1955) is also relevant to the present discussion. A modification of the Asch technique was used to investigate the effects of group pressure on perceptual judgements. Crutchfield found that persons scoring high on the F scale (which correlates in the range of  $-.25$  to  $-.55$  with conceptual structure) tended to conform more.

In a modified autokinetic situation Janicki (1964) instructed pairs of male Ss selected for different levels of conceptual complexity (determined by a dispositional measure developed by Harvey et al., 1961) to estimate the distance between two pinpoints of light exposed for about one fifth of a second. The Ss were unaware that they were actually viewing different pairs of lights. Each pair of Ss was initially presented with lights at identical distances to establish equivalent standards, then increasingly different distances were presented to each member. Janicki calculated changes in distance estimation as a result of the discrepant judgements given by a partner. As predicted, concrete Ss, more than

abstract Ss, maintained their original standards despite discrepant judgements by their unknown partner.

Streufert (1966) investigated the effect of conceptual complexity assessed by the sentence completion and impression formation tests on the evaluations of deviant and conforming group members. It was found that concrete individuals rated conforming group members more favourably than deviant group members regardless of the interaction distance between themselves and the deviant or conforming group members. Interaction distance was a measure of some of the aspects of closeness (sex, age, status) and length of interpersonal association between the subject and conforming or deviant group members. More abstract Ss on the other hand were sensitive to both the conforming-deviant dimension and the interaction-distance dimension. The abstract Ss evaluation of both conforming and deviant group-members became more moderate as the interaction-distance increased.

In a study designed to assess the effects of conceptual complexity on arousal and communication acceptance, Corfield (1969) had Ss from the four modal conceptual structure levels (determined by the Interpersonal Topical Inventory, Tuckman, 1966) perform an ambiguous task under neutral or arousing conditions. Ss performance was evaluated by either a high, positively valued authority or a high, somewhat devalued authority source. The effectiveness of these procedures was measured in terms of a change in self-evaluation from pre to post-communication administrations of a self-concept test. Among other results, Corfield found that System 3 individuals changed self-evaluations more than Ss in any other system and that System 1 individuals produced the lowest mean change.

In the research described thus far concrete conceptual structure

has been associated with more attitude change in four studies (Suedfeld, 1964; Suedfeld & Vernon, 1966; Hewitt & Rule, 1968; Crutchfield, 1955) and with less attitude change in three studies (Janicki, 1964; Streufert, 1966; Corfield, 1969). Schroder, Driver and Streufert (1967) explained this structure difference in susceptibility to influence in terms of information saliency.

Research on the effect of information saliency on attitude change has tended to show that explicit messages (high saliency) were more effective than implicit messages (low saliency) in producing change (Hovland, Lumsdaine & Sheffield, 1949; Cooper & Dinerman, 1951; Hadley, 1953; McKeachie, 1954; Thistlethwaite, de Haan & Kamenetzky, 1955; Schwilk, 1956; Fine, 1957; Maier & Maier, 1957). McGuire (1969) suggested that individual difference variables may interact with the explicitness of an influence message. In support of this notion McGuire (1969, p. 209) has cited Marrow and French (1945) and Thistlethwaite and Kamenetzky (1953) who found that the ability of subjects to comprehend the implicit message determined its effectiveness and Cooper and Dinerman (1951) who found subjects of lesser intelligence were more affected by an explicit message.

Schroder, Driver and Streufert (1967) maintained that if conflicting information is made highly salient, a concrete system is under a relatively higher degree of stress than would be an abstract system which has the potential for handling and integrating diverse information. Consequently when highly salient information is presented to a concrete person there is a tendency to adopt the new information in a categorical manner. This would explain the attitude change found in the Suedfeld (1964), Suedfeld and Vernon (1966) and the Hewitt and Rule (1968) studies where the conflicting information was made highly salient

by being presented in a sensory deprivation situation. In the Crutchfield (1955) study, group pressure served the same function. On the other hand, individuals having an abstract conceptual structure are presumed to be more sensitive to information of low salience. Thus in situations where discrepant information about an attitude has low salience, abstract subjects should exhibit more change relative to concrete individuals. In the Janicki (1964) experiment the discrepant information was presented by a single unknown individual in an unstructured situation. This information was presented in an inconspicuous way, producing minimal salience, so that the original attitude still provided a strong anchor for concrete individuals. Abstract individuals, on the other hand, were sensitive to this information, integrated it into the existing structure and thus showed some attitude change. In the Streufert (1966) study changes in situational variables had no effect on the already established attitude of concrete individuals. These changes could be considered of low salience and were thus only utilized by relatively abstract individuals. The evaluation presented in the Corfield (1969) experiment could also be considered to have had low saliency. Harvey et al. (1961) maintained that concrete individuals are susceptible to influence by communications originating from an authority symbolic of power. Communications from such a source are highly salient for concrete individuals. The evaluations in the Corfield experiment originated from an authority, but this authority had no power relationship with concrete individuals. The evaluation would thus have had little or no direct importance for concrete individuals. Again, as in the previous studies, more abstract individuals were more

sensitive to the evaluation because of its low saliency, incorporated it into their existing attitude structure and displayed relatively more attitude change than concrete individuals.

### The Present Study

An adequate test of the Schroder, Driver and Streufert (1967) theory requires that persons varying in conceptual complexity respond to predesigned information which varies in saliency and is presented under the same environmental conditions. In addition, since the hypothesized curvilinear relationship between environmental complexity and behavioural complexity has not been tested in an influence situation it was considered important to determine if conditions of extremely high environmental complexity result in attitude change effects similar to those found under conditions of very low environmental complexity.

In the present study individuals at the extreme ends of the conceptual complexity dimension were subjected to a sensory deprivation\*, a normal control or an overstimulation environment. A high salience or a low salience communication was presented in an effort to change the individuals' attitude toward the equality of women. Since concrete individuals tend to abruptly recategorize conflicting high salience information in an all-or-nothing fashion while abstract individuals tend to

\* A wide variation in terminology has been used to describe conditions of low environmental complexity. These situations have been called "sensory deprivation," "decreased sensory variation," "sensory isolation," "reduced sensory input," "physical isolation," "perceptual isolation," "perceptual deprivation," and "sensory alteration." Since the term sensory deprivation has been used more frequently to describe situations where all forms of sensory input are reduced, as in the present study, that term has been employed to describe the low environmental complexity condition.

integrate conflicting low salience information, it was expected that the high salience communication would produce more attitude change than the low salience communication and that this change would be more evident for concrete than for abstract individuals. Individuals in both the overstimulation and sensory deprivation environments were expected to undergo structural regression which would enhance acceptance of the influence communications. Thus, the overstimulation and sensory deprivation conditions were expected to yield similar and greater amounts of change than the normal control condition.

The hypothesized concrete and abstract individuals greater respective susceptibility to high and low salience information in conjunction with the enhancing effect of structural regression on susceptibility, under extreme environmental conditions resulted in the main prediction of a significant three way interaction. In this interaction concrete individuals were expected to exhibit significant attitude change under the high salience communication, sensory deprivation and under the high salience communication, overstimulation conditions. An equivalent amount of attitude change was expected for abstract individuals under low salience communication, sensory deprivation and low salience communication, overstimulation conditions. Neither abstract nor concrete individuals were expected to show attitude change under the other experimental conditions.

## METHOD

### Overview

In this experiment female subjects selected on the basis of conceptual structure and attitude toward the equality of women were required to spend three hours in one of three environments. After two and one half hours, one of two communications was presented in an attempt to influence the subjects' attitude toward the equality of women. At the end of the experimental period all subjects were administered an attitude toward the equality of women questionnaire, a test of emotional reaction to the experiment, a memory test of the content of the communication and rating scales pertaining to the experiment and the communication.

### Design

There were three independent variables, one variable having three levels and the others having two levels each, comprising a  $3 \times 2 \times 2$  factorial design. The independent variables were (1) sensory deprivation, overstimulation and normal control environments, (2) concrete and abstract conceptual structure and (3) high and low saliency communications. The main dependent measure was a difference score between a pre and post-experimental measurement of attitude toward the equality of women. In addition measures of anxiety, depression, hostility, free recall of the communication and ratings of the experiment and the communication were taken.



## Test Materials

### 1. Interpersonal Topical Inventory (ITI)

The ITI (Tuckman, 1966) is a forced choice instrument designed to assess an individual's characteristic conceptual structure as proposed by Harvey, Hunt and Schroder (1961) and Schroder, Driver and Streufert (1967). On this instrument a subject is asked to choose one item from each of 36 pairs of items that best represents his feeling about or reaction to an interpersonal topic. The topics are: (a) when criticized, (b) when in doubt, (c) when a friend acts differently toward you, (d) belief about people in general, (e) feelings about leaders, and (f) feelings about rules. Responses indicating simple structure suggest a concrete person, dependent on the external environment, intolerant of ambiguity and doubt whereas those indicating complex structure suggest a person with a highly differentiated and inter-related cognitive structure for inter-personal relations. A system score of 1 to 4 is assigned to each protocol with System 1 being concrete and System 4 complex.

The ITI was included in a battery of tests administered to all introductory psychology classes in the fall of 1969. Protocols were first classified to the four modal conceptual systems according to norms provided by Tuckman. On this basis 3.9% of the protocols were classified as System 1, 11.6% as System 2, 28.8% as System 3, 31.8% as System 4 and 23.9% were unclassifiable because they scored equally high at more than one level or were not predominant in any system. This distribution was highly skewed in the direction of abstractness. Since this skewness was contrary to previous findings by Tuckman (1965, 1966a, 1966b, and 1967) and since Tuckman (1965, 1966b and 1967) has previously

established separate norms for each protocol population, a decision was made to establish experimental ITI norms for the University of Alberta population.

ITI norms for the University of Alberta population were established, employing the procedure described by Tuckman (1966), on the responses of 387 first year educational psychology students. These norms were used to reclassify the introductory psychology protocols. The new norms resulted in 20.8% of the protocols being classified as System 1, 10.3% as System 2, 21.0% as System 3, 22.8% as System 4 and 25.7% unclassifiable. The experimental sample was selected from those female protocols reclassified as System 1 or System 4. The reclassified System 1 protocols included all those previously classified as System 1 by the Tuckman norms. In addition 6% of the reclassified System 1 protocols were previously classified as System 2, 25% were previously System 3, 16% were previously System 4 and 37% were previously unclassified by the use of the Tuckman norms. Of the reclassified System 4 protocols, 90% were previously classified as System 4 and 10% were unclassifiable by the Tuckman norms. (See Appendix A for ITI test, scoring and classification procedures.)

## 2. Attitude Questionnaire (AQ)

The AQ, a multiple attitude measuring instrument, was also part of the battery of tests administered to volunteer Ss from introductory psychology classes in the fall of 1969. One scale of the AQ was designed to measure an individual's attitude toward the equality of women. This scale was adapted from the Open Subordination of Women Scale

of Shaw and Wright (1967, p. 458). The adapted scale consisted of eight counterbalanced items to which each individual was asked to express agreement on a five point scale where 1 indicated strong disagreement and 5 indicated strong agreement with the item. The sum of all item scores constituted the protocol's scale score where a high score indicated a negative attitude toward women's equality. The scale scores of the tested female protocols ranged from 11 to 30 with a median score of 19. The equality of women scale of the AQ was used in the present study as a subject selection device and as a pre and post-experimental measure of subjects' attitude toward women's equality. (See Appendix B.)

