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Effects of Examiners and Anxiety on Three Complex Learning Tasks

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Effects Of Examiners And Anxiety On Three Complex Learning Tasks.

by

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Life

Anthony Firetto was born May 14, 1935, in Guelph, Ontario, Canada. After graduation from St. Jerome's High School in Kitchener, Ontario, he entered the Congregation of the Resurrection in July, 1954. In June of 1958, he received a Bachelor of Arts degree in Honors Philosophy from the University of Western Ontario. After the completion of theological studies at St. John Cantius Seminary, St. Louis, Missouri, he was ordained to the priesthood on June 3, 1961. In June of 1962, he received a Master of Arts degree in psychology from St. Louis University. The following year, he taught at St. Jerome's High School in Kitchener. In September of 1963, he was accepted in the graduate school of Loyola University, to pursue the Ph.D in clinical psychology. During his time at Loyola, he completed a year internship at the Illinois State Psychiatric Institute, worked at the Loyola Guidance Center and taught undergraduate psychology courses.

Chapter 1

Introduction

There has been a considerable amount of recent interest and research by psychologists on the characteristics of the psychological examiner and experimenter (Masling, 1960; Masling, 1965; McGuigan, 1963; Rosenthal, 1964a, 1964b; Rosenthal, 1967). In a pioneering series of experiments, Rosenthal (1964a) has demonstrated striking effects of experimenter bias on the results of "laboratory" studies with both human and animal subjects. Examiner characteristics, such as age or sex, have been investigated in terms of their effect on subject's responses on projective tests (Masling, 1960) as well as on intelligence tests (Cieutat, 1967). Rosenthal (1963) has even alluded to the possibility that the religion of the examiner may even be a critical variable. In view of the fact that there are increasing numbers of clergymen pursuing advanced degrees in psychology (Hiltner, 1966; Seeman, 1961; Webb, 1962), the experimenter-clergyman variable would seem to warrant increased consideration. To date, very little has been published on the experiments and testing. One study (Walker & Firetto, 1965) found that subjects reacted

with significantly more anxiety and fewer "lie" responses when tested by a clergyman than by a layman. Using the same design, another study (Walker, Davis & Firetto, 1968) reported that the layman-priest variables were not relevant, but that "true-role" and "simulated-role" did give significant performance differences for males and females on the MAS and L scales of the Taylor Manifest Anxiety Scale (Taylor, 1953).

Since the investigation of experimenter effects is still very much in its infancy, we must, as McGuigan (1963) has observed, "...accumulate knowledge in a variety of experimental situations about the effects of Es on the Ss" (p.421). Therefore, it is necessary to select representative kinds of psychological studies and designs in which the experimenter effects can be manipulated. This is the general intent of this investigation, which will specifically treat the layman-clergyman variable. At the same time, it will attempt to analyze dimensions of the "true-role" and "simulated-role" of the examiner.

This study proposes to examine the relationship between generalized drive (D) as measured by the

Taylor Manifest Anxiety Scale (Taylor, 1953), which will be designated as the MAS, and performance on a concept learning task, as a function of manipulating experimenter roles. The assumption made here is that on a complex task, there will be a decrement in performance as a function of generalized drive and situations geared to induce anxiety or to activate the generalized drive present in the subjects. Kimble, (1961, p.48) has observed that the typical finding in complex learning tasks is that high anxious subjects perform in an inferior manner. In regard to the situational factors mentioned, it is proposed by this study that high school freshmen, of Catholic background, in a Catholic high school will be operating under a higher drive level (whether this be seen as anxiety or motivation) when responding to a priest than when responding to a layman on a learning task. Secondly, it is proposed that examiners in simulated roles will generate a higher degree of anxiety in subjects, because of the formers' lack of familiarity and comfort with an assumed role.

In order to test these general propositions, the learning tasks will employ a measure of intentional

concept learning, a recall of incidental words, and the forming of incidental concepts from these words. The following specific hypotheses are predicated of these tasks, which are assumed to be examples of complex learning situations:

1) There will be a significant main effect for anxiety on all three learning tasks regardless of other treatment conditions.

2) The effects of generalized drive (MAS scores) will be accentuated by the treatment conditions (e.g. appearance of priest vs. appearance of layman, real vs. true role). Consequently, it is predicted that all subjects will show less incidental learning and less incidental concept formation when the examiner is seen as a priest than when seen as a layman, regardless of the examiners' real or simulated roles. The subjects' drive level should increase, under the assumption that they would be more motivated to perform well for the status figure "priest." This is in line with the study done by Birney (1958) which reported that the need for achievement by subjects was stronger when the examiner was perceived as being of higher status.

3) Following the same line of reasoning, as in the above statement, all subjects should exhibit less intentional concept formation when the examiner is perceived as a priest than when he is perceived as a layman, regardless of his real or simulated roles.

4) All subjects will demonstrate less intentional learning with the "false role" examiner than with the "true role" examiner, because of the hypothesized higher degree of examiner discomfort with an unnatural role, which should result in higher drive on the part of the subjects.

5) Similarly, on the incidental tasks, "false role" examiners should obtain less incidental learning than the "true role" examiners.

Chapter II

Review of the Literature

The following review will be primarily concerned with literature dealing with the psychological experimenter. However, the second and third parts of this review will attempt to survey relevant literature dealing with characteristics of the psychological examiner and the psychotherapist.

I. Characteristics of the Psychological Experimenter

Intentional tampering with experimental results as well as experimenter errors and inferences have long been recognized in scientific research (Rosenthal, 1966). However, it has been a relatively short time since studies have been directed to the investigation of the "unwitting" influence of the experimenter in controlled laboratory research. Masling (1960), McGuigan (1963) and Rosenthal (1964), have pointed out that this kind of experimenter influence poses a serious problem. A rather extensive review by Kintz, Delprato, Mettee, Persons and Schappe (1965), concludes that despite the wealth of evidence in support of the experimenter influences, the import of the experimenter variable is still relatively neglected.

In other words, isolated studies point to the major importance of the experimenter variable in psychological research, but a concentrated effort to define these influences and to systematically vary them has been virtually absent. The pioneering work of Robert Rosenthal has laid the foundation for the systematic investigation of covert communication between experimenter and subject. Hopefully, it will soon be possible to explain how and under what circumstances this kind of covert communication takes place, and how important is its role in scientific psychological investigations.

Experimenter effects are probably of two general kinds, namely, those which take place when the experimenter is dealing with non-human subjects and those that occur when the experimenter is dealing with human subjects. The major interest of this review is with the latter.

When dealing with human subjects, the experimenter cannot presume that he is dealing with a "thing," which simply reacts to stimuli. One cannot simply isolate experimenter characteristics and hope to understand the role of the experimenter variable.

We must attempt to see the totality of the experimental situation from the subject's point of view, in order to understand what cues are providing him with unintended information (Rosenthal, 1967). Orne (1962) refers to such cues as the "demand characteristics" of the experiment. More careful inquiry and investigation would probably discover that experimental results are determined by many things other than the experimental stimuli intended by the experiment (Farber, 1963, p.196). But, before one can hope to penetrate the sublties of the dyadic relationship of subject and examiner, some attempt must be made to classify the situations which seem to promote covert communication in this relationship.

Rosenthal (1967) has listed some of the categories of variables which he feels are related to the covert communication between experimenter and subject. He terms these variables, biosocial effects, psychological effects, situational effects, modeling effects and examiner expectancies.

