CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

Achievement Theory and Programed Instruction

A thesis submitted in partial satisfaction of the requirements for the degree of Master of Arts in

Psychology

by

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January, 1975
The thesis of Patricia Murph Newlands is approved.

California State University, Northridge
December, 1974
ACKNOWLEDGEMENTS

For his love, encouragement and assistance, this thesis is dedicated to my husband, Dave.

My appreciation and thanks are extended to Dr. William B. Knowles and Dr. Frederick A. Muckler for their outstanding guidance and cooperation. I acknowledge with special thanks the assistance of my chairman, Dr. Mark S. Sanders. Dr. Sanders with patience, insight, advice and criticisms was an invaluable aid to me, not only during this study but throughout my graduate career.

I give my sincerest thanks and appreciation to my sons, Shawn, Michael and Mark for their encouragement over the years.

I am also indebted to my typist, Mary-jo Drean, for her diligence in typing and reproducing this document. In conclusion, I express my gratitude to the students who served as subjects for this study.
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ABSTRACT

ACHIEVEMENT THEORY
AND PROGRAMED INSTRUCTION

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Master of Arts in Psychology

December, 1974

Forty-two psychology students from California State University, Northridge served as subjects in an experiment designed to test the applicability of Atkinson's achievement theory to the design of programed instruction. Twenty-one subjects who were high in achievement imagery (AI) and low in test anxiety (TA) formed one achievement group in which the motivation to success (Ms) was greater than motivation to avoid failure (Mf). The remaining twenty-one subjects who were low AI and high TA formed a second achievement group in which Mf > Ms. Seven subjects from each achievement group were randomly assigned to one of three programed tasks. Each of the three programed tasks had a different probability of success (Ps). The easy program had a Ps of .90 while the hard program had a Ps of .62. The third program which was a combination of the hard and easy programs allowed subjects to choose their own Ps (free choice).
According to Atkinson's achievement theory subjects with $M_s > M_f$ should choose a task of intermediate difficulty with a $P_s$ of about .50 while subjects with $M_f > M_s$ should prefer a very easy ($P_s = .90$) or a very difficult task ($P_s = .10$). While no achievement group differences were found for the easy or hard programs, results on the free choice program were counter to those predicted from Atkinson's theory. The $M_s > M_f$ group chose an easy task in the free choice situation while the $M_f > M_s$ group chose the more difficult task. Possible explanations for this finding are discussed in terms of the future orientation of subjects in academic situations.

Additional findings indicated that knowledge of results (KR) may have been more beneficial to subjects on the hard program than on the easy program. No difference was found in retention on the three programs. This finding indicates that small step size and low error rate may not be more beneficial to retention than large step size and high error rate.
ACHIEVEMENT THEORY
AND PROGRAMED INSTRUCTION

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INTRODUCTION

Programed instruction has traditionally relied on programs in which the student progresses rather slowly through the material to be learned. Each frame or paragraph of the program contains only one idea and the student is given frequent review to be sure that he fully understands the concept presented (i.e., the size of the steps from frame to frame is small). Proponents of programs with small steps (Holland, 1965; Skinner, 1972) feel that by using small steps the student can keep his error rate low. Errors they believe are detrimental to subsequent learning. This approach does not take into account other individual variables that may affect how different students best learn material or that may affect the students acceptance of the learning technique. To examine the possible influence of individual differences the present investigation examines achievement imagery and test anxiety as variables in performance on programed instruction in an achievement-oriented situation. The motivation to achieve success and the motivation to avoid failure of the student is believed to vary in such a way that individuals will prefer programs of different difficulties and repetitiveness. The present study was performed to learn more about the effect of achievement
imagery and anxiety on performance and attitude toward different programs.

**Achievement Motivation**

Atkinson (1966) states that an "achievement-oriented situation" is one in which 1) the individual is responsible for the outcome (success or failure); 2) the individual anticipates unambiguous knowledge of results; and 3) the situation contains some degree of uncertainty or risk.

Atkinson (1957; 1966) proposes a model for achievement motivation which assumes that the motivation to perform in an achievement-oriented situation depends upon the strength of two relatively stable tendencies - the motive to achieve success ($M_s$) and the motive to avoid failure ($M_f$). Individuals who are high in motive to achieve success are characterized by high achievement imagery (AI) and low test anxiety (TA) while individuals high in motive to avoid failure display low AI and high TA.

According to Atkinson (1966, p. 13):

The strength of motivation to perform some act is assumed to be a multiplicative function of the strength of the motive, the expectancy (subjective probability) that the act will have a consequence, the attainment of an incentive, and the value of the incentive: $Motivation = f(Motive \times Expectancy \times Incentive)$.

When both motivation to approach and motivation to avoid are simultaneously aroused, the resultant motivation is the algebraic summation of approach and avoidance. The act which is performed among a set of alternatives is the act for which the resultant motivation is most positive.

Atkinson assumes that the degree of difficulty of a task can be inferred from the subjective probability of success ($P_s$). A difficult task would be one where the $P_s$ is low and an easy task would be one
where the \( P_s \) is high. He further assumes that the incentive value of success (\( I_s \)) is a positive linear function of difficulty - that is, as the \( P_s \) of a task becomes smaller, the \( I_s \) becomes greater (specifically, \( I_s = 1 - P_s \)). He defines \( I_s \) as "the relative amount of satisfaction to be experienced in any personal accomplishment" (Atkinson, 1958a, p. 298) which indicates that the model applies to situations which involve skill rather than chance.

The theory states that behavior on tasks differing in \( P_s \) and \( I_s \) is influenced by the degree to which an individual is motivated to achieve success or to avoid failure. Thus, in a constrained performance situation, individuals in whom \( M_s > M_f \) (characterized by high AI and low TA) would be expected to manifest the strongest motive to perform a task where \( P_s = .50 \). Given a choice of tasks with \( P_s \) from .10 to .90 such individuals would be expected to choose the tasks with a \( P_s \) of .50. The rationale for this expectation is that:

...in an extremely safe undertaking at which anyone can succeed, the person with high n Achievement [need for achievement] can get little achievement satisfaction out of accomplishing his objective. In an extremely speculative one, ...he not only is almost certain to frustrate his achievement aspirations, he also may feel that if he should by some outside chance succeed, his success could not be attributed to his own personal efforts but to luck or circumstances beyond his control. (McClelland, 1958, p. 306).

For individuals with \( M_f > M_s \) (characterized by low AI and high TA) all tasks would be negatively valued since these individuals would wish to avoid all of the tasks. If they are constrained to perform in an achievement situation they should avoid the intermediate difficulty (\( P_s = .50 \)) and choose either either the easiest (\( P_s = .90 \)) or the most difficult (\( P_s = .10 \)) task. In this way they set their level of
aspiration either defensively high or defensively low. These expectations have been borne out in studies by Atkinson (1958a); Atkinson and Litwin (1966); Karabenick and Youssef (1968); McClelland (1958); Raynor and Rubin (1971); and Raynor and Smith (1966). Partial support for the theory have been found in studies by Brody (1966); Litwin (1966); and Shrable and Sassenrath (1970), while Herbert and Sassenrath (1973) and Kight and Sassenrath (1966) found no support for the theory.