### 3. Multiple Affect Adjective Check List (MAACL)

The MAACL (Zuckerman & Luben, 1965) consisted of 132 adjectives with affective connotations measuring anxiety, depression and hostility states. The anxiety scale consisted of 21 adjectives, the depression scale, 40 adjectives and the hostility scale, 30 adjectives. The remaining 41 adjectives were buffer items. The MAACL has been used extensively by Zuckerman and his colleagues (Zuckerman, Persky, Link and Basu, 1968; Zuckerman and Haber, 1965; Zuckerman, Levine and Biase, 1964) in sensory deprivation studies to assess Ss' reaction to this condition. The MAACL was used in the present study during post-experimental testing as a buffer test and to provide information on Ss' affective responses to the various experimental conditions.

### 4. Additional Post-Experimental Questionnaires

During the post-experimental testing session all Ss were requested to complete three additional questionnaires, constructed specifically for this study. The first of these was a free recall test on

which S was asked to list as many points as she could remember from the verbal message she had heard. On the second questionnaire S was asked to rate the verbal message on five evaluative dimensions. The dimensions were (a) clarity, (b) informativeness, (c) understandability, (d) interest value and (e) complexity. The third questionnaire was an evaluation on three dimensions, of the entire experiment. S was asked to rate (a) how interesting, (b) how boring and (c) how difficult to complete, she had found the experiment. Appendix D contains copies of the three questionnaires.

#### Communication

Two communications of approximately three minutes duration and varying in saliency were constructed to provide information about the equality of women. The high salience (HS) communication directly advocated women's equality in a number of social and economic areas. The low salience (LS) communication implied the need for women's equality in the same areas but did not directly advocate equality.

The two communications were rated independently by senior psychology students on a five point saliency dimension with 1 indicating low saliency and 5 indicating high saliency. The HS and LS were respectively rated 4.0 and 1.5 yielding a significant difference ( $t = 3.73$ ,  $df = 10$ ,  $P < .01$ ). (See Appendix E for the complete text of the communications.)

#### Subject Selection

Subjects were selected for this experiment from an initial sample of 534 female introductory psychology students who completed the test battery given at the beginning of the 1969 fall session.

Selection for the experiment was based on scores obtained on the ITI and on the equality of women scale of the AQ described above. In order to be selected an individual had to be classified as either System 1 or System 4 on the ITI and to have an attitude scale score equal to or above the median score of 19, reflecting a negative evaluation of women's equality. A total of 114 Ss met these criteria (50 System 1 and 64 System 4). Ninety-seven, 48 System 1 and 49 System 4, of these individuals were randomly selected to participate in this experiment as part of their course requirements in introductory psychology. Of the 97 Ss selected one System 4 S was unable to complete the sensory deprivation condition described below.

#### Procedure

Prior to the beginning of the experiment all Ss were randomly assigned to one of the six environmental and communication conditions. When S arrived at the laboratory she was told that the purpose of the experiment was to determine how different kinds of environments affected a person's ability to remember new information that was introduced into that environment. All Ss were told that they had been randomly assigned to one of the experimental environments which they would be in for approximately a three hour period. They were also told that sometime during their stay in the environment, verbal information would be presented to them by means of a speaker. They were to pay attention to the information while it was being presented because they would be asked questions about it at the end of the experiment.

Subjects were then individually placed in one of the following experimental environments for a period of three hours:

## 1. Sensory Deprivation (SD)

These Ss were confined to a specially designed soundproof room, approximately seven feet by eight feet, which was constantly illuminated at a low level. Visual and auditory monitoring of the Ss was possible by means of a one-way observation window and a microphone amplifier speaker system. The room was equipped with a couch, a chair and a speaker connected to a tape-recorder in an adjoining room from which the appropriate communication was presented. All Ss were fitted with translucent goggles (to prevent patterned vision), cotton gloves and fingertip to elbow cardboard cylinders (to minimize tactile stimulation). This procedure was similar to that employed by Hewitt and Rule (1968) and Suedfeld (1964).

Subjects were told that they had been assigned to a quiet restful environment. They were instructed to lie on the couch wearing the goggles and arm cylinders until the session was terminated by E. They were instructed to move as little as possible, but not to sleep. In addition Ss were cautioned that they would be monitored at all times by E and that if excessive movement or sleep was detected, the experiment would be terminated without credit. If at any point Ss felt unable to continue with the experiment this was to be indicated by voice to E who would immediately terminate the experiment. Only one S requested termination of the experiment and it was not necessary for E to terminate any additional sessions.

## 2. Overstimulation (OS)

The OS experimental environment engaged the Ss in a highly varied mixed-media presentation consisting of films, slides, music and

various tasks both related and unrelated to the other media events.

(See Appendix F for a fuller description of the materials employed.)

A large 12 foot by 14 foot room was used for this environment. The room was equipped with two large projection screens at one end and a table in front of a comfortable chair at the other. Subjects sat behind the table facing the projection screen. A small reading lamp, which provided the only illumination in the room, was located on the table to the right of S. In front of S on the table were a clock, ten manila envelopes containing instruction for the various tasks, a box containing a jig-saw puzzle, a general instruction sheet and a pencil.

Three sound sources were present in the room; a tape-recorder located about eight feet to the left of S from which a wide variety of music was presented, a speaker located under the projection screens which provided a sound source for the films and an additional speaker located about two feet to the right of S through which the influence communication was presented. An automatic 35 mm slide projector and a 16 mm film projector were arranged in an adjoining room to project onto the two screens in the experimental room.

Subjects were told that they had been assigned to work in a highly varied environment which consisted of the presentation of films, slides, music and related tasks. The tasks were designed to both involve S in the media presentation and at the same time distract her attention from the presentation. The tasks ranged from direct questions about the media presentation to the construction of a 1200 piece jig-saw puzzle. Each of the tasks was contained in an envelope and was

to be worked on for a specific time period. Subjects were instructed to keep a record of the exact time each task was begun and ended. As in the SD environment if at any point S felt unable to continue with the experiment, that was to be indicated to E and the experiment would be terminated. No such requests were made.

### 3. Normal Control (NC)

Subjects in this condition were told that they had been assigned to work in a relatively normal environment for the experimental period. These Ss were instructed to go to a library where they could engage in any activity they wished. The NC Ss were instructed to return to the laboratory in two and one half hours with a brief written record of their activity while at the library. All records indicated that Ss had complied with E's request. Ss indicated that they had engaged in the usual student library activities of talking to friends, drinking coffee and occasionally reading class notes or consulting library materials. Upon returning these Ss were seated in the SD room and asked to wait there until E returned for them. The influence communication was then presented through the speaker system in the SD room.

After S had been under the assigned environmental condition for two and one half hours one of the two communications described above was presented. One half hour later S was released and given the equality of women scale of the AQ (the same as previously administered), the free recall questionnaire, the rating scales evaluating the communication and the experiment and the MAACL to complete. All Ss were told that the equality of women scale was given "in order to determine



if a person's attitude has any effect on her ability to remember information," the free recall test "to determine how much of the information a person can remember," the rating scales "to see what your general impressions of the communication and the experiment are," and the MAACL "to determine how different people feel in different kinds of environments."

After the questionnaires were completed S was asked to comment on her impression of the experiment. No S indicated that she felt the experiment was other than presented by E. No indication was given that Ss felt the experiment was an attempt to influence their attitude toward women's equality. E then explained further some of the purposes of the experiment, thanked S for her participation and requested S not to discuss the experiment with anyone in order to prevent contamination of the performance of future subjects.

## RESULTS

Analyses of variance were performed on the data of the present study. In addition, Duncan's (1955) New Multiple Range Test was employed to make specific comparisons among the various groups. (All analyses of variance summaries are contained in Appendices E through K.)

### Attitude Change

The primary dependent variable in this study was attitude toward the equality of women. The unit of measurement was a difference score between the pre and post-experimental administration of the equality of women scale of the AQ described above. The attempted effect of a change toward favoring greater equality of women is represented by a positive difference score. Table 1 presents the mean difference scores for all groups. Appendix G contains the summary of the analysis of variance for the difference scores.

The analysis of variance yielded one significant main effect and one significant interaction. The mean change in attitude was significantly greater under the HS communication condition than under the LS communication condition ( $F = 8.982$ ,  $df = 1/84$ ,  $p < .01$ ). The mean changes for the HS and LS communications were 1.917 and 0.188 respectively. The Environment X Communication interaction was also significant ( $F = 3.678$ ,  $df = 2/84$ ,  $p < .05$ ). Greatest differences in attitude change occurred between the high and low salience conditions in the normal control environment, whereas the least differences in attitude

TABLE 1

Mean Attitude Change

|                 |                          | Overstimulation<br>(OS) | Normal<br>Control<br>(NC) | Sensory<br>Deprivation<br>(SD) |
|-----------------|--------------------------|-------------------------|---------------------------|--------------------------------|
| Abstract<br>(A) | High<br>Salience<br>(HS) | 0.875                   | 2.250                     | 0.875                          |
|                 | Low<br>Salience<br>(LS)  | 1.375                   | -0.875                    | 0.750                          |
| Concrete<br>(C) | High<br>Salience<br>(HS) | 2.625                   | 3.625                     | 1.250                          |
|                 | Low<br>Salience<br>(LS)  | 1.750                   | -1.008                    | -0.875                         |

change between the two communication conditions occurred in the overstimulation and sensory deprivation environments. The mean difference scores for this interaction are presented in Table 2. The same information is presented graphically in Fig. 1.

Although the conceptual Structure X Communication interaction was not significant ( $F = 1.983, d = 1/84$ ) a comparison of the means comprising this interaction yielded significant differences. The means for this interaction are presented in Table 3. The C-HS group exhibited significantly more change than both the C-LS ( $p < .01$ ) and the A-LS ( $p < .05$ ) groups, suggesting that the HS communication was more effective.

TABLE 2

Mean Attitude Change for Environment and Communication Conditions

|                       | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------------|-------------------------|------------------------|-----------------------------|
| High Salience<br>(HS) | 1.750 <sup>ad</sup>     | 2.938 <sup>a</sup>     | 1.063 <sup>ab</sup>         |
| Low Salience<br>(LS)  | 1.563 <sup>ad</sup>     | -0.938 <sup>bc</sup>   | -0.063 <sup>bcd</sup>       |

Note: Cells containing the same superscript are not significantly different from each other at the .05 level by Duncan's New Multiple Range Test.

than the LS communication in producing change in concrete individuals while neither communication was superior in producing change in abstract individuals.