Biosocial effects refer to the sex, age and race of the investigator. The problem that needs to be clarified here, is whether subjects simply respond

differently to the presence of experimenters varying in these biosocial attributes or whether experimenters varying in these attributes behave differently toward their subjects, which in turn causes the subjects to behave differently.

There is more than ample evidence that the sex of the experimenter can affect the response of the subject (Rosenthal, 1966; Sarason, 1965; Stevenson, 1965). However, from the evidence available it is not possible to predict just how the sex of the experimenter will affect the response of the subject. For example, Binder, McConnell and Sjoholn (1957) reported significantly better learning from subjects, in a verbal learning experiment, when the experimenter was an attractive female, as opposed to a husky "ex-marine" experimenter. In contrast to this finding, Sarason and Harmatz (1965) found better learning with a male experimenter than with a female experimenter. Then, to complete the circuit, we find Ferguson and Buss (1960) reported no difference between a male and a female experimenter. The lack of consistency is perhaps explained when we see that quite probably it is not solely the sex variable

that is operating in the various studies. It seems that hostility can interact with the sex variable (Sarason, 1962) and that the interaction between experimenter sex, hostility and prestige with the subject's sex, hostility and degree of personal contact with the experimenter, are important complicating factors which prevent simple interpretations and predictions (Sarason & Minard, 1963).

The interacting effects of experimental variables and the sex of the subjects have been noted by a number of investigators (Carlson & Carlson, 1960; Hovland & Janis, 1959; Kagan & Moss, 1962; McClelland, 1965; Sarason, Davidson, Lighthall, Waite & Ruebush, 1960). Similar results have also been reported by Rosenthal, Persinger, Mulry, Vikan-Kline and Grothe (1964a, 1964b). Rosenthal (1967) has summarized some of the findings from the aforementioned investigations which he and his colleagues had conducted. First of all, male experimenters when interacting with either male or female subjects were a good deal more friendly than were the female experimenters. Female subjects were smiled at more often than were the male subjects. Further, experi-

menters took more time to deliver the stimuli when dealing with subjects of the opposite sex, a finding also reported by Shapiro (1966) in a verbal learning experiment. In terms of motor communication, male experimenters leaned closer to male subjects than did the female experimenter, while there was no difference in their behavior to female subjects. Finally, differences between male and female experimenters in terms of visual friendliness and auditory friendliness was noted. Male experimenters showed a tendency to greater friendliness in their tone of voice and to be somewhat unfriendly toward male subjects in the auditory channel of communication. Female experimenters were quite friendly toward female subjects in the visual channel but not in the auditory channel. However, with males as subjects this situation was reversed (cf. Rosenthal, 1967 pp. 358-359). The conclusion to all of these findings is that experimental evidence shows both simple across the board sex differences and inter-acting sex differences which may have multiple sources, either genetic, morphological, endocrinological, sociological or psychological, but to this list must be added the

variable of differential treatment of male and female subjects (Rosenthal, 1966, p. 56). It seems safe to concur with the statement that:

> Whenever the warmth or friendliness of the experimenter can affect the subject's response, and that happens often ..... we may also look for the effect of the experimenter's sex. (Rosenthal, 1967, p. 358)

Although there has been little work done on the effect of the experimenter's age on the behavior of the subject, what has been done indicates that there is an influence attributable to the experimenter's age. One study by Ehrlich and Riesman (1961) collected responses from a national sample of adolescent girls to form questions somewhat projective in nature and related to behavior that would be deemed "unacceptable." It was found that younger girls tended to give slightly more unacceptable responses to younger interviewers under 40, than to interviewers over 40. Girls over 15, however, gave significantly more unacceptable responses to younger interviewers than to older interviewers. As in the case of the sex of the experimenter, there appears to be an interaction effect of age with other variables. Therefore, it is difficult to determine whether

it was age per se that accounted for the different responses, or whether older interviewers differ in other aspects from younger interviewers and whether they behave differently towards the subjects (Rosenthal, 1966, p. 57). Benney, Riesman and Star (1956) have found that the age of the data collector makes a difference when the response requires a frank discussion of sexual maladjustment, but notably so when the age of the subject is taken into consideration. In general, they found answers are more frank to younger interviewers than to older interviewers.

Some experimenters have reported that the skin color of the experimenter may affect the response of the subject (Cantril, 1944; Williams, 1964). Obviously, skin color does not equally affect all types of responses (Williams & Cantril, 1954). In survey research, it has been found that white interviewers obtain more "proper" responses from Negro respondents than do Negro interviewers (Hyman et al. 1954). This finding is also supported by Summers and Hammonds (1965) who suggest further, the interacting nature of the skin color of the experimenter and the skin color of the subject. Even purely physiological

responses seem to be affected by the skin color of the experimenter (Rankin & Campbell, 1955; Berstein 1965). Finally, Robinson and Rhode (1946) and Hyman et al. (1954) have reported that interviewers perceived as Jews elicited less negative feelings about Jews from those interviewed.

Psychosocial Attributes - These attributes refer to the personality of the experimenter, and involve such things as the examiner's degree of anxiety, need for approval, hostility, authoritarianism, status and warmth.

Here too, we have considerable evidence that the anxiety of the experimenter can affect the response of the subject (e.g. Rosenthal, 1966, Sarason, 1965). Winkel and Sarason (1964) found that the anxiety level of the experimenter in interaction with subject variables seems to affect the level of verbal learning. Weickert (1967) discovered significant correlations between the anxiety of the experimenter and subjects' responses on the Taylor (1953) Manifest Anxiety Scale. Some of the findings in this area are not altogether clear. For example, in a task requiring the subjects to rate the success or failure of individuals who

were shown in photographs, one experiment found that more anxious experimenters obtained higher ratings of success from their subjects (Rosenthal, Vikan-Kline & Mulry, 1963). But in another experiment which employed the same task, less anxious experimenters obtained the higher ratings of success from the subjects (Rosenthal, Kohn, Greenfield & Carota, 1965). In another experiment involving the verbal conditioning of subjects with first person pronouns, high and low anxious experimenters did not obtain significantly different results, but, together, they did elicit significantly more conditioning than did the medium - anxious experimenters (Rosenthal, Kohn, Greenfield & Carota, 1966). The puzzling question is "What does the high anxious experimenter, for example, do differently with his subjects." Rosenthal (1967) reports that such examiners are more fidgety and show a greater degree of general body activity.

Another psychosocial attribute, namely, need for approval, may also be an important variable (Rosenthal, 1967). Crowne and Marlowe (1964) have shown that subjects who score high on the scale measuring need for approval, do in fact attempt

to gain the experimenter's approval. Using the Marlowe-Crowne SD scale, Mulry (1962) obtained results which demonstrated that experimenters scoring high on this scale obtained superior performance from subjects on a pursuit rotor task. Contradictory findings were reported by Rosenthal, Persinger, Vikan-Kline and Mulry (1963) and by Rosenthal, Kohn, Greenfield and Carota, 1965. In the 1963 study, experimenters lower in need for approval were given more "successful" ratings of photos by their subjects. In the 1965 study, it was the higher need for approval experimenters who were given more "success" ratings. In still another related study, the experimenter's need for approval was not related to the subject's susceptibility to the verbal reinforcements of the experimenter (Rosenthal, Kohn, Greenfield & Carota, 1966).

Spence and Spence (1966) have observed that when examiners act too "warmly" they might change the results in conditioning and anxiety experiments. Positive results in other experimental investigations, seem to be related to the warmth of the examiner (Ferguson and Buss, 1960; Reece and Whitman, 1962).