Test Anxiety

Mandler and Sarason (1952) found that subjects with high test anxiety (TA) took more time and had greater variability in time on the Kohs Block Design than did low TA subjects. Their study revealed that when no further reference was made to the testing situation high anxiety subjects tended to improve their performance. The opposite was found for the low anxiety subjects who tended to improve their performance scores when they were given fictitious failure reports. Similar results were obtained by Raynor and Rubin (1971).

High TA subjects in Kight and Sassenrath's (1952) study worked faster and made fewer errors on a programmed instruction task than did low TA subjects. The apparent conflict between the two studies in the time required to perform the task as a function of test anxiety may be due to the structure involved in the programmed task. Anxious individuals appear to benefit from high structure while nonanxious individuals do not (Kight and Sassenrath, 1966; Leith, 1969). Low anxious individuals have also been found to perform better than high anxious individuals when the task involved was either complex or where stress motivating instructions were given (Sarason, Mandler and Craighill, 1952).
Effects of Achievement Motivation and Test Anxiety Upon Programed Instruction

Programed instruction generally meets the requirements of an achievement-oriented situation in which the model of need for achievement is most relevant. The student is able to perform on his own initiative on an achievement task which provides immediate unambiguous feedback. In general, however, programed instruction has a high probability of success so that such situations involve little uncertainty or risk. The relationship between need for achievement and performance is positive for Ms > Mf individuals when situational cues lead these individuals to expect that a feeling of personal accomplishment will accompany a good performance (Atkinson, 1958b; Atkinson and Reitman, 1958). Since an easy task does not lead to a feeling of pride Ms > Mf individuals would not be expected to do as well as Mf > Ms individuals on a programed instruction task which has a high Ps. Kight and Sassenrath (1966) found that on an easy linear programed instruction task, freshmen and sophomore college students with high achievement motivation worked faster, made fewer errors and had better retention than students with low achievement motivation. This finding is counter to the achievement theory as proposed by Atkinson. Shrable and Sassenrath (1970) replicated Kight and Sassenrath's study using junior and senior college students under the assumption that the task would have a higher probability of success for the older better educated students. They found that students with high need for achievement had lower retention than students low in need for achievement (p < .06). Unfortunately the Ps of the program used by Kight and Sassenrath was not given in either study and Shrable and Sassenrath do not offer
convincing evidence that the Ps of the two studies was significantly different. Both of these studies were done under neutral conditions (i.e., no attempt was made to arouse achievement motivation).

When achievement-oriented and relaxed (non-ego, non-achievement-oriented) instructions were given on an easy program no differences were found (Herbert and Sassenrath, 1973). This may indicate difficulty in finding achievement relevant incentives in achievement motivation research. Conflicting results have been achieved using the same incentives (Atkinson, 1958a; Atkinson and Reitman, 1958). Unfortunately in these studies other variables were different so that comparisons are difficult. One problem encountered in achievement motivation studies is that in trying to arouse achievement motivation other motives, such as affiliation and power, may also be aroused (Atkinson, 1957, 1966). To date this problem of identifying and eliminating these undesired motives has not been satisfactorily resolved.

Another study (Heckhausen, 1967) found that fifteen-year old success-motivated students working on insight problems were better able to profit (i.e., learned more and had a higher performance level) from self-guided learning in programed instruction than students who were not success-motivated. Success motivation was significantly correlated with improvements in performance and the correlation was independent of intelligence.

According to Atkinson's achievement theory individuals who have Ms > Mf should be more motivated to perform a task which has an intermediate Ps than a task which has a very low or very high Ps. Individuals in whom Mf > Ms should prefer a task which has a very high or very
low Ps to a task where the Ps is intermediate.

Ambiguous results have been found in studies that have attempted to learn the effect of achievement imagery and test anxiety on programmed instruction. The present study was undertaken in an attempt to gather more information about this relationship. A major concern was to learn if individuals with differing levels of achievement imagery and test anxiety would choose tasks of different Ps in accordance with Atkinson's theory in a free choice situation.

Structure of Present Study

The present study compares the performance levels of students with varying degrees of achievement imagery and test anxiety on three programs dealing with logical fallacies. The programs were designated as:

1) Easy program with a high probability of success (Ps = .90)
2) Hard program with a medium probability of success (Ps = .62)
3) Free choice program (FC) where at seven different points subjects were free to choose between two branches made up of the easy and the hard programs.

The easy and the hard programs were designed to test the theoretical application of the achievement theory while the FC program was designed to examine the practical applications of the achievement theory.

The subjects were divided into two groups as follows:

Ms > Mf (high AI and low TA)
Mf > Ms (low AI and high TA)

The following hypotheses are primarily based on Atkinson's theory that the Ms > Mf subjects prefer an intermediate Ps (.62 in the present
study) over a high $Ps$ (.90 in the present study) and that the $M_f>M_s$ subjects prefer a high $Ps$ (.90) over an intermediate $Ps$ (.62). It is reasoned that working on a preferred task leads to motivation and performance is in part dependent upon motivation. It was hypothesized for the easy and hard programs that:

1) The errors made on the programs would not be significantly different for the achievement groups within a particular program.

2) The easy program was expected to require more time than the hard program due to the greater number of frames on the easy program. This finding was expected for both achievement groups. Within the easy program high anxiety subjects ($M_f>M_s$) were expected to take less time to complete the program than low anxiety subjects ($M_s>M_f$) due to the high structure (subjects progress from one frame to the next), low complexity (subjects were not required to make any decisions about how to progress through the material) and low error rate. No time expectation for the hard program was made since the consequence of a higher error rate is not known when the complexity and structure remain the same as on the easy program.

3) On the hard program $M_s>M_f$ subjects would do better on the retention test than $M_f>M_s$ subjects. $M_s>M_f$ subjects were expected to do better on this program since the $Ps$ is closest to their preferred $Ps$ of .50 and, therefore, they would be expected to be more motivated. On the easy program, $M_f>M_s$ subjects were expected to do better on the retention test.
than Ms>Mf subjects. This is because the Ps is the one which Mf>Ms subjects would be expected to choose (given a choice between Ps = .62 and Ps = .90) and one that Ms>Mf subjects would be expected to avoid.

4) Ms>Mf subjects would have a more favorable attitude toward the hard program than Mf>Ms subjects. Conversely Mf>Ms subjects were expected to have a more favorable attitude toward the easy program than Ms>Mf subjects.

For the FC program it was hypothesized that:

1) The Ms>Mf subjects would take the hard branch more frequently than Mf>Ms subjects which would result in their answering fewer frames. By performing in this manner the subjects would be setting their Ps closest to that predicted for them by the achievement theory.