TABLE 3

Mean Attitude Change for Conceptual Structure and Communication Conditions

|                    | Abstract (A) | Concrete (C) |
|--------------------|--------------|--------------|
| High Salience (HS) | 1.333        | 2.500        |
| Low Salience (LS)  | 0.417        | -0.042       |

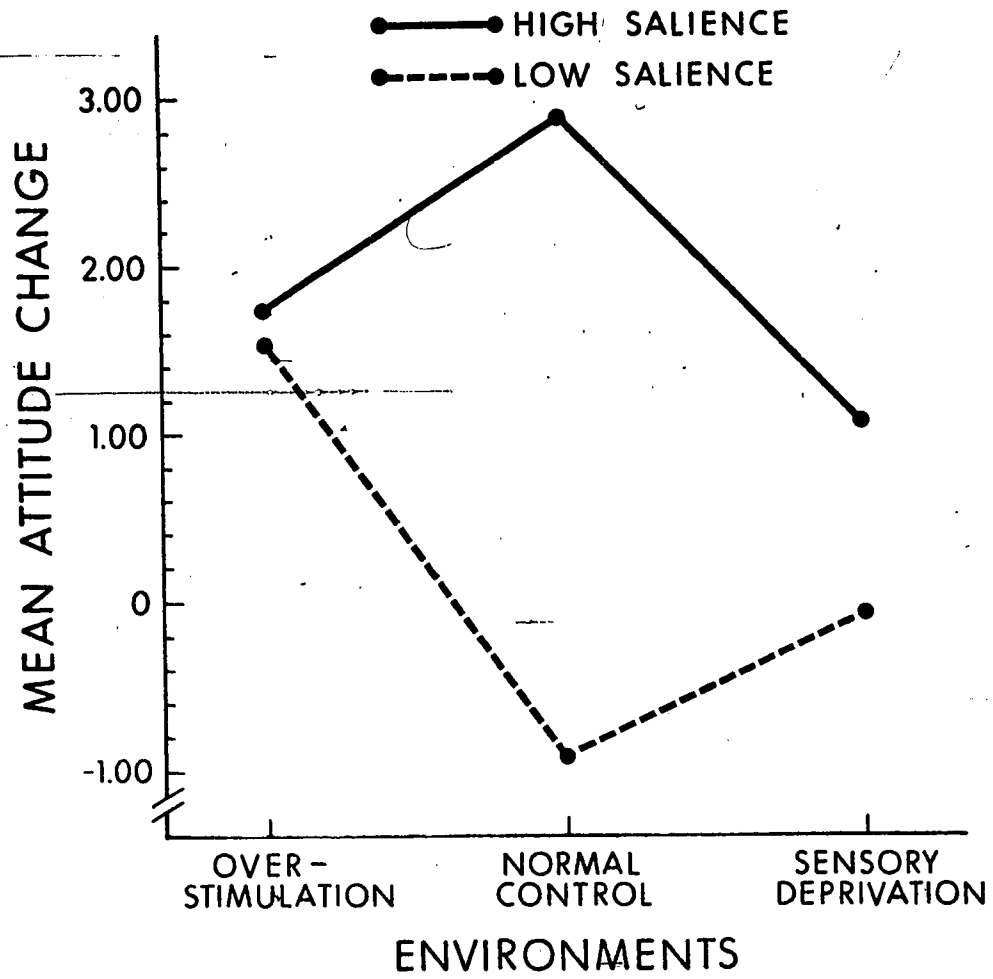


Fig. 1. Mean attitude change for environment and communication conditions.

### Recall of the Communication Content

During the post-experimental testing session each S was asked to recall as many points as possible from the communication she had heard. Each of the communications was divided into six information units. S scored one point for each of the units she was able to correctly remember. S's recall score was the total number of information units correctly remembered.—The mean recall scores for all groups and a summary of the analysis of variance are contained in Appendix H.

The environment treatment effects were significant. A comparison, by means of Duncan's New Multiple Range Test, of the groups comprising the significant environment effect ( $F = 29.959$ ,  $df = 2/84$ ,  $p < .01$ ) showed that the overstimulation group recalled less of the communication than either the normal control or the sensory deprivation groups ( $p < .01$ ). The mean recall for the overstimulation group was 1.000 compared to 2.468 and 2.250 for the normal control and sensory deprivation groups respectively. Abstract individuals recalled more of the communication than concrete individuals ( $F = 5.706$ ,  $df = 1/84$ ,  $p < .01$ ) and the high salience communication was recalled significantly better than the low salience communication ( $F = 61.603$ ,  $df = 1/84$ ,  $p < .01$ ). The mean recall for abstract and concrete individuals was 2.125 and 1.687 respectively while the mean recall of the high salience communication was 2.625 and of the low salience communication 1.187.

The only significant interaction was that of Environment X Communication ( $F = 3.610$ ,  $df = 2/84$ ,  $p < .05$ ). The mean recall scores for this interaction are presented in Table 4. The same information is presented graphically in Fig. 2. The largest differences in recall

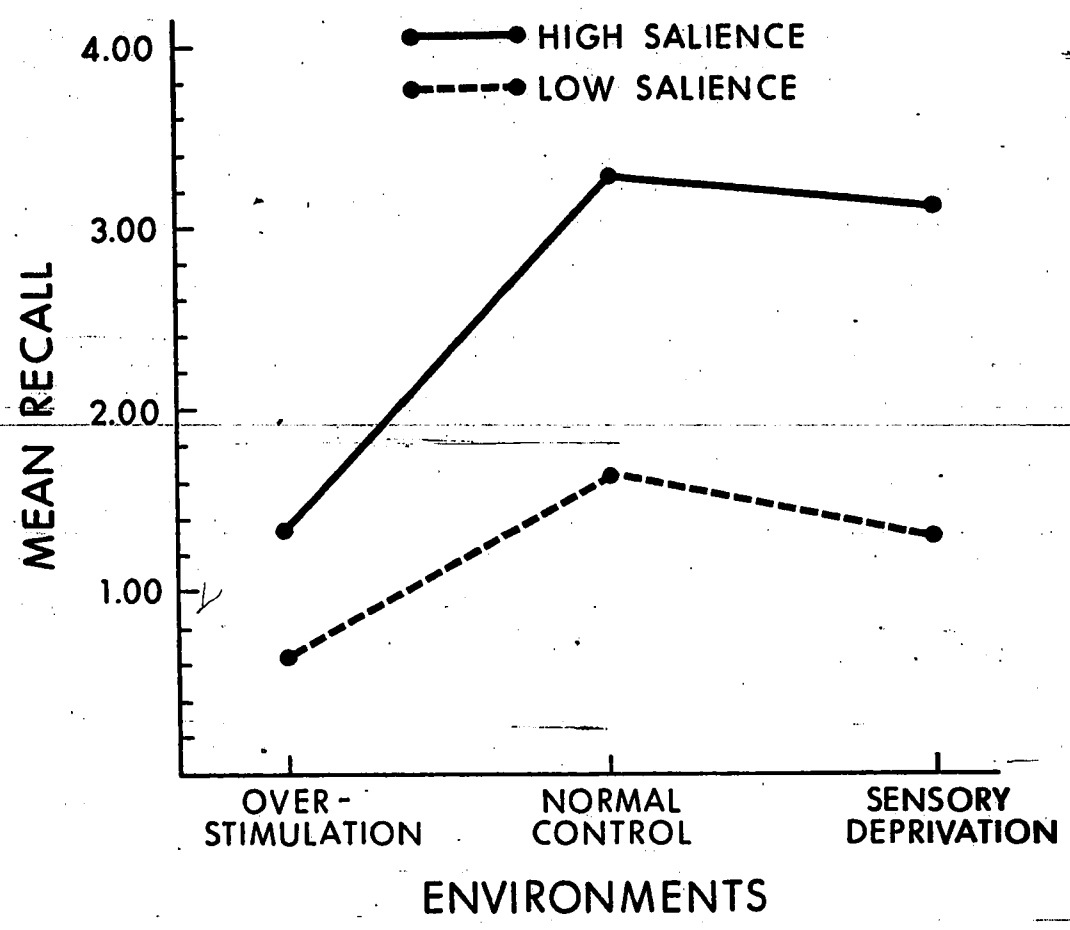


Fig. 2. Mean recall for environment and communication conditions.

occurred between the high and low salience communication conditions in the normal control and sensory deprivation environments whereas the least difference in recall between the two communication conditions occurred in the overstimulation environment.

TABLE 4

Mean Recall for Environment and Communication Conditions

|                       | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------------|-------------------------|------------------------|-----------------------------|
| High<br>Salience (HS) | 1.375 <sup>b</sup>      | 3.313 <sup>a</sup>     | 3.187 <sup>a</sup>          |
| Low<br>Salience (LS)  | 0.625 <sup>c</sup>      | 1.625 <sup>b</sup>     | 1.313 <sup>bc</sup>         |

Note: Cells containing the same superscript are not significantly different from each other at the .05 level by Duncan's New Multiple Range Test.

#### Multiple Affect Adjective Check List (MAACL)

The MAACL provided a measure of three different affective states: anxiety, hostility, and depression. A score for each of the three affective states was found by summing the number of adjectives checked which are keyed + for that scale and the number of adjectives not checked which are keyed 0. This method of scoring is used as a partial control for the influence of a checking response set (Zuckerman & Lubin, 1965, p. 3). The mean anxiety, hostility and depression scores for all groups and the respective analyses of variance are contained in Appendix I.



Independent analyses of variance of the anxiety, hostility and depression scores yielded only a significant environment condition main effect (anxiety— $F = 3.893$ ,  $df = 2/84$ ,  $p < .05$ ; hostility— $F = 9.209$ ,  $df = 2/84$ ,  $p < .01$ ; depression— $F = 4.149$ ,  $df = 2/84$ ,  $p < .05$ ). The mean anxiety, depression and hostility scores for the three environment groups are presented in Table 5.

TABLE 5

## Mean MAACL Scores for the Environment Conditions

|            | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|------------|-------------------------|------------------------|-----------------------------|
| Anxiety    | 9.69                    | 6.69                   | 8.06                        |
| Hostility  | 11.56                   | 8.53                   | 10.69                       |
| Depression | 17.47                   | 15.37                  | 18.94                       |

A comparison of the three environmental groups indicated that the NC group were significantly less anxious ( $p < .01$ ) and significantly less hostile ( $p < .01$ ) than the OS groups. The NC group also showed significantly less depression ( $p < .01$ ) and hostility ( $p < .05$ ) than the SD group.

Post-Experimental Questionnaires

During post-experimental testing all Ss were requested to rate the communication they had received on six evaluative dimensions. An analysis of variance was performed on the responses to each of these dimensions. Appendix J contains summaries of the analyses of variance.

The high salience communication was rated significantly more "clear" ( $F = 7.743$ ,  $df = 1/84$ ,  $p < .01$ ), more "informative" ( $F = 9.315$ ,  $df = 1/84$ ,  $p < .01$ ), easier to "understand" ( $F = 11.2$ ,  $df = 1/84$ ,  $p < .01$ ) and more "simple" ( $F = 13.525$ ,  $df = 1/84$ ,  $p < .01$ ), than the low salience communication. Table 6 presents the mean ratings for these dimensions.

TABLE 6  
Mean Ratings of the Communications

|                   | High Salience | Low Salience |
|-------------------|---------------|--------------|
| Clarity           | 4.209         | 3.646        |
| Informativeness   | 3.417         | 2.875        |
| Understandability | 4.563         | 3.896        |
| Interest Value    | 3.333         | 3.500        |
| Complexity        | 2.146         | 2.813        |

A significant Communication X Environment interaction was also found for the understandability dimension ( $F = 9.395$ ,  $df = 2/84$ ,  $p < .01$ ). The means for this interaction are presented in Table 7. The high salience relative to the low salience communication was rated more difficult to understand in the overstimulation environment and less difficult to understand in the normal control and sensory deprivation environments. Why the high salience communication was rated more

difficult to understand than the low salience communication in the overstimulation environment is unclear. No other effects or interactions were significant.