Relatedly, the hostility of the experimenter has been shown to be an important factor in verbal conditioning experiments (Sarason, 1962; Sarason & Minard, 1963).

A psychosocial attribute that is extremely relevant in terms of the design of this study, is that of experimenter status. Rosenthal (1966) has observed that status may be defined either in terms of the experimenter's dress or insignia, or in terms of "status-earning behaviors" during the exchange with the subject. Prince (1962) and Stevenson (1961) found that higher status experimenters were able to exert more influence on the responses of their subjects. Stevenson's study indicates that the younger the child, the more is he likely to be affected by the prestigious experimenter. There seems to be a general consensus that higher status experimenters are met with more positive responses from their subjects (Sarason & Minard, 1963; Ekman & Friesen, 1960; Rosenthal, Kohn, Greenfield & Carota, 1966; Rosenthal, Friedman and Hovland 1966; and Krasner, 1958). The Ekman and Friessen study is worth considering a little further, since the experimenters were differentiated in terms of status by

their uniforms, resembling the procedure in this present study. In the Ekman and Friessen study military recruits were subjected to a verbal conditioning experiment by commissioned officers and by non-commissioned officers. The commissioned officers were more successful in conditioning hostile verbs, while non-commissioned officers had more success in conditioning neutral verbs. Birney (1958) found that two faculty experimenters were able to obtain responses reflecting a higher need for achievement than the results obtained by a student experimenter.

A number of previous studies utilizing a similar design to this present study give ambiguous results as to whether or not religious garb vs. layman garb is a factor differentially affecting subjects' responses. Positive results were obtained in two studies (Walker & Firetto, 1965; Baur, 1966). In these two studies the same examiner switched roles, e.g. priest-layman, in the Walker and Firetto study, or non-laywoman, in the Baur study. Walker, Davis and Firetto (1968) found that the priest-layman variable was not relevant, but that "true-role" and "simulated-role" might well be important vari-

ables contributing to differences in subjects' responses. Negative results regarding the priest-layman roles were also reported by Davis (1968). This study suggested that differences in subjects' responses were simply a function of different examiners, independent of assumed roles.

If status is of any significance in affecting subjects' responses, it might also be that status is strengthened by the way the examiner behaves. Rosenthal (1966) has said that status-earning behavior can occur during the experiment. Therefore, the dominant or passive attitude of the experimenter would seem to be at least indirectly related to status. In regard to authoritarian behavior, it has been reported that dominant interviewees elicited dependent responses from interviewers, dependent interviewees elicited dominant responses and hostile and friendly interviewees had their attitudes reciprocated (Heller, Meyers & Vikan-Kline, 1963). Sarason and Winkel (1966) found that active interviewers elicited more verbalizations than either passive or "silent" interviewers.

Situational Effects - More experienced experi-

menters may obtain different results from their investigations than less experienced experimenters. Experimenters who have met their subjects prior to testing obtain different responses than do experimenters who are not acquainted with their subjects (Rosenthal, 1966). Although experienced experimenters had more success in consciously biasing their results, subjects tend to dislike such experimenters and to become bored (Rosenthal, 1966). The things that occur to the experimenter during the experiment, including the responses he obtains from his first few subjects, can all influence his behavior, and changes in his behavior can lead to changes in subjects' responses (Rosenthal, 1967). It has been found that when the first few subjects of the experiment tend to respond as they are expected to respond, the behavior of the experimenter changes in such a way as to influence his subsequent subjects to respond frequently in the direction of his hypothesis (Rosenthal, 1966).

Riecken (1962) has observed that we have little knowledge as to how the experimental scene might affect the subject. Rosenthal (1967) adds that we know even less how the experimental scene affects

the examiner. There is some evidence that both subject and experimenter are affected by the physical scene and surroundings in which the experiment is conducted (Rosenthal, 1966).

Modeling Effects - It sometimes happens that experimenters will try out the task which will later be given by themselves or research assistants to the actual subjects. The evidence is not entirely clear, but it would seem that at times, the investigator's own performance becomes a factor in the performance of the subject (Rosenthal, 1966). Hyman et al. (1954) and Maccoby and Maccoby (1954) have summarized the evidence for modeling effects in survey research. It would seem that the interviewer's own opinion, attitude, or ideology can affect the responses obtained from interviewees. In a few cases, however, the subjects have responded in the exact opposite direction favored by the interviewer himself (Rosenthal, 1963b). Even highly structured laboratory experiments may provide opportunities for modeling effects as some studies suggest (Rosenthal, 1966). When the experimental stimuli are ambiguous, for example, subjects will frequently tend to agree with the investigator's in-

terpretation of the stimuli (Rosenthal, 1966).

Expectancy Effects - Expectancy effects refer to the hypothesis held by the investigator which can lead him to unintentionally alter his behavior vis-à-vis the subject, in such a way as to increase the likelihood that the subject will respond in the direction of the examiner's hypothesis or expectation. Most of the research in this area has been done by Rosenthal (1963a; 1963c; 1964a; 1964b; 1966; 1967), Rosenthal and Fode with rats (1963a) and with humans (1963b). One might be hard pressed to explain how expectancy effects can occur with animals. Brogden (1962) suggests that the expectancy effects he obtained with animals resulted from increased handling of animals which the experimenters believed to be more intelligent. Expectancy effects seem to be possible even at the lowest levels of the phylogenetic scale. For example, Cordaro and Ison (1962) demonstrated expectancy effects with planaria, and these results were replicated by Rosenthal (1966).

The practical consequences of the presence of

experimental effects, that is, the unintended communication of intent or direction of response from experimenter to subject, can be of great importance. If one can say that rats become brighter when expected to by their experimenter, one might wonder about the expectations of teachers in regard to their students, for example. Such a question was posed and investigated by Rosenthal and Jacobson (1966). These investigators found that teachers who were made to expect striking gains in intelligence test scores from specific pupils, somehow made a significant number of these students "brighter." Eight months after the original testing, during which time the teachers were operating with the expectancy hypotheses, surprising results were obtained for first and second grade students. It was found that 47 per cent of the experimental children as compared with 19 per cent of the control children, showed gains of 20 or more IQ points.

II. Examiner Influence In Psychological Testing

Outside the laboratory situation, the examiner variable seems to be a critical factor in two of the major areas of testing - intelligence and projective

tests. Masling (1960), after reviewing over twenty years of research on projective testing, primarily with the Rorschach, concluded that situational and interpersonal variables significantly affect test results. It is interesting to note that several investigators (Masling, 1965; Magnussen, 1960; and Gross, 1959) have reported that non-verbal forms of reinforcement are more effective in influencing an examinee's behavior than verbal reinforcement.

A recent review by Sattler and Theye (1967) has commented on general effects of procedural, situational and interpersonal variables in intelligence testing:

> Conclusions emerging from the review are as follows: Minor changes in test procedures are more likely to affect specialized groups than normal groups. Children are more susceptible than college age subjects to situational factors, especially discouragement. Rapport frequently affects test scores. Differences among experimenters in obtaining test scores are occasionally noted, but little is known

about the factors accounting for the differences. The experimenter's level of experience is usually not a crucial variable. White experimenters may have some subtle deleterious effect on Negro subjects' scores, but the evidence is only suggestive. Ego involvement usually does not result in better performance. The subject's anxiety level, as measured by personality scales, is frequently related to test performance in interaction with other variables. Immediate memory is affected by procedural, situational, and interpersonal factors (p. 356).