2) The Ms>Mf subjects would make more errors than the Mf>Ms subjects since they were expected to take the hard program more often.

3) The Ms>Mf subjects would take less time than the Mf>Ms subjects since they were expected to take the hard program more often.

4) Ms>Mf subjects were expected to have better retention than Mf>Ms subjects. This is due to the complexity and lack of structure (subjects were required to make many decisions and were not required to progress from one frame to the next) of this program which was anticipated to be more beneficial to the Ms>Mf subjects. Additionally the subjects were
frequently required to estimate their $P_s$ which was expected to be more stressful for the $M_f>M_s$ subjects. Higher retention was expected for the $M_s>M_f$ subjects in spite of their taking the more difficult branch that contained less information because of their higher success motivation.

5) Given that $M_s>M_f$ subjects took the hard branch more often and that the $M_f>M_s$ subjects took the easy branch more often then it was expected that there would be no difference in the attitudes of the two groups toward the program since each should have favorable attitudes because they could optimize their preference.

These hypotheses are summarized in Table 1.
### TABLE 1

**SUMMARY OF HYPOTHESES**

<table>
<thead>
<tr>
<th>Program</th>
<th>Ms &gt; Mf</th>
<th>Mf &gt; Ms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy</td>
<td>No significant difference</td>
<td></td>
</tr>
<tr>
<td>Hard</td>
<td>No significant difference</td>
<td></td>
</tr>
<tr>
<td>FC</td>
<td>More (due to taking hard branch and answering fewer frames)</td>
<td>Less (due to taking easy branch and answering more frames)</td>
</tr>
<tr>
<td>Easy</td>
<td>More</td>
<td>Less</td>
</tr>
<tr>
<td>Hard</td>
<td>No expectation made</td>
<td></td>
</tr>
<tr>
<td>FC</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Easy</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Hard</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>FC</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Easy</td>
<td>Less favorable</td>
<td>More favorable</td>
</tr>
<tr>
<td>Attitude</td>
<td>More favorable</td>
<td>Less favorable</td>
</tr>
<tr>
<td>FC</td>
<td>No significant difference</td>
<td></td>
</tr>
</tbody>
</table>

*Easy program requires more time than the hard program.*
METHOD

Pretest

Subjects

The Iowa Picture Interpretation Test (IPIT, Hedlund, 1953) and the Test Anxiety Questionnaire (TAQ, Mandler and Sarason, 1952) were administered to 175 students enrolled in introductory and physiological psychology classes at California State University, Northridge. Three students were eliminated for failure to follow instructions.

Tests

The IPIT (revised form of the RK form with 10 items) was used as an index of the strength of achievement imagery (AI). The test is a combination of a projective technique and a multiple-choice test and can be administered to large groups of subjects as an alternative to the Thematic Apperception Test (TAT) which is frequently used to measure achievement imagery. While the IPIT has not been found to correlate significantly with the TAT it has been found to correlate significantly with verbal learning (Hurley, 1956), maze-learning (Johnston, 1955, 1956) and with addition tasks (Williams, 1955). The test-retest reliability coefficient of the original form of the test (form 0 with 10 items) was .52 (Hurley, 1955). Internal consistency coefficient using the Spearman-Brown attenuation correction was .34 (Hurley, 1955). For the RK form (24 items) of the test an odd-even internal consistency of .33 was found and a stability coefficient of
.60 (Johnston, 1956). For the present study only items from the RK form that have shown a marked positive discrimination on two or more analyses were used (Personal communication, Kight, 1974). Appendix A contains the IPIT.

Test anxiety was measured by the TAQ. The TAQ is frequently used to measure test anxiety in motivation studies (Atkinson and Litwin, 1958; Herbert and Sassenrath, 1973; Kight and Sassenrath, 1966; Sassenrath and Shrable, 1970). Appendix B contains the TAQ. For the original sample of 172 subjects the TAQ and the IPIT were uncorrelated ($r = -.04$).

Selection of Subjects

Of the 172 students who completed the IPIT and TAQ correctly 70 students were selected to continue in the experiment. These 70 subjects were either above the median on the IPIT and below the median on the TAQ ($M_s > M_f$) or below the median on the IPIT and above the median on the TAQ ($M_f > M_s$). The median score on the IPIT was 12 and on the TAQ the median was 175. The 70 subjects were randomly assigned to one of the three programed tasks used in the actual experiment. Seven subjects failed to return to complete the experiment. Of the 63 subjects who completed the experiment three were later eliminated due to failure to follow instructions.

Actual Experiment

Subjects

Because there was an unequal number of subjects from each achievement group on each program 18 subjects were eliminated from analysis
and only the seven Ms>Mf and seven Mf>Ms subjects with the most extreme scores on the IPIT and TAQ within each program were used for analysis. None of the subjects had previous experience with logical fallacies.

Tests and Programed Material

A test-retest reliability for 18 subjects in the present study (subjects on the hard program were given a retest of the TAQ whenever time permitted) was .94. The correlation for the sample of 42 subjects on the IPIT and the TAQ was \( r = -.77 \). This strong negative correlation confirmed the selection criterion. The Adaptability Test (Form A, SRA, 10 minutes) to measure intelligence; an attitude questionnaire (Appendix C); an achievement test for assessing retention (Appendix D); and three versions of a program dealing with logic fallacies (taken from Little, Wilson, and Moore, 1955) were given to all subjects.

Three programs (easy, hard and free choice) were used. All dealt with identical material and took from 15 to 79 minutes each to complete. Pilot studies were done prior to the actual experiment to determine the Ps of the three programs. Frames were altered or deleted in order to obtain Ps as close to .90 and .50 as possible. The final programs were not pretested.

The Ps of the easy program for the 14 subjects analyzed on this program was .90. This was a 70 frame linear program where the subjects filled in a missing word or words or chose a correct answer from two or more alternatives. The answer to each frame was on the back of each frame (this was the procedure for all three programs).
Appendix E contains this program.

The hard program contained 27 frames and had a Ps of .62 for the 14 subjects on this program. The material in the hard program was the same as that in the easy program but was made more difficult by increasing the size of the steps, i.e., one or more frames were deleted between frames so that it contained less information. In addition, cues, such as underlining key words needed in the answer, were eliminated from the easy program. One frame identified in pilot studies as difficult was on the hard program but not on the easy program. Appendix F contains the hard program.

The FC program allowed the subjects to choose their own Ps. This program was a combination of the easy and hard programs. At seven points in the program, choice frames were offered which were identical on both branches. At these frames the subject had the option of taking the easy branch (identical to the easy program) which was longer but had a high probability of success or the hard branch (identical to the hard program) which was shorter but had a medium probability of success. Before each choice frame the subjects were allowed to go over the previous group of frames (remedial route) if they desired. They could review either branch regardless of which one they had previously taken. They were informed that the choice to review was entirely theirs. They were allowed to freely move from one branch to the other at choice frames but not in between choice frames. At each choice frame they were told how many frames they would encounter on each branch before the next choice frame. They were asked to indicate which branch they would take and to state how many of the
frames they expected to get correct. Subjects were not allowed to change answers once they had seen the correct answer and they were required to respond to every frame in a series and to every choice frame. Room was available for two answers in case they chose to go back over the material. They were not allowed to review more than once. The structure of this FC program can be seen in Figure 1. Appendix G contains the FC program.