TABLE 7

Mean Rating of "Understandability" for the Environment and Communication Conditions

|                       | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------------|-------------------------|------------------------|-----------------------------|
| High Salience<br>(HS) | 2.125                   | 1.063                  | 1.125                       |
| Low Salience<br>(LS)  | 1.625                   | 2.000                  | 2.687                       |

Note: Higher scores = more difficult to understand.

Subjects were also requested to evaluate the experiment on three dimensions. Analyses of variance showed a significant environment effect on all three dimensions ("interest"  $F = 4.118$ ,  $df = 2/84$ ,  $p < .05$ ; "boring"  $F = 5.397$ ,  $df = 2/84$ ,  $p = .01$ ; "difficulty of completion"  $F = 17.029$ ,  $df = 2/84$ ,  $p < .01$ ). Table 8 presents the mean ratings for these dimensions. Appendix K contains summaries of the analyses of variance.

The OS environment was rated most "interesting," least "boring" and the most "difficult to complete." The NC environment was rated least "interesting" and the least "difficult to complete," while the SD environment was rated the most "boring." These results provided

verification of the environment manipulation. No other effects or interactions were significant.

TABLE 8

Mean Ratings of the Experiment for Environment Condition

|                             | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------------------|-------------------------|------------------------|-----------------------------|
| Interest                    | 4.194                   | 3.437                  | 3.875                       |
| Boring                      | 1.937                   | 2.250                  | 3.781                       |
| Difficulty of<br>Completion | 3.437                   | 1.781                  | 2.500                       |

## DISCUSSION

The primary purpose of the present study was to test some of the predictions concerning attitude change which were derived from the Harvey, Hunt and Schroder (1961) and Schroder, Driver and Streufert (1967) theory of personality organization. The main prediction of a three way interaction between conceptual structure, communication salience and environmental complexity in determining attitude change received only minimal support from the data of the present study. Support for the interaction effect was provided by a comparison of the groups comprising the non-significant interaction between conceptual structure and communication salience. As expected, concrete individuals who received the high salience communication showed significantly more attitude change than concrete individuals who received the low salience communication. However, the expected reversal of this effect for abstract individuals was not found. No other effect of conceptual structure on attitude change was found in the present study.

The relative failure of conceptual structure to produce significant differential attitude change in the present study was of some surprise in view of the important role it has played in previous studies (Suedfeld, 1964; Janicki, 1964; Streufert, 1966; Suedfeld & Vernon, 1966; Corfield, 1969; Hewitt & Rule, 1968). McGuire (1969, p. 252) has maintained that there is a common, though not quite

universal finding, that individual difference variables predict influ-  
encability more strongly for males than for females (Abelson & Lesser,  
1959; Beloff, 1958; Janis & Field, 1959; King, 1959; Lesser & Abelson,  
1959; Schulman & London, 1963). Hovland and Janis (1959) conjectured  
that in our society the culture imposes rather pronounced and explicit  
conformity demands on females but is unclear and ambivalent with res-  
pect to conformity in males. Thus the individual idiosyncrasies of  
males tend to determine how conforming they will be, while for females  
their individual propensities are largely submerged under general  
culturally imposed conformity demands. McGuire (1969, p. 252) also  
suggested that since the experimental materials are usually made up  
by male researchers they are more suitable for validly measuring male  
subjects' responses. This tendency for individual difference variables  
to be less important in the determination of influencability for fe-  
males than for males may be a primary reason for the lack of effect of  
the cognitive structure variable in the present study. The majority  
of influence studies in which cognitive structure has been of impor-  
tance (Suedfeld, 1964; Janicki, 1964; Suedfeld & Vernon, 1966; Corfield,  
1969; Hewitt & Rule, 1968) have all employed males as subjects.

Another problem is related to the conceptual structure  
measuring instrument. The Interpersonal Topical Inventory (Tuckman,  
1966) was standardized on a male population and the norms employed for  
the selection of female subjects in the present study were developed  
from the responses of a combined sex sample. The ITI in the form  
employed in the present study may not be an adequate device for deter-  
mining the conceptual structure of females. Support for the differen-

tial responses of males and females to the ITI has been found by Rule and Hewitt (1970). These investigators separately factor analyzed the responses of males and females on several cognitive and social attitude scales including the ITI, the F-scale and the Dogmatism scale. For males the ITI was found to load on the same factor as the F and Dogmatism scales as might be expected from the correlations found by Harvey (1967) between a measure of conceptual structure and the F and Dogmatism scales. The same factor was not however present in the responses of females. This evidence has suggested that additional research is necessary to determine the adequacy of the ITI as a measure of conceptual structure in females.

The most significant finding of the present study was the superiority of the high salience communication over the low salience communication in bringing about attitude change. Earlier research has suggested that messages in which a conclusion has been explicitly drawn are more effective than those in which the conclusion has been left for the subject to draw himself. Hovland, Lumsdaine and Sheffield (1949), Cooper and Dinerman (1951), Hadley (1953), McKeachie (1954), Thistlethwaite, de Haan and Kamenetzky (1955), Schwilk (1956), Fine (1957) and Maier and Maier (1957) have reported that messages with explicit conclusions are more effective than ones with implicit conclusions. The present study provided additional support to this finding in that the more effective high salience communication provided more explicit information than did the low salience communication.

McGuire (1968, 1969) proposed that in analyzing the social influence process "the dependent variable of attitude change can be logically analyzed into a series of successive steps (1969, p. 173)."

He suggested that attitude change involved "at least five behavioral

steps, including attention, comprehension, yielding, retention, and action" and that the "receiver must go through each of these steps if a communication is to have an ultimate persuasive impact (1969, p. 173)." Data available on two of the steps, comprehension and yielding, in the present study has substantiated McGuire's proposal. Over all conditions the high salience communication, which resulted in significantly greater attitude change (yielding), was recalled (comprehension) significantly better than the low salience communication. Subjects' ratings of the communications also supported the greater comprehensibility of the high salience communication. The high salience communication was rated significantly more clear, more informative, easier to understand and more simple than the low salience communication.

Some additional support for McGuire's proposal was given by the interaction between environmental complexity and communication salience present in both the attitude change and recall data. In the attitude change data this interaction was produced by the significant difference in change which occurred between the high and low salience communications in the normal control environment combined with no significant differences in change between the two communications in both the overstimulation and sensory deprivation environments. The interaction for the recall data was produced by the significant differences in recall which occurred between the high and low salience communications in both the normal control and sensory deprivation environments combined with no significant difference in recall between the two communications in the overstimulation condition. McGuire's proposal was supported by the greater recall of the high salience over



the low salience communication in the normal control environment in conjunction with a corresponding significantly greater change in attitude in the high salience condition. This same relationship, however, was not present in either the overstimulation or sensory deprivation environments indicating that additional factors mediated change in these two conditions.

A comparison of the recall in overstimulation and normal control environments indicated that, while recall of the high and low salience communications did not differ in the overstimulation environment, the recall of both communications was significantly less than the recall of the high salience communication in the normal control environment. According to McGuire's proposal the corresponding attitude change for both the high and low salience communications in the overstimulation condition should be less than the change found in the high salience-normal control environment condition. However, while the differences in attitude change between the high and low salience communication conditions did not differ in the overstimulation environment, this change was not significantly less than the change evident in the high salience-normal control condition. This finding suggests that the low comprehension of the communications present in the overstimulation condition resulted in a disproportionate amount of attitude change.

Berlyne's (1963) hypothesis regarding the reinforcing properties of arousal reduction may be appropriate to the understanding of the attitude change in the overstimulation condition. Berlyne proposed that both high and low levels of stimulation result in increases in arousal. "When arousal stands above its possible minimum, we assume

that there will be an aversive state and that anything that serves to bring it down toward its possible minimum will have reward value (p. 317).<sup>1</sup> In influence situations, individuals may reduce arousal by a variety of means including compliance, ignoring disquieting information, rationalizing, counterarguing or discrediting the source. The significantly higher levels of anxiety and hostility reported on the MAACL by subjects in the overstimulation condition than reported in the normal control condition is evidence that the overstimulation condition was a high arousal producing situation. The presentation of the communications which were in opposition to the attitude held by subjects may have tended to further increase their arousal level. The most appropriate way to reduce arousal in the overstimulation condition would be to ignore the disquieting information. However, since subjects were instructed to pay attention to this information some other means of arousal reduction was most likely used. Satiation due to the extended high level of information input would have tended to preclude the generation of counterarguments to reduce arousal, so that compliance with the communication would have been the most appropriate strategy. Thus in the overstimulation environment a high level of arousal probably interfered with information intake (comprehension) as evidenced by low recall while reduction of this arousal through compliance with that part of the communications comprehended, enhanced yielding as evidenced by the attitude change scores.

A comparison of the recall in the sensory deprivation and normal control environments found that in both environments the high salience communication was recalled significantly better than the low

saliency communication. Consistent with McGuire's theory, low recall of the low saliency communication resulted in a correspondingly low attitude change in both the sensory deprivation and normal control environments. The greater recall of the high saliency communication was associated with greater attitude change in the normal control environment but, contrary to McGuire's theory, with low attitude change in the sensory deprivation experiment. This pattern suggests that comprehension was a factor influencing change under the low saliency but not under the high saliency communication condition. Berlyne's arousal reduction hypothesis may also account for results found in this condition. Subjects in the sensory deprivation condition also indicated on the MAACL higher levels of anxiety and significantly higher levels of hostility than those indicated by subjects in the normal control condition. According to Berlyne the high arousal present was due to the lack of stimulation present in the sensory deprivation condition and would be reduced by increasing stimulation. One way to increase stimulation would have been to think about the communication and generate counter arguments. This interpretation would account for the high recall of the high saliency communication combined with the low attitude change resulting from that communication in the sensory deprivation condition.

In summary, the present study indicated that the design of an influence communication, in particular its saliency is of importance in eliciting attitude change. The present study also indicated that the complexity of the environment in which an influence attempt is made interacts with the type of communications to produce differential

attitude change. Only limited support for the combined effect of conceptual structure, environmental complexity and communication saliency on attitude change was found. The failure to find support for this interaction effect may be largely due to a differential sex response to the measure of conceptual structure used in the present study. The present study has suggested that additional research is necessary to determine the adequacy of the present measure of conceptual structure for females. It also suggested that the inclusion of sex of subject as a variable in future studies of conceptual structure and attitude change may be profitable.

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## APPENDIX A

INTERPERSONAL-TOPICAL INVENTORY  
(Form A)INSTRUCTIONS

You will be given some situations and topics to which we would like you to respond. The responses are given in pairs. You are to choose one response from each pair. Choose the response that most closely fits your opinion or feeling and indicate your choice by blacking "A" or "B" corresponding to the response chosen. Always choose one member of each pair. Never choose both members of the pair and do not skip over any of the pairs. If you agree with both, choose the one you agree with most strongly. If you do not agree with either, choose the one you find the least disagreeable of the two.