III. Therapist Variables

There has been an increase of interest in employing some of the research findings of social psychology to counseling psychology (Goldstein, 1966; Goldstein & Dean, 1966; Goldstein, Heller & Sechrest, 1966). Research on opinion change has attracted particular attention because of the focus on communication and how a communicator influences an individual in a particular direction (Strong, 1968). The situation seems analogous to the goals of counseling, and the general concern with communication between therapist

and patients seems consistent with experimenter influences in laboratory and testing psychology.

There have been some serious recent attempts to delineate therapist's characteristics, such as high- and low-functioning therapist groups (e.g. Carkhuff, 1967; Carkhuff & Alexik, 1967; Carkhuff & Berenson, 1967; Carkhuff & Truax, 1965; Holder, Carkhuff & Berenson, 1967; Piaget, Berenson & Carkhuff, 1967; Truax, 1963; Truax & Carkhuff, 1964). Several of these studies have demonstrated differential effects of manipulating therapist variables, such as, empathy, positive regard, genuineness and concreteness by high- and low-functioning therapists upon the level of self-exploration of high-and low-functioning patients (Holder et al., 1967; Piaget et al., 1967; Truax & Carkhuff, 1965).

Perhaps the most significant study in terms of this present investigation is the finding reported by Browning (1966). The latter studied the effects of the perceived expertness (prestige) on client acceptance of interpretations in therapy. A significantly greater number of large discrepancy interpretations were accepted by clients who were

in the high-prestige therpists condition than in the low prestige condition. This seems to be related to the observations of Raven (1965), Schofield (1964, p. 107) and Frank (1963, p. 129) that evidences of "expert power," such as diplomas, state certification and other office paraphernalia attesting to the counselor's expertise, are important factors in interpersonal persuasion.

By way of summary of this review, it seems obvious that the need for continued study of the examiner variable in all aspects of psychological research cannot be emphasized too strongly. In the laboratory it is a factor which might explain the frequent difficulty in replicating experiments. In the testing situation, consideration of the examiner influence sheds more light on the differences between temporary and enduring psychological characteristics uncovered by testing. Awareness of examiner influences should serve as a caution for the therapist who might tend to believe that he is "purely objective" in dealing with his patients, simply because he is not conscious of any manipulative intent. Secondly, it offers the possibility of

teaching new therapists how to emulate successful therapists, by determining the kinds of covert communication that are effective in changing unhealthy behavior. For the most part, research on the experimenter variable has been limited to classifying the conditions under which it operates, while the problem of how covert communication takes place is to a great extent still enigmatic.

Finally, the literature seems quite emphatic that the communication that goes on in a testing or therapy situation is a reciprocal one. Therefore, even though we may succeed in leveling out examiner differences prior to testing or therapy, we are not likely to be able to rigidly control the change in the examiner's behavior as a result of feedback from the subject or patient. Obliquely, the consideration of examiner influences and mutual covert communication between experimenter and subject, implies non-mechanistic constructs, and is congruent with recent humanistic and existential influences in psychology.

Chapter III

Method

Experimenters. The roles of priest and layman were played by four graduate students in psychology, two of whom were clergymen and two laymen. Each experimenter had two groups to test. With one group of subjects he administered the concept learning tasks while dressed as a layman. With a second group of subjects the experimenter now dressed as a priest administered the same test. All four experimenters thus tested the subjects under real and simulated role conditions. The first layman tested first in lay garb and then in clerical garb. The second layman tested first in clerical garb and then in lay garb. Priest number one tested his group first of all dressed in lay garb and then tested the second group in his clerical garb. The procedure was reversed for the second priest examiner. The lay garb consisted of a business suit, white shirt and tie. The clerical garb was the standard black suit and Roman collar of the Catholic priest. None of

the examiners knew anything about the expected results of the experiment and to this extent they were naive. An attempt was made to control for "appearance of age" of the four examiners by randomly asking two faculty members and seven graduate students, who knew the experimenters, their estimate of the experimenters' ages. There were no large differences in their estimates as they unanimously judged the experimenters to be in their late twenties or early thirties. Actually, the two lay examiners were 28 and 29 respectively, while the two priests were 38 and 39 respectively.

Subjects. The subjects were 714 freshmen at a Catholic boys' high school. The students were told that they would be expected to assist in the collection of data for a research project. The subjects were given a pretest of anxiety in groups ranging between 35 and 40. During the course of the two weeks following this testing, the subjects took a test which involved the learning of intentional and incidental concepts. For this test the subjects ranged between 80 and 90 per group. All the subjects were randomly assigned to the four

examiners for the concept learning task.

Test Materials. A 95-item version of Taylor's Biographical Inventory (Taylor, 1953) was used as the pretest of anxiety. It consisted of the 50-item Manifest Anxiety Scale (MAS), the 30-item MMPI K scale, and the 15-item MMPI L scale (Hathaway and McKinley, 1951). The subjects recorded their responses on an IBM scoring sheet.

The concept materials for the intentional and incidental concept-formation tasks were taken from Laughlin (1967). The latter investigator selected ten sets of six words from the Underwood and Richardson study (1956). The lists were such that four words in each set of six all evoked the same associative response in a high percentage of subjects. For example, the four words, Globe, Wheel, Spoon and Baseball all elicited the same associative response "round." Thus according to the calibration of Underwood and Richardson (1956) these four words would be considered exemplars of the common response or concept "round." The other two words in each set of six both evoked the same association, for example, the response "sour." Thus these two words would be considered exemplars of the concept "sour." The con-

cept evoked by the four words will be designated as the intentional concept-learning task. The two incidental words will constitute the incidental words recall task. The concept evoked by these two words will constitute the incidental concept-learning task. The ten lists of six words were randomly arranged in each list.

Procedure and Instructions for the MAS. The subjects were instructed the day before testing that on the following day during the guidance period, they were to come into class prepared to take part in the collection of data for a research project. This statement was made by the guidance counselor over intercom T.V. He informed the students that they would find test booklets on their desk, but that they were not to open them until their guidance teachers had read the instructions to them.

On the following day, when the students came into their respective guidance classes, they found a test booklet and a scoring sheet on their desk. The guidance teacher then read them the following instructions:

> In the booklets you will find a list of statements to which you are to answer true or false. If the statements are true or

true most of the time, in your opinion, darken the opening on your scoring sheet marked with the letter T. If you feel the statements are false or false most of the time, mark it false under the section marked F. There are no right or wrong answers to these statements. We are simply interested in your ideas, feelings and impressions. When you are finished, stay until the bell rings. Leave your booklet and answer sheet at your desk.

During the course of the next two weeks, the subjects were randomly assigned to the four examiners. The day before the testing for the concept task, the students were informed through their guidance teachers to report to the cafeteria on the following day.

Procedure and Instructions for the Concept Tasks.

The procedure was designed to present both the intentional and incidental concept-formation stimulus words at the same time, but the instructions were to learn only the intentional concept. Each subject recorded his responses in a booklet provided for him.

The students sat at the cafeteria tables to perform the task. The cover page of their booklets had the following instructions, which were read to them by their respective examiner:

> Six words will be pronounced aloud. Four of these six words will go together in some way. These four words exemplify a concept. Listen carefully to the six words, and then figure out the concept or way in which four of the six words go together. Then write the concept word in the blank. For example, consider the following six words: "glue, paste, house, flypaper, rubber cement and gymnasium." The four words that go together in some way are "glue," "paste," "flypaper," and "rubber cement," because they are all "sticky." Thus the concept is "sticky," and you should write "sticky" in the answer blank for the concept. Do not turn each page until you are instructed to do so.