**Dependent Variables**

The measures obtained on the easy, hard and FC programs were:

a) time to complete the program; b) number of correct frames; c) retention score (obtained from post retention test given seven days after completion of the program - two subjects in the hard and one subjects in the FC program took their posttest after eight days and one subject on the hard program took the posttest after nine days); and d) attitude toward the program (from the attitude questionnaire). Additional measures on the FC program were: a) proportion of frames answered on each branch; b) number of times each branch was chosen; c) expectation of success; and d) number of times review was taken.

**Procedure**

Each type of program was run with from one to eight subjects at the same time. Subjects were not told the difficulty level of a program or branch.

Subjects on all three programs were given the following instructions:

This is an experiment to find out what type of programed instruction is the most efficient. Your help in follow-
Figure 1. Structure of the FC Program
Following the instructions is absolutely necessary to find out what type of program is best and to the development of future programs. Please read the instructions carefully.

After you finish here today you are to come back in one week for a posttest on the material covered in the program. Please do not study for this test as this would invalidate the results.

After everyone has finished the experiment the results will be posted on the bulletin boards. Find your name on the board and look at your score. The highest score will be posted along with the mean and the standard deviation so that you can see how well you have done. The three top scorers will receive $10.00 each. In case of ties the money will be divided.

The program deals with traditional logic fallacies. Research studies have shown mixed results about ability to identify logical fallacies in arguments and success in a number of professions. In general, it appears that people who do well in the study of logic fallacies do well in most professions especially those that require abstract reasoning, integration of ideas, creativity and in dealing with people.

This program is designed to facilitate the learning of traditional logic fallacies. It consists of a series of frames. A frame is a paragraph or question which tells you something about logic and requires that you fill in a missing word or phrase, or that you select a correct answer from two or more choices. You are to read each frame and write in the required response. You then look on the back of the frame where you will find the correct answer. If your answer was incorrect try to understand why you made a mistake by examining the frame. Do not change your answer or look back at any frame previous to the missed frame. Do not worry about errors, the correct answers are given to reinforce your correct learning or to immediately erase any misconceptions.

Some frames will call for more than one answer - be sure to provide all of the answers called for before proceeding to the next frame. Answer every question and do not look ahead. A line provided for an answer may require one or more words.

Subjects on the easy and hard programs were further instructed:

Please look at your sample program. This program is similar to the actual program but not identical. You may find it harder or easier than the actual program.
It will give you an idea of what you will encounter in the actual program. If you have any questions please ask them now.

You may now do the sample program. PLEASE DO NOT MARK IN THE PROGRAM BOOKLET.

Now on the actual program write down the time that you begin and the time you finish. All of the programs are similar but there are differences in the number of frames that each of you have. Therefore, some of you will finish sooner than others. After you finish fill out the opinion survey. When you have finished the opinion survey come up and sign up for the posttest in 7 days. Be sure and write down the time and place of the posttest. It will require 30 minutes. You may then leave. Please do not discuss the experiment with anyone. Thank you. PLEASE DO NOT MARK IN THE PROGRAM BOOKLET.

Subjects on the FC program received additional instructions

(Branch A = easy program and Branch B = hard program):

This program offers you a choice of how much information you want and how much time you want to take. This is done by using a technique known as branching. This program has two branches for you to choose from.

Branch A gives you the most information and therefore requires that you respond to more frames. In general, it is easier, more redundant and slower.

Branch B gives you less information and has fewer frames. In general, it is more difficult, less redundant and faster.

At several points in the program you will have an opportunity to choose if you want to take Branch A or Branch B - these are called CHOICE FRAMES. You will be told how many frames are in each branch. You are to choose one of the two branches and to state how many of the frames you expect to get right. For example, if there are 6 frames and you expect you will get all of them correct you will write 6 in the provided blank, if you expect to get half of them correct you would write 3 and so on. If there is only one frame you would answer yes if you expect to get it right and no if you do not expect to get is right. Questions about how many you expect to get right are for research purposes only and do not affect your performance in any way.
Before each Choice Frame you will have a chance to go over the previous group of frames. You may feel that you did not understand the previous group of frames well enough and want to review them or you may have some other reason for wishing to review them. If you go back or not is entirely up to you. If you do choose to go back you will be told which frame is the start of each branch. You may choose either branch. That is, you may review the branch you have just completed or you may wish to go over the other branch. Your answer sheet provides a space for you to write down your answers for the review.

ABOUT CHOICE FRAMES

After you select a branch you must stay with that branch until you reach the next choice frame. For example, on the first choice frame you may decide to take Branch A, but while you are doing Branch A you decide that Branch B would have been better, you must stick with Branch A until you reach the next Choice Frame - then you may switch to Branch B if you wish. At the third Choice Frame you may decide to stay with Branch B or you may go back to Branch A. You may stick to one branch throughout the program if you wish.

Please look at your sample program. The branches on this program are similar to those on the actual program but not identical. You may find the branches on the actual program easier or harder than on this sample program. The sample program will give you an idea of what to expect on the actual program. Please do both branches on this sample program so that you will have an idea of what both branches are like. You may do Branch A or Branch B first. Indicate your first choice on the answer sheet. If you have any questions please ask them now.

You may now do the sample program. PLEASE DO NOT MARK IN THE PROGRAM BOOKLET.

Now on the actual program write down the time that you begin and the time you finish. All of the programs are similar but there are differences in the number of frames that each of you have. Therefore, some of you will finish sooner than others regardless of what branch you take. After you finish fill out the opinion survey. When you have finished the opinion survey come up and sign up for the test in 7 days. Be sure and write down the time and place of the posttest. It will require 30 minutes. You may then leave. Please do not discuss the experiment with anyone. Thank you. PLEASE DO NOT MARK IN THE PROGRAM BOOKLET.
The sample programs were used to acquaint the subjects with the actual programs. This was considered necessary for those on the FC program so that they would have a better idea of the difficulties they could expect to encounter in the actual program. In this way the entire actual program could be analyzed since all of the subjects had equal prior practice and were considered to be familiar enough with the procedure that the early frames did not need to be discounted. The sample programs were also used on the easy and hard programs to equate experience. When the subjects returned after seven days they were given the Adaptability Test for 10 minutes and then a posttest for retention of which they were allowed 15 minutes. After the posttest they were debriefed and excused. The top scoring subject in each program was paid $10.00 as per instructions.
RESULTS

An analysis of variance showed that the intelligence (as measured by the Adaptability Test) of the subjects assigned to the three programs was significantly different ($F(2,36)=4.39, p<.05$). Duncan's Multiple-Range Test indicated that the subjects on the hard program ($\bar{X} = 18.21$) scored higher than subjects on the FC program ($\bar{X} = 14.15, p<.10$). The subjects on the easy program ($\bar{X} = 17.64$) did not differ from subjects on the other two programs. Further analysis comparing measures across the three programs used intelligence as a covariant. No covariant was used in analysis comparing groups on the FC program because there was no significant difference in intelligence between the two achievement groups ($F(1,36)=2.22, p>.05$) and because there was no significant interaction between achievement groups and the type of program in terms of intelligence ($F(2,36)=2.55, p>.05$). Instead, an analysis of variance for repeated measures was employed. Table 2 gives the means and standard deviations for intelligence, errors, time, retention and attitude.