Example:

Here is an example of the way the questions will be asked and the way they should be answered. The manner in which you will indicate your choice between the two given responses is illustrated below:

When I am confused . . .

## Pair No.

---

(i)

| A   | B  |
|---|--|
| I try to find a solution and end the confusion. | I completely ignore the fact. I am confused. |

---

(ii)

| A                                 | B                           |
|-----------------------------------|-----------------------------|
| I break out into a nervous sweat. | I remain calm at all times. |

How to respond:

First: Decide which response you agree with most.

Second: Indicate which response you agree with most by blacking in the identifying letter on the IBM sheet. Thus, if in comparing the first pair of statements, you agree with the statement, "I try to find a solution and end the confusion," more than with the statement, "I completely

ignore the fact that I am confused," you would black in the letter "A" (above the chosen statement). Having chosen one (never both, never neither) statement from the first pair of statements, you would then move on to the second pair. If, in considering the second pair, you find that you agree more with the statement, "I remain calm at all times," (as compared to the statement, "I break out into a nervous sweat") you would black in the letter "B" on the IEM sheet.

On the pages that follow there are 36 different pairs of responses. There are six pairs on a page. You are to select one response from each pair, the one that more accurately shows your opinion or feeling and record your choice by blacking in the letter indicating the statement chosen. Be frank and indicate, in each case, your true feeling or opinion or the reaction which you actually would make in the situation. Do not indicate how you should feel or act; rather, indicate how you do feel and act.

Make sure that you are aware of the situation or topic that each pair of responses refers to. You will find the situation or topic identified at the top of each page. All items on the page refer to the situation or topic appearing at the top of that page.

When you are finished, your paper should contain 36 marks. Check back and make sure that you have made 36 choices, no more no less.

Remember: (1) Respond only once for each pair; that is, choose one member of the pair, never both, never neither. Indicate your choice by blacking in either "A" or "B".

(2) When you are finished you should have made 36 circles.

Work at your own rate of speed but work straight throughout the inventory without stopping. Once you have completed a page do not return to it.

YOU MAY BEGIN

1. Imagine that someone has criticized you. Choose the response from each pair that come closest to your feelings about such criticism. Indicate your choice by blacking in either "A" or "B" on the IBM sheet.

When I am criticized . . .

| Pair No.   |  |
|--|--|
| A  | B  |
| (1)  |  |
| I try to take the criticism, think about it, and value it for what it is worth. Unjustified criticism is as helpful as justified criticism in discovering what other people's standards are.                           | I try to accept the criticism but often find that it is not justified. People are too quick to criticize something because it doesn't fit their standards.   |
| A  | B  |
| (2)  |  |
| I try to determine whether I was right or wrong. I examine my behavior to see if it was abnormal. Criticism usually indicates that I have acted badly and tends to make me aware of my own bad points.                 | It could possibly be that there is some misunderstanding about something I did or said. After we both explain our viewpoints, we can probably reach some sort of compromise.   |
| A  | B  |
| (3)  |  |
| I listen to what the person says and try to accept it. At any rate, I will compare it to my own way of thinking and try to understand what it means.   | I feel that either I'm not right, or the person who is criticizing me is not right. I have a talk with that person to see what's right or wrong.   |
| A  | B  |
| (4)  |  |
| I usually do not take it with good humor. Although, at times, constructive criticism is very good, I don't always think that the criticizer knows what he is talking about.  | At first I feel that it is unfair and that I know what I am doing, but later I realize that the person criticizing me was right and I am thankful for his advice. I realize that he is just trying to better my actions.                             |
| A  | B  |
| (5)  |  |
| I try to ask myself what advantages this viewpoint has over mine. Sometimes both views have their advantages and it is better to combine them. Criticism usually helps me to learn better ways of dealing with others. | I am very thankful. Often I can't see my own errors because I am too engrossed in my work at the time. An outsider can judge and help me correct the errors. Criticism in everyday life usually hurts my feelings, but I know it is for my own good. |
| A  | B  |
| (6)  |  |
| It often has little or no effect on me. I don't mind constructive criticism too much, but I dislike destructive criticism. Destructive criticism should be ignored.  | I try to accept and consider the criticism. Sometimes it has caused me to change myself; at other times I have felt that the criticism didn't really make much sense.  |

2. Imagine that you are in doubt.—Choose the response from each pair that comes closest to your feelings about such doubt. Indicate your choice by blacking either "A" or "B" of IBM sheet.

When I am in doubt . . .

Pair No.

|  |      |  |
|--|------|--|
| A  | (7)  | B  |
| I become uncomfortable. Doubt can cause confusion and make one do a poor job. When one is in doubt he should ask and be sure of himself.                             |      | I find myself wanting to remove the doubt, but this often takes time. I may ask for help or advice if I feel that my question won't bother the other person. |
| A  | (8)  | B  |
| I don't get too upset about it. I don't like to ask someone else unless I have to. It's better to discover the correct answer on your own.                           |      | I usually go to someone who knows the correct answer to my question. Sometimes I go to a book which will set me straight by removing the doubt.              |
| A  | (9)  | B  |
| I first try to reason things out and check over the facts. Often I approach others to get ideas that will provide a solution.  |      | I think things over, ask questions, and see what I can come up with. Often several answers are reasonable and it may be difficult to settle on one.          |
| A  | (10) | B  |
| I realize that I'll have to decide on the correct answer on my own. Others try to be helpful, but often do not give me the right advice. I like to judge for myself. |      | I usually try to find out what others think, especially my friends. They may not know the answer, but they often give me some good ideas.                    |
| A  | (11) | B  |
| I look over the problem and try to see why there is a doubt. I try to figure things out. Sometimes I just have to wait awhile for an answer to come to me.           |      | I try to get some definite information as soon as possible. Doubt can be bad if it lasts too long. It's better to be sure of yourself.                       |
| A  | (12) | B  |
| I consider what is best in the given situation. Although one should not rush himself when in doubt, he should certainly try to discover the right answer.            |      | I act according to the situation. Sometimes, doubt can be more serious than at other times and many of our serious doubts must go unanswered.                |

3. Imagine that a friend has acted differently toward you. Choose the response from each pair that comes closest to your feelings about such an action. Indicate your choice by blacking either "A" or "B" on IBM sheet.

When a friend acts differently towards me . . .

Pair No.

- |   |      |   |
|---|------|---|
| A   | (13) | B   |
| I am not terribly surprised because people can act in many different ways. We are different people and I can't expect to understand all his reasons for acting in different ways. |      | I am usually somewhat surprised but it doesn't bother me very much. I usually act the way I feel towards others. People worry too much about others' actions and reactions.   |
| A   | (14) | B   |
| I find out why. If I have done something wrong I will try to straighten out the situation. If I think he's wrong, I expect him to clear things up.                                |      | I feel that I may have caused him to act in a different way. Of course, he may have other reasons for acting differently which would come out in time.                        |
| A   | (15) | B   |
| I first wonder what the trouble is. I try to look at it from his viewpoint and see if I might be doing something to make him act differently toward me.                           |      | It is probably because he has had a bad day, which would explain this different behavior; in other cases he may just be a changeable kind of person.                          |
| A   | (16) | B   |
| It is probably just because something is bothering him. I might try to cheer him up or to help him out. If these things didn't work I would just wait for him to get over it.     |      | I try to understand what his different actions mean. I can learn more about my friend if I try to figure out why he does things. Sometimes the reasons may not be very clear. |
| A   | (17) | B   |
| There has to be a definite reason. I try to find out this reason, and then act accordingly. If I'm right I'll let him know it. If he's wrong, he should apologize.                |      | I usually let him go his way and I go mine. If a friend wants to act differently that's his business, but it's my business if I don't want to be around when he's that way.   |
| A   | (18) | B   |
| I don't get excited. People change and this may cause differences. It is important to have friends, but you can't expect them to always be the same.                              |      | I like to get things back to normal as soon as possible. It isn't right for friends to have differences between them. Whoever is at fault should straighten himself out.      |

4. Think about the topic of people in general. Choose the response from each pair that comes closest to your thoughts about people. Indicate your choice by blacking either "A" or "B" on IBM sheet.

This I believe about people . . .

Pair No.

|  |      |   |
|--|------|---|
| A  | (19) | B   |
| Whatever differences may exist between persons, they can usually get along if they really want to. Although their ideas may not agree, they probably still have something in common. |      | People can learn from those who have different ideas. Other people usually have some information or have had some experience which is interesting and can add to one's knowledge. |

|  |      |   |
|--|------|---|
| A  | (20) | B   |
| People can act in all sorts of ways. No single way is always best, although at certain times a particular action might be wiser than others. |      | Each person should be able to decide the correct thing for himself. There are always a few choices to be made and the individual himself is in the best position to pick the right one. |

|   |      |   |
|---|------|---|
| A   | (21) | B   |
| Some people think they know what's best for others and try to give advice. These people shouldn't make suggestions unless asked for help. |      | There are certain definite ways in which people should act. Some don't know what the standards are and therefore need to be straightened out. |

|   |      |  |
|---|------|--|
| A   | (22) | B  |
| I can tell if I am going to get along with a person very soon after meeting him. Most people act either one way or another and usually it is not difficult to say what they are like. |      | It's hard for me to say what a person is like until I've known him a long time. People are not easy to understand and often act in unpredictable ways. |

|   |      |   |
|---|------|---|
| A   | (23) | B   |
| People have an outside appearance that usually isn't anything like what can be found on the inside, if you search long and hard enough. |      | Each person is an individual. Although some people have more good or bad points than others, no one has the right to change them. |

|  |      |  |
|--|------|--|
| A  | (24) | B  |
| People can be put into categories on the basis of what they're really like. Knowing the way a person really is helps you to get along with him better. |      | People are unlike one another in many respects. You can get along with people better and better understand them if you are aware of the differences. |

5. Think about the general topic of leaders. Choose the response from each pair that comes closest to your thoughts about leaders. Indicate your choice by blacking either "A" or "B" on IBM sheet.

Leaders . . .

Pair No.

- |   |      |   |
|---|------|---|
| A   | (25) | B   |
| Leaders do not always make the right decisions. In such cases, it is wise for a man to look out for his own welfare.  |      | Leaders are necessary in all cases. If a leader cannot make the right decisions another should be found who can.  |
| A   | (26) | B   |
| Leaders cannot provide all the answers. They are like other people—they have to try to figure out what action is necessary and learn from their mistakes.           |      | Leaders make decisions sometimes without being sure of themselves. We should try to understand this and think of ways to help them out.   |
| A   | (27) | B   |
| I like a leader who is aware of how the group feels about things. Such a leader would not lead any two groups in exactly the same way.                              |      | A person should be able to put his confidence in a leader and feel that the leader can make the right decision in a different situation.  |
| A   | (28) | B   |
| There are times when a leader shouldn't make decisions for those under him. The leader has the power to decide things, but each man has certain rights also.        |      | A leader should give those under him some opportunity to make decisions, when possible. At times the leader is not the best judge of a situation and should be willing to accept what others have to say. |
| A   | (29) | B   |
| Some leaders are good, others are quite poor. Good leaders are those who know what is right for the men under them. These leaders deserve the respect of every man. |      | Leaders cannot be judged easily. Many things go to make up good leadership. Most people fall short in some way or another, but that is to be expected.  |
| A   | (30) | B   |
| Leaders are needed more at certain times than at others. Even though people can work out many of their own problems, a leader can sometimes give valuable advice.   |      | Some people need leaders to make their decisions. I prefer to be an individual and decide for myself, when possible. Most leaders won't let you do this.  |

6. Imagine that someone has found fault with you. Choose the response from each pair that comes closest to your feelings about such a situation. Indicate your choice by blacking either "A" or "B" on IBM sheet.