There were four trials of the 10 sets of 6 words, each on a separate answer page. Within each trial both the order of the six words within

a set and the order of the 10 sets were in a different random order. The stimulus words were read in a steady monotone with 10 seconds between sets of six words and sufficient time to turn the page between trials. The examiner used a microphone to make sure all of the subjects could hear equally well. After the final trial the directions regarding the last page of the booklet were read. This was the instruction for the incidental concept-learning task:

> Now, the four words that exemplified each concept are given below. For each of the four words try to recall the other two words that were not part of the concept. These other two words, however, were also like each other in some way, and thus exemplified another concept. Write the two other words and the concept they exemplified below, in the blanks provided.

The above instructions were also printed on the last page of the booklet so that the subject could see clearly what was required of him. The incidental stimulus material was made up of ten sets of four words that were presented in a new random order.

Thus, they did not appear in the same order as experienced in the intentional task. In all, eight minutes were given for recall of the two incidental words and their respective incidental concepts.

Chapter IV

Results

The original 714 subjects who took the MAS were divided into three equal groups of high, medium and low anxious subjects. This was achieved by simply ranking the anxiety scores from low to high and dividing them into equal categories. Because of the fact that some of the subjects appeared for the MAS but did not appear for the learning tasks, there was some variation in the number of subjects for each treatment. In order to have equal numbers of subjects in each cell for the statistical analyses, subjects were randomly eliminated. As a result, 660 subjects were used in the priest garb vs. layman garb treatment; 654 subjects were involved in the real priest vs. real layman treatment; 648 subjects were involved in the true vs. false role treatment and 600 subjects for the analyses of the effect of the four examiners considered separately.

The means and standard deviations for priest vs. layman garb on the three dependent variables

over the three levels of anxiety are given in Table 1. The analyses of variance for the three learning tasks in the priest garb, layman garb treatments over the three levels of anxiety, are presented in Tables 2, 3 and 4.

Table 2 shows that the anxiety level of the subjects significantly affected their scores on the intentional learning task when garb was the other variable ($F = 4.45$ for 2/654 df, $p < .02$). The mean scores for the three anxiety levels were in order of magnitude, low (32.94), middle (31.22) and high (31.16). Duncan's New Multiple Range Test (Edwards, 1960) was used to test the significance of differences among these means. Significance was obtained between the low and middle anxious scores ($Md = 1.72 \alpha < .05$) and between the low and high anxious scores ($Md = 1.78 \alpha < .05$). Further, whether the examiner was dressed as a priest or a layman did make a difference on the subjects' performance on the intentional learning task, as subjects performed better for examiners dressed in lay garb. There was a significant overall effect for garb ($F = 15.46$ for 1/654 df, $p < .001$). It should be noted also that examiners

appearing in the garb of a layman obtained significantly more intentional concepts than when dressed in priest garb ($F = 2.280$ for 1/219 df, $p < .001$), with high anxious subjects. There were no significant effects for incidental words. However, on the incidental concepts, the level of anxiety was significantly related to the subjects' ability to do this task ($F = 3.33$ for 2/654 df, $p < .04$). The mean scores for the three levels of anxiety on the incidental concepts, were in order of magnitude, low (2.02), high (1.74) and middle (1.60). Duncan's New Multiple Range Test (Edwards, 1960), found that the difference between the low and middle anxious groups was the only mean difference that reached significance ($Md = .42 \propto < .05$).

Table 5 lists the means and standard deviations for the three dependent variables at each level of anxiety for the real priest vs. real layman roles. The analysis of variance for these treatment conditions are presented in Tables 6, 7 and 8.

For intentional learning, there is a significant over-all main effect for real priest vs. real layman ($F = 14.85$ for 1/648 df, $p < .001$). Laymen obtained more intentional learning than priests at all three

levels of anxiety. However, a consideration of the one way analysis of variance within each level revealed that this difference was significant only with the low anxious subjects ($F = 7.19$ for 1/217 df, $p < .008$) and with high anxious subjects ($F = 5.36$ for 1/217 df, $p < .002$). On the incidental words task, the over-all main effect of the real priest vs. the real layman was significant ($F = 36.00$ for 1/648 df, $p < .001$). Real laymen obtained significantly higher scores than priests on incidental words at all three levels of anxiety. Moving from low to high respectively, the results were: $F = 11.24$ for 1/217 df, $p < .001$; $F = 20.25$ for 1/217 df, $p < .001$; $F = 6.98$ for 1/217 df, $p < .01$. On the incidental concept task, the over-all effect of anxiety was significant ($F = 3.01$ for 2/648 df, $p < .05$). The mean scores for the levels of anxiety were: 1.99 (low anxious), 1.67 (middle anxious) and 1.60 (high anxious). Duncan's range test (Edwards, 1960) found a significant difference between the low and high anxious scores ($Md = .32$ $\alpha < .05$) and between the low and middle anxious scores ($Md = .39$ $\alpha < .05$). The real layman also obtained higher over-all scores than the real

priest on this task ($F = 13.10$ for 1/648 df, $p < .001$). The better performance for layman than priest was also obtained with the low anxious subjects ($F = 7.83$ for 1/217 df, $p < .01$).

Table 9 gives the means and standard deviations for true vs. false roles on the three learning tasks. The analyses of variance for these treatment conditions are presented in Tables 10, 11 and 12.

On the intentional learning task, anxiety significantly affected the subjects' performance ($F = 4.36$ for 2/636 df, $p < .01$). The mean scores in order of magnitude were: 32.82 (low anxious), 31.96 (high anxious) and 31.28 (middle anxious). Duncan's range test gave a significant mean difference for the low and middle anxious scores ($Md = 1.54$ $\alpha < .05$). Also, the over-all effect of roles upon performance showed that true role examiners obtained higher over-all learning than false role examiners ($F = 9.67$ for 3/636 df, $p < .001$). The better performance for true role examiners than for false role examiners was also obtained with the low anxious subjects ($F = 7.00$ for 3/215 df, $p < .001$) and for the low anxious subjects ($F = 2.84$ for 3/215

df, $p < .04$). The same over-all effect of better performance for true role examiners than for false role examiners was obtained with the incidental words task ($F = 12.06$ for 3/636 df, $p < .04$). This directional tendency of true role obtaining higher scores was found with the low anxious subjects ($F = 4.55$ for 3/213 df, $p < .004$) as well as with the middle anxious subjects ($F = 11.77$ for 3/212 df, $p < .001$). True role examiners obtained better performance than false role examiners on the over-all task of incidental learning ($F = 4.06$ for 3/636 df, $p < .007$). This over-all main effect was further supported by the one way analysis of variance obtained with the low anxious subjects ($F = 3.71$ for 3/215 df, $p < .01$) and with the middle anxious subjects ($F = 2.77$ for 3/215 df, $p < .05$).

Since the true role in this treatment consisted of real priest in his collar (P-C) and real layman in a suit and tie (L-T), while the false role consisted of real priest dressed in suit and tie (P-T) and real layman dressed in clerical garb (L-C), some further analysis was required. In effect there were four treatment conditions, namely P-C, L-T, P-T and L-C,

with two examiners in each treatment. Duncan's New Multiple Range Test (Edwards, 1960) was employed to test the significance of difference between the means of the four treatment conditions on the three learning tasks. The results are presented below.