Errors

A $3 \times 2$ analysis of covariance on the number of correct frames showed that the three programs were of significantly different difficulties ($F(2,35)=25.17, p<.005$). Analysis on the means adjusted on the basis of score on the covariant (hereafter called adjusted means) using Duncan's Multiple-Range Test showed that subjects on the hard ($\bar{X}=.62$) program made more errors than subjects on the easy ($\bar{X}=.90, p<.001$)
<table>
<thead>
<tr>
<th>Program</th>
<th>Retention (No. Correct)</th>
<th>Attitude*</th>
<th>Attitude 7**</th>
<th>Attitude 12**</th>
<th>Intelligence</th>
<th>Score**</th>
<th>Time**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>X</td>
<td>s.d.</td>
<td>X</td>
<td>s.d.</td>
<td>X</td>
<td>s.d.</td>
<td>X</td>
</tr>
<tr>
<td>EASY</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms&gt;Mf</td>
<td>9.63</td>
<td>3.69</td>
<td>10.00</td>
<td>7.42</td>
<td>2.56</td>
<td>.53</td>
<td>1.29</td>
</tr>
<tr>
<td>Mf&gt;Ms</td>
<td>9.86</td>
<td>3.53</td>
<td>8.57</td>
<td>6.80</td>
<td>2.46</td>
<td>.53</td>
<td>1.62</td>
</tr>
<tr>
<td>Total</td>
<td>9.65</td>
<td>9.29</td>
<td>2.51</td>
<td>1.46</td>
<td>17.65</td>
<td>.90</td>
<td>43.74</td>
</tr>
<tr>
<td>HARD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms&gt;Mf</td>
<td>9.29</td>
<td>4.23</td>
<td>3.71</td>
<td>7.06</td>
<td>3.13</td>
<td>.95</td>
<td>2.35</td>
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<tr>
<td>Mf&gt;Ms</td>
<td>7.63</td>
<td>4.86</td>
<td>7.57</td>
<td>6.55</td>
<td>3.25</td>
<td>.76</td>
<td>2.31</td>
</tr>
<tr>
<td>Total</td>
<td>8.38</td>
<td>5.64</td>
<td>3.19</td>
<td>2.34</td>
<td>18.22</td>
<td>.61</td>
<td>24.14</td>
</tr>
<tr>
<td>FC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ms&gt;Mf</td>
<td>9.86</td>
<td>4.43</td>
<td>11.14</td>
<td>5.01</td>
<td>2.71</td>
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<td>1.72</td>
</tr>
<tr>
<td>Mf&gt;Ms</td>
<td>6.63</td>
<td>2.15</td>
<td>4.71</td>
<td>5.95</td>
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<tr>
<td>Total</td>
<td>8.15</td>
<td>7.93</td>
<td>2.80</td>
<td>2.00</td>
<td>14.14</td>
<td>.83</td>
<td>42.48</td>
</tr>
</tbody>
</table>

*Higher score = more positive attitude

**Adjusted means
or the FC ($\bar{x} = .83, p < .005$) programs. There was no significant difference between the easy and the free choice programs. There was no significant difference between achievement groups ($F(1,35) = <1$) nor any significant interaction ($F(2,35) = 1.51, p > .05$). It was hypothesized that a difference would be found for the FC program but not for the easy and hard programs which would cause an overall interaction between program and achievement groups.

**Time**

Time spent on the task was significantly different for the three programs ($F(2,35) = 13.61, p < .005$). Duncan's Multiple-Range Test on adjusted means showed that subjects on the hard ($\bar{x} = 24.14$) program took significantly less time to complete the task than subjects on the easy ($\bar{x} = 43.74, p < .005$) or subjects on the FC ($\bar{x} = 42.47, p < .005$) programs. There was no significant difference between the time spent on the easy and FC programs. The hard program was expected to take less time than the easy program. Since subjects on the FC program were free to review, their mean time was very similar to that of the subjects on the easy program. The variance on the FC program was great (Table 2) — time to complete the program ranged from 17 to 79 minutes. There was a non-significant tendency for $Mf > Ms$ subjects to take less time than $Ms > Mf$ subjects ($F(1,35) = 3.42, p < .10$) on all three programs. The expectation that the $Mf > Ms$ subjects would take more time on the easy and less time on the FC programs than the $Ms > Mf$ subjects found no support ($F(2,35) = <1$).

**Retention**

The subjects did not differ significantly according to program
(F(2,35)=<1) or achievement group (F(1,35)=<1). Nor was the interaction significant (F(2,35)=<1). Four subjects took the posttest more than seven days after completing the program of whom three were in the Mf>Ms group on the hard program. A t test on the Mf>Ms subjects on the hard program indicated that there was a significant difference between subjects who took the posttest on the seventh day and those who took it a day or two later (t(5) = 4.98, p<.01, two-tailed). This may account for the lower retention in the Mf>Ms group relative to the Ms>Mf group within the hard program.

Attitude

Six attitude questions (1, 7, 12, 18, 19 and 20) were analyzed separately since they did not fit into the general scoring scheme of the other questions. Only questions 7 and 12 yielded significant effects. Question 7 asked the subjects "Did you feel the frames were: 1) too repetitious? 2) repetitious? 3) about right? 4) not quite repetitious enough? 5) not nearly repetitious enough?". There was a significant difference between the programs (F(2,35)=3.68, p<.05). Duncan's Multiple-Range Test on adjusted means indicated that the hard program (X = 3.19) was judged less repetitive than the easy program (X = 2.51, p<.10). The FC program (X = 2.80) was not different from the other two programs. There was no significant difference in achievement groups (F(1,35)=<1) nor any significant interaction (F(2,35)=<1).

Question 12 asked the subjects "Did you feel you knew whether your answer was correct before you looked at the answer? 1) quite often, 2) often, 3) occasionally, 4) seldom, and 5) very seldom". There was
a significant program difference (F(2,35)=5.72, p<.01) which according to Duncan's Test indicated that subjects on the hard program (x = 2.33) felt they knew the correctness of their answer less often than subjects on the easy program (x = 1.46, p<.05). Subjects on the FC program (x = 2.0) did not differ significantly from subjects on the other two programs. Neither of the achievement groups (F(1,35)=1.62, p<.05) nor the interaction (F(2,35)=<1) were significantly different.