When other people find fault with me . . .

Pair No.

- |   |      |   |
|---|------|---|
| A   | (31) | B   |
| It means that someone dislikes something I'm doing. People who find fault with others are not always correct. Each person has his own ideas about what's right.   |      | It means that someone has noticed something and feels he must speak out. It may be that we don't agree about a certain thing. Although we both have our own ideas, we can talk about it.      |
| A   | (32) | B   |
| I first wonder if they are serious and why they have found fault with me. I then try to consider what they've said and make changes if it will help.  |      | If enough people point out the same fault, there must be something to it. I try to rid myself of the fault, especially if the criticizers are people "in-the-know."                           |
| A   | (33) | B   |
| They have noticed something about me of which I am not aware. Although criticism may be hard to take, it is often helpful.  |      | They are telling me something they feel is correct. Often they may have a good point which can help me in my own thinking. At least it's worthwhile to consider it.                           |
| A   | (34) | B   |
| I may accept what is said or I may not. It depends upon who is pointing out the fault. Sometimes it is best to just stay out of sight.  |      | I accept what is said if it is worthwhile, but sometimes I don't feel like changing anything. I usually question the person.  |
| A   | (35) | B   |
| I like to find out what it means; since people are different from one another, it could mean almost anything. A few people just like to find fault with others but there's usually something to be learned. |      | There is something to be changed. Either I am doing something wrong or else they don't like what I'm doing. Whoever is at fault should be informed so that the situation can be set straight. |
| A   | (36) | B   |
| I don't mind if their remarks are meant to be helpful, but there are too many people who find fault just to give you a hard time.   |      | It often means that they're trying to be disagreeable. People get this way when they've had a bad day. I try to examine their remarks in terms of what's behind them.                         |

CHECK AND MAKE SURE THAT YOU'VE CHOSEN ONE MEMBER OF EACH PAIR

(A TOTAL OF 36 MARKS)



## Appendix A (continued)

## INTERPERSONAL TOPICAL INVENTORY SCORING KEY

| Pair<br>No. | SYSTEM |   | No. | SYSTEM |   |
|-------------|--------|---|-----|--------|---|
|             | A      | B |     | A      | B |
| 1.          | 3      | 2 | 19. | 3      | 4 |
| 2.          | 1      | 4 | 20. | 4      | 2 |
| 3.          | 3      | 1 | 21. | 2      | 1 |
| 4.          | 2      | 1 | 22. | 1      | 4 |
| 5.          | 4      | 3 | 23. | 3      | 2 |
| 6.          | 2      | 4 | 24. | 1      | 3 |
| 7.          | 1      | 3 | 25. | 2      | 1 |
| 8.          | 2      | 1 | 26. | 4      | 3 |
| 9.          | 3      | 4 | 27. | 3      | 1 |
| 10.         | 2      | 3 | 28. | 2      | 4 |
| 11.         | 4      | 1 | 29. | 1      | 4 |
| 12.         | 2      | 4 | 30. | 3      | 2 |
| 13.         | 4      | 2 | 31. | 2      | 4 |
| 14.         | 1      | 3 | 32. | 3      | 1 |
| 15.         | 3      | 2 | 33. | 3      | 4 |
| 16.         | 3      | 4 | 34. | 1      | 2 |
| 17.         | 1      | 2 | 35. | 4      | 1 |
| 18.         | 4      | 1 | 36. | 2      | 3 |

## Appendix A (continued)

## NORMS FOR INTERPERSONAL TOPICAL INVENTORY

(Obtained from 461 Naval Trainees—Tuckman)

| <u>DECILE</u> | <u>SYSTEMS</u> |      |      |       |
|---------------|----------------|------|------|-------|
|               | I              | II   | III  | IV    |
| 10            | 13 +           | 12 + | 12 + | 13 +  |
| 9             | 12             | 11   | 11   | 12    |
| .....         |                |      |      |       |
| 8             | 11             | 10   | 10   | 11    |
| 7             | 10-11          | 9    | 9-10 | 10-11 |
| 6             | 9-             | 8-   | 8-   | 9-    |

SYSTEM SCORING:

If S scores 9th or 10th Decile in one system and 8th or lower in all others, classify him in his highest system.

- If necessary, Ss who score 8th Decile in one system and 6th or lower in all others may also be classified in highest scoring system.

## Appendix A (continued)

## NORMS FOR INTERPERSONAL TOPICAL INVENTORY

(Obtained from 387 First Year University of  
Alberta Educational Psychology Students)

| <u>DECILE</u> | <u>SYSTEMS</u> |      |      |      |
|---------------|----------------|------|------|------|
|               | I              | II   | III  | IV   |
| 10            | 11 +           | 13 + | 13 + | 15 + |
| 9             | 10             | 12   | 12   | 14   |
| .....         |                |      |      |      |
| 8             | 9              | 11   | 12   | 13   |
| 7             | 8              | 10   | 11   | 12   |
| 6             | 8-             | 9-   | 10-  | 12-  |

SYSTEM SCORING:

If S scores 9th or 10th Decile in one system and 8th or lower in all others, classify him in his highest system.

If necessary, Ss who score 8th Decile in one system and 6th or lower in all others may also be classified in highest scoring system.

## APPENDIX B

Please indicate how strongly you agree or disagree with each statement by blocking in the appropriate number on the IEM answer sheet. Use the rating scale from 1 to 5 according to the following key:

1. Strongly disagree.
2. Disagree.
3. Undecided.
4. Agree.
5. Strongly agree.

## Appendix B (continued)

1. Because of their inborn limitations, women can contribute little to the discoveries and inventions of civilization.
2. Because men are strong and women are weak, it is only right that this be a man's world.
3. Despite the Western ideal of equality of the sexes, there are some jobs—such as that of Prime Minister—which are too important to be held by a woman.
4. Although women hold many important jobs today, a woman's proper place is still in the home.
5. Women are inherently as capable as men of logical, and scientific thinking.
6. Because the man's occupation keeps him away from the family so much, the woman should be the head of the household.
7. Women have greater emotional control than men.
8. Women are more capable than men in financial affairs.

## APPENDIX C

Name \_\_\_\_\_

On the following sheet you will find words which describe different kinds of moods and feelings. Mark an X in the boxes beside the words which describe how you felt during the experiment. Some of the words may sound alike, but we want you to check all the words that describe your feelings. Work rapidly.

## Appendix C (continued)

|    |              |    |              |     |               |
|----|--------------|----|--------------|-----|---------------|
| 1  | active       | 45 | fit          | 89  | peaceful      |
| 2  | adventurous  | 46 | forlorn      | 90  | pleased       |
| 3  | affectionate | 47 | frank        | 91  | pleasant      |
| 4  | afraid       | 48 | free         | 92  | polite        |
| 5  | agitated     | 49 | friendly     | 93  | powerful      |
| 6  | agreeable    | 50 | frightened   | 94  | quiet         |
| 7  | aggressive   | 51 | furios       | 95  | reckless      |
| 8  | alive        | 52 | gay          | 96  | rejected      |
| 9  | alone        | 53 | gentle       | 97  | rough         |
| 10 | amiable      | 54 | glad         | 98  | sad           |
| 11 | amused       | 55 | gloomy       | 99  | safe          |
| 12 | angry        | 56 | good         | 100 | satisfied     |
| 13 | annoyed      | 57 | good-natured | 101 | secure        |
| 14 | awful        | 58 | grim         | 102 | shaky         |
| 15 | bashful      | 59 | happy        | 103 | shy           |
| 16 | bitter       | 60 | healthy      | 104 | soothed       |
| 17 | blue         | 61 | hopeless     | 105 | steady        |
| 18 | bored        | 62 | hostile      | 106 | stubborn      |
| 19 | calm         | 63 | impatient    | 107 | stormy        |
| 20 | cautious     | 64 | incensed     | 108 | strong        |
| 21 | cheerful     | 65 | indignant    | 109 | suffering     |
| 22 | clean        | 66 | inspired     | 110 | sullen        |
| 23 | complaining  | 67 | interested   | 111 | sunk          |
| 24 | contented    | 68 | irritated    | 112 | sympathetic   |
| 25 | contrary     | 69 | jealous      | 113 | tame          |
| 26 | cool         | 70 | joyful       | 114 | tender        |
| 27 | cooperative  | 71 | kindly       | 115 | tense         |
| 28 | critical     | 72 | lonely       | 116 | terrible      |
| 29 | cross        | 73 | lost         | 117 | terrified     |
| 30 | cruel        | 74 | loving       | 118 | thoughtful    |
| 31 | daring       | 75 | low          | 119 | timid         |
| 32 | desperate    | 76 | lucky        | 120 | tormented     |
| 33 | destroyed    | 77 | mad          | 121 | understanding |
| 34 | devoted      | 78 | mean         | 122 | unhappy       |
| 35 | disagreeable | 79 | meek         | 123 | unsociable    |
| 36 | discontented | 80 | merry        | 124 | upset         |
| 37 | discouraged  | 81 | mild         | 125 | vexed         |
| 38 | disgusted    | 82 | miserable    | 126 | warm          |
| 39 | displeased   | 83 | nervous      | 127 | whole         |
| 40 | energetic    | 84 | obliging     | 128 | wild          |
| 41 | enraged      | 85 | offended     | 129 | willful       |
| 42 | enthusiastic | 86 | outraged     | 130 | wilted        |
| 43 | fearful      | 87 | panicky      | 131 | worrying      |
| 44 | fine         | 88 | patient      | 132 | young         |

## APPENDIX D

The message presented to you contained a number of different points.

Please list as many of these points as you can remember.



## Appendix D (continued)

During the experiment, a verbal message was presented. Please rate that message on the following scales by placing an X in the appropriate box:

|                    |                 |                         |
|--------------------|-----------------|-------------------------|
| very clear         | / / / / / / / / | very vague              |
| very informative   | / / / / / / / / | very uninformative      |
| easy to understand | / / / / / / / / | difficult to understand |
| very interesting   | / / / / / / / / | not at all interesting  |
| very complex       | / / / / / / / / | very simple             |

Appendix D (continued)

Please rate this experiment on the following scales by placing an X in the appropriate box:

very interesting /  /  /  /  /  /  not at all interesting

very boring /  /  /  /  /  not at all boring

difficult to complete /  /  /  /  /  not at all difficult to complete

**APPENDIX E****High Salience Communication**

Anthropological evidence indicates that the status of men and women in various parts of the world is a matter of extraordinary variety. In some societies men do the hunting and trading while women do the cooking and home making. But in others women do the manufacturing and trading while the men stay around the house busying themselves with simple art work and music. There are societies in which men do the fighting, while women practice a domestic style of life. But there are others in which women and men enjoy equally the skills and dangers of battle. And there are societies in which the task of raising the babies in the household is almost exclusively the man's field of work. Basically this means that women are not inherently inferior in or incapable of performing any role in a society. In our society women have been long considered to have inferior mathematical ability. Educational research has shown this to be totally without foundation. In fact it has been found that women are more accurate, more careful and have more imagination than men in this area. In our society where computer technology and its mathematical foundation are ever increasing in importance women should play an equal role with men in society's advancement. This can only be accomplished when our society adopts the philosophy that the productive ability of an individual and not her sex should be the major factors in determining employment opportunities and pay rates. Since men and women have an equal potential for any occupation they should

**Appendix E (continued)**

receive an equal opportunity to engage in that occupation and receive equal pay for equal productivity.