On the intentional learning task, L-T obtained a higher mean score than P-T (Md = 1.34 $\alpha <$ .05); L-T obtained a higher mean score than L-C (Md = 2.37 $\alpha <$ .05); L-C obtained a higher mean score than P-C (Md = 1.79 $\alpha <$ .05); P-T mean score was higher than P-T (Md = 1.82 $\alpha <$ .05) and finally L-T achieved significantly more learning than P-C (Md = 4.16 $\alpha <$ .05). On the incidental words L-C surpassed P-C (Md = 1.82 $\alpha <$ .05); L-T topped P-C (Md = 1.73 $\alpha <$ .05) and P-T was superior to P-C (Md = 1.57 $\alpha <$ .05). On the incidental concepts task, L-T achieved a higher performance than L-C (Md = .22 $\alpha <$ .05); L-T was better than P-T (Md = 1.42 $\alpha <$ .05); L-T was higher than P-C (Md - 1.52 $\alpha <$ .05); L-C was higher than P-T (Md = 1.20 $\alpha <$ .05) and L-C was better than P-C (Md = 1.30 $\alpha <$ .05).

The means and standard deviations for the various

examiners on the three learning tasks over the three levels of anxiety are presented in Table 13. The analysis of variance for these treatment conditions are found in Tables 14, 15 and 16 respectively.

The over-all effect of anxiety on intentional learning for the four examiners was significant ($F = 4.35$ for 2/588 df, $p < .02$). The mean scores over the three levels of anxiety in order of magnitude were: 30.40 (low), 29.18 (middle) and 27.49 (high). The Duncan's range test found that the mean difference between low and high anxious scores was significant ($Md = 2.91 \alpha < .05$) as was the mean difference between middle and high anxious scores ($Md = 1.69 \alpha < .05$). The over-all effect for examiners was also significant ($F = 4.34$ for 3/588 df, $p < .005$). The examiner effect was also significant for the low anxious subjects ($F = 3.14$ for 3/199 df, $p < .03$). On the incidental words task, the over-all effect for examiners was significant ($F = 8.87$ for 3/588 df, $p < .001$). The examiner treatment was also significant with the low anxious subjects ($F = 3.25$ for 3/199 df, $p < .03$) and with the middle anxious subjects ($F = 6.56$ for 3/199 df, $p < .001$). On the

concept task the over-all effect for anxiety was significant ($F = 2.99$ for 2/588 df, $p < .05$). In order of magnitude the mean scores for the three levels of anxiety on this task were: 1.86 (low), 1.57 (high) and 1.45 (middle). The Duncan's test found that the difference between low and middle anxious scores was significant ($Md = .41 \alpha < .05$). On this task also, there was a significant over-all effect for examiners ($F = 3.99$ for 3/588 df, $p < .008$). The effect of examiners was also significant for the low anxious subjects ($F = 2.94$ for 3/199 df, $p < .04$). In order to clarify the over-all differences between examiners, a test of mean differences was performed.

Duncan's New Multiple Range test (Edwards, 1960), was used to test the significance of the difference between means for the four examiners on the learning tasks. For the intentional learning task there was a significant mean difference between E_2 and E_3 ($Md = .25 \alpha < .05$). On the recall of incidental words, there were significant mean differences between E_3 and E_2 ($Md = .53 \alpha < .05$), between E_3 and E_1 ($Md = .79 \alpha < .05$) and between E_4 and E_1 ($Md = \alpha < .05$). Finally, on the incidental concept task, there were significant differences between E_2 and E_1 (Md = .04

$\alpha < .05$), between $\underline{E}_2$ and $\underline{E}_4$ (Md = $.23 \alpha < .05$) and between $\underline{E}_2$ and $\underline{E}_3$ (Md = $.29 \alpha < .05$).

Table 1

Means and Standard Deviations for Priest Garb vs. Layman Garb

MAS Ranks		Priest Garb M	Priest Garb SD	Layman Garb M	Layman Garb SD
Low Anxious	Int. Learning	32.24	6.82	33.64	6.87
	Inc. Words	5.72	3.73	5.10	3.58
	Inc. Concepts	2.07	1.89	1.94	1.40
Middle Anxious	Int. Learning	30.53	6.98	31.90	6.71
	Inc. Words	4.53	3.67	4.45	3.24
	Inc. Concepts	1.48	1.55	1.71	1.38
High Anxious	Int. Learning	29.27	8.09	33.34	6.80
	Inc. Words	4.90	3.41	5.36	4.15
	Inc. Concepts	1.63	1.48	1.85	2.07

N = 110 per treatment

Table 2

Analysis of Variance for Garb of Priest vs. Garb of Layman (1)

Intentional Learning

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	P-L Garb	107.7999	1	107.79999	2.27909	.133
	Error	10311.30909	218	42.29958		
	Total	10419.10909	219			
Middle Anxious	P-L Garb	100.91364	1	100.91364	2.13270	.146
	Error	10315.17273	218	47.31731		
	Total	10416.08636	219			
High Anxious	P-L Garb	779.07251	1	779.07251	13.81056	.001*
	Error	12297.67273	218	56.41134		
	Total	13076.74545	219			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	448.5121	2	224.2561	4.45459	.012*
	P-L Garb	778.9227	1	778.9227	15.47239	.001*
	Anx. X Garb	208.8636	2	104.4318	2.07442	.126
	Error	32924.15	654	50.34274		

Table 3

Analysis of Variance for Garb of Priest vs. Garb of Layman (2)

Incidental Words

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	P-L Garb	2.40454	1	2.40454	.17809	----
	Error	2943.39091	218	13.50179		
	Total	2945.79545	219			
Middle Anxious	P-L Garb	14.25455	1	14.2545	1.17302	.280
	Error	2649.12727	218	12.15196		
	Total	2663.38182	219			
High Anxious	P-L Garb	11.36364	1	11.36364	.78072	----
	Error	3173.07273	218	14.55538		
	Total	3184.43636	219			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	7.530540	2	3.765270	.32777	----
	P-L Garb	5.969221	1	5.969221	.51962	----
	Anx. X Garb	3.614658	2	1.807329	.15733	----
	Error	7501.3770	653	11.48756		

Table 4

Analysis of Variance for Garb of Priest vs. Garb of Layman (3)

Incidental Concepts

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	P-L Garb	.89091	1	.89091	.26859	----
	Error	723.09091	218	3.31693		
	Total	723.98182				
Middle Anxious	P-L Garb	2.84091	1	2.84091	1.31169	.253
	Error	472.15455	218	2.16585		
	Total	474.99545	219			
High Anxious	P-L Garb	2.61818	1	2.61818	.79705	----
	Error	716.09091	218	3.28482		
	Total	718.70707	219			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	19.45758	2	9.728788	3.32889	.036*
	P-L Garb	1.856061	1	1.856061	.63509	----
	Anx. X Garb	4.493939	2	2.246970	.76884	
	Error	1911.336	654	2.922533		

Table 5

Means and Standard Deviations for Real Priest vs. Real Layman Role

MAS Ranks		Priest		Layman	
		M	SD	M	SD
Low Anxious	Int. Learning	30.44	7.09	34.35	6.77
	Inc. Words	4.80	3.33	6.39	3.70
	Inc. Concepts	1.66	1.59	2.31	1.87
Middle Anxious	Int. Learning	30.83	6.33	32.39	7.29
	Inc. Words	4.12	3.02	6.16	3.61
	Inc. Concepts	1.40	1.46	1.79	1.57
High Anxious	Int. Learning	29.86	7.89	32.34	7.34
	Inc. Words	4.40	3.35	5.72	3.96
	Inc. Concepts	1.53	1.65	1.81	1.82

N = 109 per treatment

Table 6

Analysis of Variance for Real Priest vs. Real Layman (1)