The achievement groups did not differ in their attitudes toward the programs (F(1,35)=<1). The Ms>Mf subjects were expected to show a more positive attitude toward the hard program but instead they had a lower though non-significant attitude toward this program than toward the other two programs (interaction, F(2,35)=2.14, p<.20). There was no significant difference in the attitude of the subjects toward the three programs (F(2,35)=<1).

**FC Program**

The Ms>Mf subjects did not get significantly more frames correct than the Mf>Ms subjects (F(1,12)=1.69, p>.05). As they progressed through the program they did have a higher success rate than the Mf>Ms subjects thus the interaction between achievement groups and choice points was significant (F(6,72)=2.81, p>.05). There was no significant main effect for the choice points in terms of number of frames correct (F(6,72)=<1). This relationship is shown in Figure 2.

To determine if there was any difference in the preference for the easy (A) or the hard (B) branches for the two achievement groups the proportion of times each chose Branch A was analyzed using the choice points as independent variables. The Test for Significance of
Figure 2. Actual Success of \( M_a > M_f \) and \( M_f > M_s \) Subjects on FC Program Across Choice Points.
Difference Between Two Proportions indicated that only choice point 6 was significant at the .05 level (2.16). Failure to reach significance for more than one choice point is attributed to the low number of subjects. From Figure 3 it can be seen that after choice point 3 there is a definite trend for the Ms > Mf subjects to take Branch A and for the Mf > Ms subjects to take Branch B. The relationship between proportion of subjects that took Branch A and performance on the given group of frames can be seen by comparing Figures 2 and 3. The Ms > Mf subjects were fairly divided between the two branches on the first two choice points and they got over 70 percent of the frames correct. On choice point 3, where there was a large difference in the number of frames on each branch, almost 60 percent of these subjects chose Branch B as would be expected from Atkinson's theory. Their performance was very low (getting only 53 percent of the frames correct). Over 70 percent of these subjects chose Branch A from choice points 4 through 7 and they got over 80 percent of these frames correct. Apparently their poor performance on the hard branch on choice point 3 caused them to switch to the easy branch and thereby increase their performance level.

On choice point 3 over 70 percent of the Mf > Ms subjects chose the easy branch and got nearly 80 percent of these frames correct. Yet on choice points 4 through 6 fewer and fewer of these subjects took the easy branch which resulted in lower performance scores. On choice point 7, where the difference in the number of frames on the two branches was small, more of these subjects returned to Branch A but their overall performance was low. The reason for their taking fewer
Figure 3. Proportion of $M_s > M_f$ and $M_f > M_s$ Subjects Who Took Branch A Across Choice Points

$\#p < .05$
frames and thereby raising their error rate is not clear. The variance in their performance on the first three choice points may have increased their anxiety so that they switched to the hard program where they expected to do poorly (see following discussion on expectation of success). Taking the hard branch also required less time so that they may have been seeking to get out of the situation as quickly as possible. That a greater proportion of these subjects returned to Branch A on the seventh choice point is not seen as significant since there was little difference in the number of frames between the two branches. Also that they performed so badly on this group of frames suggest that they were not exerting much effort at this point.

The expectation of success for the Ms > Mf group was higher than the expectation of the Mf > Ms group. ($F(1, 72) = 9.71, p < .025$). Table 3 gives the means and standard deviations for the expectation of success for the two achievement groups while Figure 4 shows the relationship between the two groups. There was a significant difference between choice points ($F(6, 72) = 4.47, p < .001$) in terms of the expected success and there was a significant interaction between groups and choice points ($F(6, 72) = 2.78, p < .025$). An F test for Simple Effects showed that the Ms > Mf subjects did not change as a function of practice ($F(6, 72) = < 1$) while the Mf > Ms subjects did change as a function of practice ($F(6, 72) = 6.40, p < .001$). The Ms > Mf subjects retained their high expectation of success throughout the program ($F(6, 72) = 2.78, p < .025$) while the Mf > Ms subjects had a generally decreasing expectation of success (with the exception of the fourth group of frames). This lowering expectation of success for the Mf > Ms subjects may have been due to their
TABLE 3
Means and Standard Deviations for the Expectation of Success for Ms>Mf and Mf>Ms Subjects on FC Program

<table>
<thead>
<tr>
<th>Choice Points</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ms&gt;Mf</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\bar{x})</td>
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<td>.92</td>
<td>.98</td>
<td>.95</td>
<td>.84</td>
<td>.96</td>
<td>.89</td>
</tr>
<tr>
<td>s.d.</td>
<td>0</td>
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<td>.04</td>
<td>.13</td>
<td>.20</td>
<td>.09</td>
<td>.16</td>
</tr>
<tr>
<td>Mf&gt;Ms</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(\bar{x})</td>
<td>.86</td>
<td>.79</td>
<td>.69</td>
<td>.95</td>
<td>.64</td>
<td>.50</td>
<td>.61</td>
</tr>
<tr>
<td>s.d.</td>
<td>.13</td>
<td>.19</td>
<td>.32</td>
<td>.13</td>
<td>.33</td>
<td>.25</td>
<td>.32</td>
</tr>
</tbody>
</table>
Figure 4. Expectation of Success for Ms>Mf and Mf>Ms Subjects on FC Program
taking fewer frames after the third choice frame (Figure 3) or they may have taken fewer frames due to their lower expectation of success (Figure 4). Similarly the Ms>Mf subjects may have maintained their high expectation of success because they took more frames after the third choice point or they may have taken more frames because of their higher expectation of success.

Analysis of the number of times the subjects chose to review revealed no significant effects of achievement group ($F(1,12)=1.43$, $p>.05$), choice points ($F(6,84)=1.59$, $p>.05$) or interaction ($F(6,84)<1$).

The obtained results are compared to the predicted results in Table 4. The hypothesis that there would be no difference in error rate for the two achievement groups within the easy and hard programs was confirmed. For the FC program the reverse of the hypothesis that Ms>Mf subjects would make more errors than the Mf>Ms subjects was found.