Appendix E (continued)

## Low Salience Communication

As long as mothers continue to assume greater responsibility than fathers for the care of young children the patterns of their lives are bound to differ. But they do not need to differ as radically as they do now. If society is to reap the full harvest of human potentialities, if women are to enjoy the full play of their capacities we need less differentiation in the occupations of the sexes and greater opportunities for women to combine familial and occupational roles. Some husbands and wives may choose to share equally economic and domestic responsibilities. Other women will find fulfilment in domesticity and volunteer work. There will be women who forego marriage and motherhood and dedicate themselves to a profession. We require a climate of opinion that is tolerant of some diversity and permits a wide range of cultural alternatives. Unfortunately the homemaker and career woman are placed on a see-saw so that praise of one implies degradation of the other. However we are living in a time when the great variety of personalities and circumstances cannot all be forced into a uniform mold. An argument should be made for a greater similarity in the social roles of the sexes in the face of a frequently expressed contrary view. It is popular today to claim that the path to equality of the sexes does not lie in sameness but in the cultivation of unique and complementary qualities. According to this view women must cease imitating men and competing with them and must proudly

## Appendix E (continued)

cultivate their uniquely feminine gifts. Indeed they are urged to redeem our aggressive, overcompetitive and conflict ridden society through the exercise of distinctly feminine qualities. The only way this seems possible is through engaging in these anti-feminine behaviors in order to get to a position of leadership. The emphasis should thus not be placed on the development of a distinct feminine role but on developing a more humane society to all mankind.

U

## APPENDIX F

## Overstimulation Environment

Immediately following the presentation of general instructions to S a tape containing three hours of recorded music was started. The tape contained a wide variety of music, ranging from contemporary "hit parade" to well known "classical" selections. The music was presented at randomly varying volume levels for the entire three hour experimental period. Ten minutes after the beginning of the music presentation, the first of 240 35 mm slides\* was projected onto one of the projection screens before S. Each slide was automatically presented for 15 seconds. The material on the slides included simple stimulus figures, people, animals, landscapes, the University of Alberta campus and Expo '70. The slide presentation was continuous throughout the remainder of the experimental period with each slide being shown three times. Ten minutes after the beginning of the slide presentation the first of nine films was presented on the second screen in front of S. The films were shown consecutively with approximately five minutes between each during which E rewound the film just shown and prepared the next film for presentation. The films were

\*Note: Slides used in the present study were provided by A. Chernick, Assistant Supervisor, Photo Services, University of Alberta, P. de Groot, Department of Psychology, University of Alberta, and the author. Films numbered 1 through 9 were provided by the National Film Board of Canada. A brief description of each may be found in the NFB 1969 film catalogue, Canadian edition. Film numbered 9 was obtained from the Department of Extension, University of Alberta.

presented in the following order:

| <u>Title</u>           | <u>Length (min.)</u> |
|------------------------|----------------------|
| 1. Pas de Deux         | 13                   |
| 2. Op Hop              | 4                    |
| 3. Test 0558           | 5                    |
| 4. Very Nice Very Nice | 7                    |
| 5. Ride for Your Life  | 10                   |
| 6. It's a Crime        | 13                   |
| 7. What on Earth       | 10                   |
| 8. Around Perception   | 16                   |
| 9. Mountain Man        | 23                   |

Ten minutes after the beginning of the first film S began the tasks presented on the following pages.



## Appendix F (continued)

Name \_\_\_\_\_

Please begin Task #1 thirty minutes after the beginning of the experiment.

| <u>TASK</u> | <u>TIME ALLOTTED</u> | <u>TIME BEGAN</u> | <u>TIME FINISHED</u> |
|-------------|----------------------|-------------------|----------------------|
| 1           | 10 min.              | _____             | _____                |
| 2           | 10 min.              | _____             | _____                |
| 3           | 30 min.              | _____             | _____                |
| 4           | 15 min.              | _____             | _____                |
| 5           | 30 min.              | _____             | _____                |
| 6           | 15 min.              | _____             | _____                |
| 7           | 20 min.              | _____             | _____                |
| 8           | 10 min.              | _____             | _____                |
| 9           | 5 min.               | _____             | _____                |
| 10          | 5 min.               | _____             | _____                |

**Appendix F (continued)****TASK # 1**

You have been presented with a number of slides on one of the screens in front of you.

How many slides would you estimate have been presented? \_\_\_\_\_

How many of the slides were identical? \_\_\_\_\_

The slides you have seen may be categorized into different groups (scenery, men, women, etc.). In the space below list the different categories appropriate to the slides you have seen and estimate how many there have been in each category. List as many categories as you think appropriate.

**Appendix F (continued)****TASK # 2**

A number of musical compositions have been and are being played to you. In the space below list as many of the selections as you can remember in the approximate order that you heard them. Beside the name of each selection please provide the name of the group or main artist performing the selection.

## Appendix F (continued)

TASK # 3

FILL IN THE NUMBER THAT SHOULD FOLLOW NEXT IN EACH SEQUENCE IN THE  
BLANK SPACE.

|     |    |    |    |    |    |     |     |       |
|-----|----|----|----|----|----|-----|-----|-------|
| 1.  | 1  | 2  | 3  | 4  | 5  | 6   | 7   | _____ |
| 2.  | 1  | 3  | 5  | 7  | 9  | 11  | 13  | _____ |
| 3.  | 1  | 8  | 2  | 6  | 3  | 4   | 4   | _____ |
| 4.  | 15 | 16 | 14 | 17 | 13 | 18  | 12  | _____ |
| 5.  | 1  | 2  | 4  | 7  | 11 | 16  | 22  | _____ |
| 6.  | 1  | 2  | 3  | 4  | 8  | 12  | 8   | _____ |
| 7.  | 2  | 48 | 4  | 24 | 8  | 12  | 16  | _____ |
| 8.  | 64 | 3  | 32 | 6  | 16 | 12  | 8   | _____ |
| 9.  | 1  | 12 | 6  | 8  | 11 | -4  | 16  | _____ |
| 10. | 1  | 1  | 2  | 6  | 24 | 120 | 720 | _____ |
| 11. | 81 | 49 | 25 | 9  | 9  | 7   | 5   | _____ |
| 12. | 12 | 23 | 14 | 27 | 17 | 33  | 21  | _____ |
| 13. | 54 | 28 | 18 | 10 | 6  | 4   | 2   | _____ |
| 14. | 1  | 3  | 2  | 9  | 4  | 27  | 8   | _____ |
| 15. | 2  | 3  | 2  | 2  | 2  | 3   | 5   | _____ |

NOTE: THERE IS A CORRECT ANSWER FOR EACH OF THESE SEQUENCES.

## Appendix F (continued)

TASK # 4

In the space below please describe in as much detail as possible one  
of the films you have been shown

**Appendix F (continued)****TASK # 5**

Please put the enclosed puzzle together. If you do not finish in the time assigned for this task you may return to finish it when you have time between other tasks.

Appendix F (continued)

TASK # 6

From the slides you have been shown please pick three which you found interesting. In the space below please describe each one in as much detail as possible.

## Appendix F (continued)

TASK # 7\*

Put the 4 enclosed blocks together to form 1 rectangular box so that each of the 4 colors represented is visible on each of the 4 long sides of the box.

\*Note: This task appears under the trade name of "Instant Insanity."



**Appendix F (continued)****TASK # 8**

Please go back and complete any of the tasks you did not have time to finish. Please list below those tasks which you have returned to complete.

## Appendix F (continued)

TASK # 9

You have been presented with a number of slides on one of the screens in front of you.

How many slides would you estimate have been presented? \_\_\_\_\_

How many of the slides were identical? \_\_\_\_\_

The slides you have seen may be categorized into different groups (scenery, men, women, etc.). In the space below list the different categories appropriate to the slides you have seen and estimate how many there have been in each category. List as many categories as you think appropriate.

## Appendix F (continued)

TASK # 10

A number of musical compositions have been and are being played to you. In the space below list as many of the selections as you can remember in the approximate order that you heard them. Beside the name of each selection please provide the name of the group or main artist performing the selection.

## APPENDIX G

## Summary of the Analysis of Variance for Attitude Change

| Source of Variation | Sum of Squares | df | Mean Square | F     | P    |
|---------------------|----------------|----|-------------|-------|------|
| A: Environment      | 21.520         | 2  | 10.760      | 1.347 |      |
| B: Structure        | 3.010          | 1  | 3.010       | 0.377 |      |
| C: Communication    | 71.760         | 1  | 71.760      | 8.981 | <.01 |
| A X B               | 12.270         | 2  | 6.135       | 0.767 |      |
| A X C               | 58.770         | 2  | 29.385      | 3.677 | <.05 |
| B X C               | 15.843         | 1  | 15.843      | 1.983 |      |
| A X B X C           | 0.437          | 2  | 0.218       | 0.027 |      |
| Error               | 671.125        | 84 | 7.989       |       |      |

## APPENDIX H

TABLE 1

Mean Recall for all Experimental Groups

|                 |                          | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------|--------------------------|-------------------------|------------------------|-----------------------------|
| Abstract<br>(A) | High<br>Salience<br>(HS) | 1.500                   | 3.625                  | 3.125                       |
|                 | Low<br>Salience<br>(LS)  | 0.750                   | 2.250                  | 1.500                       |
| Concrete<br>(C) | High<br>Salience<br>(HS) | 1.250                   | 3.000                  | 3.250                       |
|                 | Low<br>Salience<br>(LS)  | 0.500                   | 1.000                  | 1.125                       |

TABLE 2

Summary of the Analysis of Variance for Recall

| Source of Variation | Sum of Squares | df | Mean Square | F      | p     |
|---------------------|----------------|----|-------------|--------|-------|
| A: Environment      | 40.187         | 2  | 20.093      | 24.959 | < .01 |
| B: Structure        | 4.593          | 1  | 4.593       | 5.706  | < .05 |
| C: Communication    | 49.593         | 1  | 49.593      | 61.603 | < .01 |
| A X B               | 3.0625         | 2  | 1.531       | 7.902  |       |
| A X C               | 5.813          | 2  | 2.906       | 3.609  | < .05 |
| B X C               | 0.843          | 1  | 0.843       | 1.048  |       |
| A X B X C           | 0.437          | 2  | 0.219       | 0.271  |       |
| Error               | 67.625         | 84 | 0.805       |        |       |