Intentional Learning

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	P-L	349.43115	1	349.43115	7.18849	.008*
	Error	10499.72477	216	48.60984		
	Total	10849.15596	217			
Middle Anxious	P-L	131.01375	1	131.01375	2.78510	.097
	Error	10160.84404	216	47.04094		
	Total	10291.85780	217			
High Anxious	P-L	310.09155	1	310.09155	5.35870	.022*
	Error	12499.2471	216	57.86689		
	Total	12809.33945	217			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	275.9113	2	137.9557	2.69589	.068
	P-L	759.9771	1	759.9771	14.85126	.001*
	Anx. X P-L	30.55963	2	15.27982	.29859	----
	Error	33159.82	648	51.17256		

Table 7

Analysis of Variance for Real Priest vs. Real Layman (2)

Incidental Words

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	P-L	140.48164	1	140.48164	11.23777	.001*
	Error	2700.18349	216	12.50085		
	Total	2840.66514	217			
Middle Anxious	P-L	226.07338	1	226.07338	20.24707	.001*
	Error	2411.79817	216	11.16573		
	Total	2637.87156	217			
High Anxious	P-L	95.11926	1	95.11926	6.98365	.009*
	Error	2941.98165	216	13.62029		
	Total	3037.10092	217			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	35.59939	2	17.79969	1.43212	.240
	P-L	447.5245	1	447.5245	36.00660	.001*
	Anx. X P-L	14.14985	2	7.074924	.56923	----
	Error	8053.963	648	12.42896		

Table 8

Analysis of Variance for Real Priest vs. Real Layman (3)

Incidental Concepts

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	P-L	23.77982	1	23.77982	7.82819	.006*
	Error	656.14679	216	3.03772		
	Total	679.92661	217			
Middle Anxious	P-L	8.09174	1	8.09174	3.47904	.064
	Error	502.38532	216	2.32586		
	Total	510.47706	217			
High Anxious	P-L	7.71101	1	7.71101	2.53043	.113
	Error	658.22018	216	3.04732		
	Total	665.93119	217			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	16.87156	2	8.435780	3.00888	.050*
	P-L	36.73547	1	36.73547	13.10282	.001*
	Anx. X P-L	2.847095	2	1.42354	.50775	----
	Error	1816.752	648	2.803630		

Table 9

Means and Standard Deviations for True vs. False Roles*

			True Role		False Role	
			P-C	L-T	P-T	L-C
MAS Ranks						
	Int. Learning	M	31.57	34.89	31.92	32.90
		SD	6.37	5.59	7.47	7.58
	Inc. Words	M	5.0	6.33	4.39	6.56
		SD	3.69	3.80	2.77	3.85
	Inc. Concepts	M	1.81	2.33	1.37	2.33
		SD	1.70	2.0	1.39	1.93
	Int. Learning	M	30.15	33.16	30.44	31.35
		SD	6.37	5.59	7.47	7.53
	Inc. Words	M	3.31	6.0	4.44	6.61
		SD	2.67	3.38	2.88	3.67
	Inc. Concepts	M	1.13	1.76	1.67	1.87
		SD	1.23	1.36	1.41	1.70
	Int. Learning	M	27.50	33.65	32.33	30.35
		SD	8.68	6.28	6.10	7.92
	Inc. Words	M	4.57	5.72	4.76	5.15
		SD	3.11	3.81	3.95	3.85
	Inc. Concepts	M	1.59	1.96	1.59	1.63
		SD	1.40	1.85	2.07	1.59

N = 54 per treatment

* The true role in this treatment, consisted of real priest in his collar (P-C) and real layman in suit and tie (L-T). There were two priests and two laymen for this measure. The false role was comprised of real priest dressed in suit and tie (P-T) and real layman dressed in clerical garb and collar (L-C). Again there were two men in each treatment.

Table 10

Analysis of Variance for True vs. False Roles (1)

Intentional Learning

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	True-False	401.22217	3	133.74072	2.83782	.039*
	Error	9991.14815	212	47.12806		
	Total	10392.37037	215			
Middle Anxious	True-False	300.3325	3	100.11108	2.08518	.103
	Error	10178.25926	212	48.01066		
	Total	10478.59259	215			
High Anxious	True-False	1150.68506	3	383.56169	7.00431	.001*
	Error	11609.29630	212	54.76083		
	Total	12759.98148	215			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	436.1605	2	218.0802	4.36453	.013*
	Ex. Roles	1450.179	3	483.3930	9.67434	.001*
	Anx. X E Roles	402.179	6	67.01029	1.34110	.237
	Error	31778.70	636	49.96652		

Table 11

Analysis of Variance for True Role vs. False Roles (2)

Incidental Words

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	True-False	178.33333	3	59.44444	4.5532	.004*
	Error	2766.48148	212	13.04944		
	Total	2944.8148	215			
Middle Anxious	True-False	362.33325	3	120.77775	11.76795	.001*
	Error	2175.8148	212	10.26328		
	Total	2538.14815	215			
High Anxious	True-False	41.92592	3	13.97531	1.00726	.391
	Error	2941.40741	212	13.87456		
	Total	2983.33333	215			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	36.14815	2	18.07407	1.45809	.233
	Ex. Roles	448.4198	3	149.4733	12.05842	.001*
	Anx. X E Roles	134.1728	6	22.36214	1.80402	.096
	Error	7883.704	636	12.39576		

Table 12

Analysis of Variance for True vs. False Roles (3)

Incidental Concepts

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	True-False	35.7179	3	11.90586	3.70608	.012*
	Error	681.05556	212	3.21253		
	Total	716.77315	215			
Middle Anxious	True-False	17.49536	3	5.83179	2.77171	.043*
	Error	446.05556	212	2.10404		
	Total	463.55093	215			
High Anxious	True-False	5.24074	3	1.74691	.56063	----
	Error	660.59259	212	3.11600		
	Total	665.83333	215			
Two Way Summary for 2 Treatments Over the 3 Levels	Anxiety	15.31790	2	7.658951	2.72478	.066
	Ex. Roles	34.25309	3	11.41770	4.06200	.007*
	Anx. X E Roles	24.20062	6	4.033436	1.43495	.199
	Error	1787.704	636	2.810855		

Table 13

Means and Standard Deviations for Each Examiner

MAS Ranks		Ex. 1 M	Ex. 1 SD	Ex. 2 M	Ex. 2 SD	Ex. 3 M	Ex. 3 SD	Ex. 4 M	Ex. 4 SD
Low Anxious	Int. Learning	30.24	8.73	32.35	3.95	30.17	5.57	28.63	6.90
	Inc. Words	5.51	3.24	5.11	3.74	4.26	3.12	4.75	3.59
	Inc. Concepts	1.96	1.67	2.33	1.96	1.41	1.55	1.72	1.69
Middle Anxious	Int. Learning	30.53	7.87	28.91	7.11	28.67	6.13	28.39	7.04
	Inc. Words	6.02	3.79	5.56	3.39	3.65	2.76	4.13	3.16
	Inc. Concepts	1.56	1.48	1.69	1.73	1.09	1.31	1.44	1.69
High Anxious	Int. Learning	25.19	7.54	29.94	7.03	27.70	7.92	27.11	7.58
	Inc. Words	4.76	3.80	4.83	4.24	3.59	2.36	4.69	4.14
	Inc. Concepts	1.74	1.76	1.61	1.81	1.20	1.15	1.74	2.04

N = 50 per treatment

Table 14

Analysis of Variance for Examiners (1)