The prediction that the easy program would take more time to complete than the hard program was confirmed. The prediction that the Ms>Mf subjects would take more time than the Mf>Ms subjects on the easy program was not confirmed and no difference was found in the time required to complete the hard program for the two achievement groups. The Mf>Ms subjects on the FC program did not require more time than the Ms>Mf subjects as predicted. There was a non-significant tendency for the Mf>Ms subjects on all of the programs to take less time than the Ms>Mf subjects.
**TABLE 4**
Comparison of Obtained and Predicted Results

<table>
<thead>
<tr>
<th>Program</th>
<th>Errors</th>
<th>Hypothesized</th>
<th>Obtained</th>
<th>Hypothesized</th>
<th>Obtained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Easy</td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td>Hard</td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td>FC</td>
<td>Less</td>
<td>Less</td>
<td>Less</td>
<td>More</td>
</tr>
<tr>
<td>Time*</td>
<td>Easy</td>
<td>More</td>
<td>No difference</td>
<td>Less</td>
<td>No difference</td>
</tr>
<tr>
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<td>No difference</td>
<td>No prediction</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td>FC</td>
<td>Less</td>
<td>No difference</td>
<td>More</td>
<td>No difference</td>
</tr>
<tr>
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<td>High</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td>Hard</td>
<td>High</td>
<td>No difference</td>
<td>Low</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
<td>FC</td>
<td>High</td>
<td>No difference</td>
<td>Low</td>
<td>No difference</td>
</tr>
<tr>
<td>Attitude</td>
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<td>No difference</td>
<td>More favorable</td>
<td>No difference</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
<td>FC</td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
<td>No difference</td>
</tr>
</tbody>
</table>

*The easy program required more time than the hard program as predicted.*
None of the hypotheses dealing with retention were confirmed since no difference in retention was found. That four subjects took the retention test one or two days later than the other subjects may have affected this analysis.

None of the hypotheses dealing with attitude were confirmed for the easy and hard programs. The hypothesis that there would be no difference in the attitude of the two achievement groups on the FC program was not confirmed since the hypothesis was based upon the assumption that the two achievement groups would select the Ps predicted for them by Atkinson's theory.
DISCUSSION

Findings in the present study are counter to those predicted by the achievement theory. That there was no difference in the error rate, time, retention or attitude of the two achievement groups on the easy and hard programs could be because high variance in measures coupled with small numbers of subjects masked the results. This lack of difference could also be interpreted as a washout effect caused by failure to sufficiently arouse achievement motivation or it could be due to the arousal of conflicting motives. However, when these findings are considered along with the results of the FC program it appears that achievement motivation was indeed aroused. When allowed to make a choice the two achievement groups did differ significantly by setting their probability of success (Ps) at different levels and they indicated that their expectations of success were quite different. This finding suggests that in a constrained situation (such as the easy or hard programs) both groups will behave in a similar manner but that when they are given a choice of behaviors they will behave differently.

The possibility that conflicting motives contributed to performance cannot be entirely ruled out. Smith (1966) found that one or more unmeasured motives that are negatively related to achievement motivation may influence performance in an achievement-oriented situation. Also, as previously mentioned, other motives may be inadvertently aroused along with achievement motivation. These motives can
differentially effect the two achievement groups. As Atkinson and Feather (1966) state, it is not necessarily safe to assume that in dividing subjects into achievement groups all other variables are equal. Which motives are aroused and the degree to which they are aroused for each subject is unknown. The problem of conflicting motives may have confounded the results in this study. In attempting to arouse achievement motivation by telling the subjects that scores would be posted, that money would be awarded and that successes with logic correlated with professional success conflicting motives could have been aroused. Ideally other groups of subjects should be employed using only one motivator so that the effect of these motivators would be measured. In addition, measures of other motives that might be suspected of contributing (i.e., affiliation, need for power, social approval) to behavior should be obtained. Studies that have attempted to identify other motives have not been entirely satisfactory. The difficulty of identifying aroused motives and their relative strength is considered a serious flaw in the achievement motivation theory.

Atkinson (1958b; 1966) states that the achievement theory only applies to Ms>Mf individuals under ideal achievement-related situations. When these individuals have expectations of satisfying other motives through the same action the simple relationship between need for achievement and performance is confounded. However, the Mf>Ms individual will not undertake an achievement-oriented activity at all unless constrained by some other source of positive motivation such as the need for social approval. One might question how the researcher
can involve both individuals in the same experiment without violating the assumptions underlying the theory.

It is further possible that asking subjects to estimate their Ps influenced their behavior. Litwin (1966) found that when subjects were asked to estimate their Ps that they tended to perform in accordance with their estimate and that achievement differences were not found. The high expectation of success of the Ms>Mf subjects may have caused them to choose the easy branch on the FC program in order to obtain their expected success. The Mf>Ms subjects may have chosen the hard branch in order to fulfill their low expectation of success. If this were the case is unknown, however, that the Ms>Mf subjects had a lower though non-significant attitude toward the hard program suggests that they preferred the easy program. If this were true then the high expectation of success was more likely the result of choosing the easy branch.

Achievement Motivation and Future Orientation

According to Raynor (Raynor, 1969; Raynor and Rubin, 1971) Atkinson's theory fails to deal with the future orientation of the subjects. He (Raynor, 1969) found that when students with Ms>Mf viewed grades as instrumental to future career success they received higher grades in an introductory psychology class than Ms Mf students who did not view grades in that way. He suggests that for the Ms>Mf individual, the greater the number of anticipated future successes that are contingent upon immediate performance, the larger will be the motivation to do well. When the subjective probability of future success is intermediate these individuals should be trying to do their
very best on the immediate task no matter what the Ps of the task is but they will prefer that the immediate task have a high Ps. The Mf>Ms individual would be expected to display the greatest resistance to engaging in the immediate activity when the subjective probability of future failure is intermediate. Therefore, when individuals view future success as contingent upon success in the immediate activity, the Ms>Mf individual should strive to do his best on the immediate task and the Mf>Ms individual should display the greatest resistance to the immediate task when the subjective probability of success or failure is intermediate (.50). However, when future success is assured or very easy (Ps = .90) the Ms>Mf individual would not be expected to strive as hard since the task offers little incentive to achieve. When future success is not contingent upon immediate success the probability of success in the immediate activity is expected to influence the individual's behavior as predicted by Atkinson's achievement theory. Raynor (1971) used continuation in an addition task with a Ps = .50 as the contingent condition and found that Mf>Ms subjects performed worse in this condition than in the non-contingent condition in which continuation was assured regardless of performance. Ms>Mf subjects performed better in the contingent than in the non-contingent condition.

Raynor's modification of the achievement theory would appear to explain the difficulty in applying Atkinson's theory to academic situations. Studies that have attempted to relate college grades and achievement motivation have found no clear cut evidence of a relationship (Lowell, 1952; McClelland, et al., 1953; Parrish and
Rethlingshafter, 1954; Weiss, et al., 1959). The bulk of achievement theory research has dealt with simple situations such as games of skill. In these situations the goal is the immediate outcome of the game. The subject receives immediate unambiguous knowledge of results (KR) that relates directly to success or failure. Such a situation does not encompass a large segment of an individual's life and may be assigned to that phase of the life situation which is considered relaxation or recreation. It is doubtful that an academic situation is so simple. The outcome of many different tasks are cumulative and while each single task may not greatly affect the individual's future, when taken together they are integrated with the individual's life situation or future goals. Success or failure relates not to recreation but to achievement of an entire set of future aspirations such as career, prestige, or economics. Therefore, the consequences are much greater. KR gives knowledge of success or failure on the specific task but does not necessarily give information about attainment of future goals. To the individual outcome of a game of skill may be a goal in itself, however, for an academic task the outcome is a means to a goal.