## APPENDIX I

TABLE 1

Mean MAACL Anxiety Scores for All Experimental Groups

|                 |                          | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------|--------------------------|-------------------------|------------------------|-----------------------------|
| Abstract<br>(A) | High<br>Saliency<br>(HS) | 10.63                   | 8.13                   | 9.37                        |
|                 | Low<br>Saliency<br>(LS)  | 8.37                    | 6.00                   | 7.87                        |
| Concrete<br>(C) | High<br>Saliency<br>(HS) | 8.87                    | 8.37                   | 8.75                        |
|                 | Low<br>Saliency<br>(LS)  | 10.87                   | 7.37                   | 8.25                        |

TABLE 2

Summary of the Analysis of Variance for Anxiety

| Source of Variation | Sum of Squares | df | Mean Square | F     | p     |
|---------------------|----------------|----|-------------|-------|-------|
| A: Environment      | 78.770         | 2  | 39.385      | 3.893 | < .05 |
| B: Structure        | 3.010          | 1  | 3.010       | 0.297 |       |
| C: Communication    | 19.260         | 1  | 19.260      | 1.903 |       |
| A X B               | 3.520          | 2  | 1.760       | 0.173 |       |
| A X C               | 8.395          | 2  | 4.197       | 0.415 |       |
| B X C               | 27.093         | 1  | 27.093      | 2.677 |       |
| A X B X C           | 13.563         | 2  | 6.781       | 0.670 |       |
| Error               | 849.875        | 84 | 10.117      |       |       |

## Appendix I (continued)

TABLE 3  
Mean-MAACL Hostility Scores for All Experimental Groups

|                 |                          | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------|--------------------------|-------------------------|------------------------|-----------------------------|
| Abstract<br>(A) | High<br>Salience<br>(HS) | 10.37                   | 9.50                   | 11.37                       |
|                 | Low<br>Salience<br>(LS)  | 11.50                   | 7.50                   | 9.75                        |
| Concrete<br>(C) | High<br>Salience<br>(HS) | 12.37                   | 8.87                   | 11.50                       |
|                 | Low<br>Salience<br>(LS)  | 12.00                   | 8.25                   | 10.13                       |

TABLE 4  
Summary of the Analysis of Variance for Hostility

| Source of Variation | Sum of Squares | df | Mean Square | F     | p     |
|---------------------|----------------|----|-------------|-------|-------|
| A: Environment      | 155.770        | 2  | 77.885      | 9.209 | < .01 |
| B: Structure        | 6.510          | 1  | 6.510       | 0.769 |       |
| C: Communication    | 15.843         | 1  | 15.843      | 1.873 |       |
| A X B               | 6.520          | 2  | 3.260       | 0.385 |       |
| A X C               | 17.063         | 2  | 8.531       | 1.009 |       |
| B X C               | 0.010          | 1  | 0.010       | 0.001 |       |
| A X B X C           | 8.395          | 2  | 4.197       | 0.496 |       |
| Error               | 710.375        | 84 | 8.457       |       |       |

## Appendix I (continued)

TABLE 5  
Mean MAACL Depression Scores

|                 |                          | Overstimulation<br>(OS) | Normal Control<br>(NC) | Sensory Deprivation<br>(SD) |
|-----------------|--------------------------|-------------------------|------------------------|-----------------------------|
| Abstract<br>(A) | High<br>Salience<br>(HS) | 16.50                   | 16.75                  | 20.63                       |
|                 | Low<br>Salience<br>(LS)  | 17.25                   | 12.13                  | 18.50                       |
| Concrete<br>(C) | High<br>Salience<br>(HS) | 17.88                   | 16.25                  | 19.50                       |
|                 | Low<br>Salience<br>(LS)  | 18.25                   | 16.38                  | 17.13                       |

TABLE 6  
Summary of the Analysis of Variance for Depression

| Source of Variation | Sum of Squares | df | Mean Square | F     | p    |
|---------------------|----------------|----|-------------|-------|------|
| A: Environment      | 205.145        | 2  | 102.573     | 4.149 | <.05 |
| B: Structure        | 8.760          | 1  | 8.760       | 0.354 |      |
| C: Communication    | 41.343         | 1  | 41.343      | 1.673 |      |
| A X B               | 43.145         | 2  | 21.573      | 0.873 |      |
| A X C               | 42.187         | 2  | 21.093      | 0.853 |      |
| B X C               | 11.343         | 1  | 11.343      | 0.459 |      |
| A X B X C           | 34.187         | 2  | 17.093      | 0.691 |      |
| Error               | 2076.375       | 84 | 24.719      |       |      |



## APPENDIX J

## Summaries of the Analyses of Variance on the Ratings of the Communication

TABLE 1  
Communication (Clear-Vague)

| Source of Variation | Sum of Squares | df | Mean Square | F     | p     |
|---------------------|----------------|----|-------------|-------|-------|
| A: Environment      | 4.083          | 2  | 2.041       | 2.081 |       |
| B: Structure        | 0.843          | 1  | 0.843       | 0.860 |       |
| C: Communication    | 7.593          | 1  | 7.593       | 7.743 | < .01 |
| A X B               | 4.087          | 2  | 2.039       | 2.079 |       |
| A X C               | 4.750          | 2  | 2.375       | 2.421 | < .10 |
| B X C               | 0.510          | 1  | 0.510       | 0.520 |       |
| A X B X C           | 0.333          | 2  | 0.167       | 0.169 |       |
| Error               | 82.375         | 84 | 0.980       |       |       |

TABLE 2  
Communication (Informative-Uninformative)

| Source of Variation | Sum of Squares | df | Mean Square | F     | p     |
|---------------------|----------------|----|-------------|-------|-------|
| A: Environment      | 1.583          | 2  | 0.791       | 1.047 |       |
| B: Structure        | 0.375          | 1  | 0.375       | 0.496 |       |
| C: Communication    | 7.041          | 1  | 7.041       | 9.315 | < .01 |
| A X B               | 2.250          | 2  | 1.125       | 1.488 |       |
| A X C               | 1.083          | 2  | 0.541       | 0.717 |       |
| B X C               | 1.041          | 1  | 1.041       | 1.377 |       |
| A X B X C           | 1.083          | 2  | 0.541       | 0.717 |       |
| Error               | 63.500         | 84 | 0.755       |       |       |

## Appendix J (continued)

TABLE 3  
Communication (Ease of Understanding)

| Source of Variation | Sum of Squares | df | Mean Square | F      | p     |
|---------------------|----------------|----|-------------|--------|-------|
| A: Environment      | 2.770          | 2  | 1.385       | 1.455  |       |
| B: Structure        | 2.041          | 1  | 2.041       | 2.143  |       |
| C: Communication    | 10.667         | 1  | 10.667      | 11.200 | < .01 |
| A X B               | 4.395          | 2  | 2.197       | 2.307  |       |
| A X C               | 17.895         | 2  | 8.947       | 9.395  | < .01 |
| B X C               | 0.167          | 1  | 0.167       | 0.175  |       |
| A X B X C           | 1.020          | 2  | 0.510       | 0.535  |       |
| Error               | 80.000         | 84 | 0.958       |        |       |

TABLE 4  
Communication (Interesting)

| Source of Variation | Sum of Squares | df | Mean Square | F     | p |
|---------------------|----------------|----|-------------|-------|---|
| A: Environment      | 1.520          | 2  | 0.760       | 0.475 |   |
| B: Structure        | 0.667          | 1  | 0.667       | 0.855 |   |
| C: Communication    | 0.667          | 1  | 0.667       | 0.855 |   |
| A X B               | 2.020          | 2  | 0.010       | 1.295 |   |
| A X C               | 0.895          | 2  | 0.447       | 0.574 |   |
| B X C               | 0.167          | 1  | 0.167       | 0.213 |   |
| A X B X C           | 1.895          | 2  | 0.947       | 1.215 |   |
| Error               | 65.500         | 84 | 0.779       |       |   |

## Appendix J (continued)

TABLE 5

## Communication (Complex-Simple)

| Source of Variation | Sum of Squares | df | Mean Square | F      | p     |
|---------------------|----------------|----|-------------|--------|-------|
| A: Environment      | 1.020          | 2  | 0.510       | 0.647  |       |
| B: Structure        | 0.041          | 1  | 0.041       | 0.053  |       |
| C: Communication    | 10.667         | 1  | 10.667      | 13.525 | < .01 |
| A X B               | 0.145          | 2  | 0.073       | 0.092  |       |
| A X C               | 4.645          | 2  | 2.323       | 2.945  |       |
| B X C               | 1.500          | 1  | 1.500       | 1.901  |       |
| A X B X C           | 1.687          | 2  | 0.843       | 1.069  |       |
| Error               | 66.250         | 84 | 0.789       |        |       |

## APPENDIX K

## Summaries of the Analyses of Variance on the Ratings of the Experiment

TABLE 1  
Experiment (Interesting)

| Source of Variation | Sum of Squares | df | Mean Square | F     | p     |
|---------------------|----------------|----|-------------|-------|-------|
| A: Environment      | 7.145          | 2  | 3.573       | 4.118 | < .05 |
| B: Structure        | 1.760          | 1  | 1.706       | 2.029 |       |
| C: Communication    | 0.010          | 1  | 0.010       | 0.012 |       |
| A X B               | 0.145          | 2  | 0.073       | 0.084 |       |
| A X C               | 0.020          | 2  | 0.010       | 0.012 |       |
| B X C               | 0.843          | 1  | 0.843       | 0.973 |       |
| A X B X C           | 0.437          | 2  | 0.218       | 0.252 |       |
| Error               | 72.875         | 84 | 0.867       |       |       |

TABLE 2  
Experiment (Boring)

| Source of Variation | Sum of Squares | df | Mean Square | F     | p     |
|---------------------|----------------|----|-------------|-------|-------|
| A: Environment      | 11.645         | 2  | 5.823       | 5.397 | < .01 |
| B: Structure        | 0.260          | 1  | 0.260       | 0.241 |       |
| C: Communication    | 1.760          | 1  | 1.760       | 1.631 |       |
| A X B               | 0.020          | 2  | 0.010       | 0.009 |       |
| A X C               | 0.145          | 2  | 0.073       | 0.067 |       |
| B X C               | 0.843          | 1  | 0.843       | 0.782 |       |
| A X B X C           | 1.687          | 2  | 0.843       | 0.782 |       |
| Error               | 90.625         | 84 | 1.079       |       |       |

## Appendix K (continued)

TABLE 3  
Experiment (Difficulty)

| Source of Variation | Sum of Squares | df | Mean Square | F      | p    |
|---------------------|----------------|----|-------------|--------|------|
| A: Environment      | 44.145         | 2  | 22.073      | 17.029 | <.01 |
| B: Structure        | 0.260          | 1  | 0.260       | 0.200  |      |
| C: Communication    | 0.260          | 1  | 0.260       | 0.200  |      |
| A X B               | 2.895          | 2  | 1.447       | 1.117  |      |
| A X C               | 0.520          | 2  | 0.260       | 0.200  |      |
| B X C               | 0.093          | 1  | 0.093       | 0.072  |      |
| A X B X C           | 0.437          | 2  | 0.218       | 0.168  |      |
| Error               | 108.875        | 84 | 1.296       |        |      |