Intentional Learning

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	Examiners	408.97485	3	136.32495	3.13601	.027*
	Error	8533.90000	196	43.54031		
	Total	8942.87500	199			
Middle Anxious	Examiners	233.20000	3	77.73333	1.52612	.209
	Error	9983.28000	196	50.93510		
	Total	10216.48000	199			
High Anxious	Examiners	298.49487	3	99.49829	1.72254	.164
	Error	11321.46000	196	57.76255		
	Total	11619.95500	199			
Two Way Summary for 4 Treatments Over the 3 Levels	Anxiety	441.4633	2	220.7317	4.34974	.013*
	Examiners	660.3600	3	220.1200	4.33768	.005*
	Anx. X Exs.	280.3100	6	46.71833	.92063	----
	Error	29838.64	588	50.74599		

Table 15

Analysis of Variance for Examiners (2)

Incidental Words

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	Examiners	117.81999	3	39.27333	3.2451	.023*
	Error	2365.20000	196	12.06735		
	Total	2483.02000	199			
Middle Anxious	Examiners	223.13499	3	74.37833	6.55569	.001*
	Error	2223.74000	196	11.34561		
	Total	2446.87500	199			
High Anxious	Examiners	60.17499	3	20.05833	1.42510	.237
	Error	2758.70000	196	14.07500		
	Total	2818.87500	199			
Two Way Summary for 4 Treatments Over the 3 Levels	Anxiety	55.60333	2	27.80167	2.22485	.109
	Examiners	332.6800	3	110.8933	8.87432	.001*
	Anx. X Exs.	68.45000	6	11.40833	.91296	----
	Error	7347.640	568	12.49499		

Table 16

Analysis of Variance for Examiners (3)

Incidental Concepts

	Source	SS	df	MS	F	Sig. Level
MAS Ranks						
Low Anxious	Examiners	26.73499	3	8.91166	2.93926	.034*
	Error	594.26000	196	3.03194		
	Total	620.99500	199			
Middle Anxious	Examiners	5.04740	3	1.68247	.76500	----
	Error	428.86639	195			
	Total	433.91378				
High Anxious	Examiners	11.54000	3	3.84667	1.27004	.286
	Error	593.64000	196	3.02878		
	Total	605.18000	199			
Two Way Summary for 4 Treatments Over 3 Levels	Anxiety	16.87000	2	8.435000	2.99095	.051*
	Examiners	33.73833	3	11.24611	3.98774	.008*
	Anx. X Exs.	9.756667	6	1.626111	.57660	----
	Error	1658.260	588	2.820170		

Chapter V

Discussion

As the result section indicates, this study yielded a considerable number of significant findings. At the same time, interpretation of these findings is necessarily complicated and must involve some qualifications. One should first of all begin by noting that the three learning tasks represent complex learning situations, namely, intentional concept formation, recall of incidental words and the formation of concepts from these incidental words. Also, it should be noted that even though the recall of incidental words is logically prior and necessary for the formation of incidental concepts, it is possible to obtain the concept without being able to recall both incidental words on a particular list. This latter observation should help explain why significance, in some instances, was obtained with incidental concepts, but not with incidental words.

When significance was obtained in this study, the priest role, whether in terms of garb or real-simulated conditions, generated more anxiety pre-

sumably, since the layman role consistently produced more learning on the tasks of this experiment, whereas, the priest role resulted in lowered performances. This would be in line with the finding of Birney (1958). It is likely that the need to produce and achieve was greater when the examiner was perceived as a priest. Since all of the tasks are of complex rather than simple learning, the inference is that, with an increase in drive level, which this study hypothesized would take place with the priest treatment condition, learning was inhibited. Further, the priest-layman difference support the previous results obtained by Walker and Firetto (1965) and Baur (1966).

In terms of the effect of anxiety upon the performance of the subjects, it was found that it was the low anxious subjects who consistently obtained higher performance, when compared with either the middle or high anxious subjects. There was no consistent relationship between the three anxiety groups in terms of performance on the three tasks, other than the fact that low anxious subjects performed significantly better than the next highest group, whether it was the middle or high anxious subjects. It was inter-

esting that the results showed no interaction of a significant nature between anxiety and treatment conditions. That is, the treatments did not interact with the subjects' anxiety. Thus, it would seem that the "priest-layman" treatments, in general, affected the subjects in the same way. This might reflect the stereotype of priest and layman which the subjects shared in common because of their similar Catholic background.

An analysis of the True-False role differences showed that there were significant differences on all three learning tasks. This result supports the conclusion of Walker, Davis and Firetto (1968) that "true-role" and "simulated-role" are critical variables resulting in performance differences of subjects. The question of whether the examiner obtains significant differences in his real role or false role, seems to be answered in the affirmative. What should be noted in regard to the true-false role results, is the consistently better results obtained on all three learning tasks by the layman, whether it was a layman dressed in lay garb or a layman dressed in priest garb. The implication here is that the real laymen

as well as the simulated laymen generated less anxiety to the subjects than the priest role in this experiment.

Examiner differences are evident on all three learning tasks. This finding supports Davis' study (1968) in which examiner differences seemed to account for variations in subjects' performance. However, what the examiner differences in this study indicate, is the difference between real-life priests and real-life laymen. This seems to be a valid conclusion in view of the fact that there were no difference on any of the three learning tasks for examiners three and four, who were priests. Examiners one and two, who were laymen, obtained significantly different results on the incidental task only. This conclusion adds further clarification to the results obtained from the real priest vs. real layman treatment, in which laymen obtained consistently better performances than priests on all three learning tasks. This experiment can conclude that in this particular instance the behavior of the priest-examiner is significantly different from the layman-examiner, and that the laymen obtained better results from their subjects. However, whether laymen-examiners and priest-examiners operate according to some consistent pattern that is relatively rigid and

uniform (as might be concluded from this study), is a question that must await further research.

This study points to the possibility that it is not the appearance of "status" garb which is the most critical factor, but the way in which the examiner behaves (cf. Rosenthal, 1966). In this study, the garb of the experimenter was effective in producing differences on intentional learning alone, and only with the high anxious subjects. That the examiner is the critical variable is borne out by the results of the priest-layman differences, by the true-role, false-role differences, and finally by the individual examiner differences, regardless of role or status. Furthermore, in view of the results obtained, it must be assumed that the latter fact is related in some way to real-life differences, the examiner's behavior, appearance or some other variable or combination of variables.

Chapter VI

Summary

Seven hundred and fourteen freshman high school students were divided into low, middle and high anxious groups. Four graduate students in psychology switched roles as priest and layman and while wearing the garb consistent with the roles, administered three complex learning tasks to equal groups of subjects. The results showed that low anxious subjects performed significantly better on the three learning tasks than middle or high anxious subjects. The general results also point to the primary impact of examiner differences. However, these examiner differences seem to be related to the real life differences of the experimenters. Priest-examiners obtained poorer performance on all three learning tasks than the laymen-examiners. Role differences were also found to be important. The results tended to indicate that when examiners switched from priest role to layman role, they obtained better performances from the subjects. In other words, the examiners apparently behaved differently when they switched roles.

The effect of garb alone seemed to be a factor of lesser importance. Layman garb resulted in significantly higher learning, compared to priest garb, with the intentional learning task only.

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APPROVAL SHEET

The dissertation submitted by Reverend Anthony Firetto, C.R. has been read and approved by members of the Department of Psychology.

The final copies have been examined by the director of the dissertation and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the dissertation is now given final approval with reference to content and form.

The dissertation is therefore accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

Date	Signature of Adviser