It is, therefore, possible that the achievement theory; 1) applies to future goals in complex situations but not to immediate tasks that are a means for achieving future goals or that 2) it does not apply to more complex situations.

The findings of the present study appear consistent with Raynor's theory. The Ms > Mf subjects chose the easy branch when they had the opportunity thereby raising their rate of success. They had a non-
significant lower attitude toward the hard program which may indicate that in an academic situation they prefer the opportunity to be more successful. The Mf>Ms subjects chose the hard branch which resulted in lower success. They had a non-significant lower attitude toward both the hard and the FC programs. It is unclear why they chose the hard branch of the FC program when they had a low attitude toward it. The task may have been so anxiety provoking for them that they attempted to get out of it as quickly as possible. Their tendency to take less time on the three programs offers some limited evidence that they may have been attempting to get out of the task as quickly as possible. Additionally the lack of structure of the FC program may have affected their choice by adding to their anxiety.

Future studies in achievement theory should look at the possible relevance of Raynor's proposal. Estimating the Ps of future goals is difficult. It is questionable that Raynor's experimental task really relates to success in life. Clues to these Ps may be found by looking at career aspirations, major chosen in college or course difficulties. The Ps of various occupations can be examined for the amount of risk involved, i.e., the number and consequences of decisions required by those in the occupation or the probability of attaining the occupation. One study (Burnstein, 1963) has found that Ms>Mf individuals aspire to prestigious occupations with intermediate probabilities of attainment but are less likely to aspire to high risk occupations such as U.S. Supreme Court Justice. This result appeared to be more related to fear of failure than to need for achievement. French (1958) found that when Air Force personnel were lead to believe that success in a
digit-letter code test was related to future career success they had a significantly higher success rate than when future career success was not mentioned.

Programed Instruction

Subjects in both achievement groups indicated that the repetitiveness of the hard program was "about right" (on attitude question 7). On this program subjects were missing nearly 40 percent of the frames which is high for programed instruction. Subjects on the two other programs felt the program was "repetitious" to "about right". The actual difference between the ratings on the three programs was not very great but this finding does suggest that normal programs with small step size and higher success rates than the easy program used in this study may be too repetitious for most individuals in terms of preference. While individual preference is not necessarily related to performance it can affect user acceptance.

Responses to attitude question 12 raises some interesting questions about knowledge of results (KR). Subjects on the easy program indicated that they knew they were correct before they looked at the answer "quite often" to "often" while those on the hard program said they knew "often" to "occasionally". It is possible that KR was more beneficial to subjects on the hard program in that such feedback corrected misconceptions and thus conveyed more information to them than to subjects on the easy program. In his review of programed instruction, McKeachie (1974) found that KR was not necessary to learning and that immediate KR may not be as useful as delayed KR. He also suggests that KR may be more beneficial to students on a
difficult task. This is also suggested by Holland (1965). The present findings tend to support this conjecture. More research on KR and repetitiveness seems in order.

The hard program was made deliberately difficult in the present study. As a result there were sometimes large jumps in information—in some instances subjects were asked to respond to questions about information that they had not received. The hard program was also lower in the amount of cueing of answers. On several frames on the easy program information that was required for the answer was underlined. This underlining was omitted on the hard program. Subjects on the hard program may have studied the information presented more carefully in order to make their responses. Correct answers may have also been more meaningful to them. Subjects on the easy program might have been responding to cues and not paying as much attention to the information. For them KR would have little value. Further studies using some of the principles used in the hard program could prove more enlightening about the effect of repetition, cueing and KR on retention. It would be valuable to compare a program with low repetition, no cueing and large steps but with high continuity from frame to frame with and without KR with a traditionally high repetitious, high cueing, and small step program with and without KR.

An interesting finding was that there was no significant difference in retention on the three programs. In spite of the fact that the three Mf > Ms subjects on the hard program who took the posttest after seven days did significantly worse on the posttest than the four Mf > Ms subjects who took the posttest on the seventh day, subjects on
the hard program did not do significantly worse than subjects on the other two programs. Many researchers claim that errors are detrimental to learning (Dolejsi, 1969; Fry, 1963; Glazer, 1965; Holland, 1965; Skinner, 1972; and Smith and Moore, 1962). If this were the case then subjects on the hard program who made significantly more errors would be expected to do worse on the posttest than subjects on the easy program. This did not occur, which is even more interesting since subjects on the easy program received more information than those on the hard program. This finding also leads to question of the concept of small steps in programed instruction. That the hard program did not result in significantly different retention suggests that people learn in spite of errors. This contention is supported by other research that shows that errors do not persist and that small steps may be less effective than larger steps (McKeachie, 1974). Since the retention for all groups was low ($\bar{x} = 8.71$ out of 20 possible) no firm statement can be made but it is an obvious area for further consideration. It is certainly conceivable that optimum step size, repetition of material and acceptable error rates may vary as a function of the material presented.

Summary

No support was found for Atkinson's achievement motivation theory as originally postulated. Findings contradictory to the theory in a free choice situation suggest that the theory may not apply to complex situations or that it applies to future rather than to immediate goals in a complex situation. Raynor's modification of Atkinson's achievement theory appears to be potentially useful to the under-
standing of achievement motivation in complex situations.

Errors were not found to be detrimental to retention. Nor did large step size appear to affect retention. It is possible that KR was more helpful to subjects on the hard program than on the easy program. Also by not receiving cues to answers they may have become more involved in the learning process. KR and non-cueing may have affected the performance of the subjects on the hard program on the posttest. Further study is needed to understand the inter-relationship between KR, cueing, size of steps and learning in programed instruction.
REFERENCES


Glaser, Robert (Ed.), Teaching machines and programmed learning, II. Department of Audiovisual Instruction, National Education Association of the United States, 1965.


APPENDIX A

IOWA PICTURE INTERPRETATION TEST
MULTIPLE CHOICE PICTURE TEST

Each of the pictures you will see is indicated in this booklet by a number. Underneath each number there are four descriptions for that particular picture. You are to rank the four descriptions according to your idea of what the picture expresses.

Each description can be ranked from 1 to 4 on the basis of how well you think it fits the picture, that is, tells what is happening. Read all four descriptions and decide which one you would most likely give. This one would get a rank of 1. Then decide upon the one that seems next most likely. Rank it 2. And so on. The description that you would be least likely to give should be ranked 4.

Here is an example:

A. She is listening to her favorite radio program.
B. She is annoyed because she has to work while her friends go out.
C. She feels that she cannot go to the party because no one ever asks her to dance.
D. She is looking forward to her opening night as the star of a great show.

If B is most like your own interpretation, you would rank it 1.

Look at the separate answer sheet. Under the space marked Example you would write a 1 after the letter B. You would then write down the rank for descriptions A, C and D.

Each picture will be shown for one minutes. You must rank each description. Even if you have difficulty deciding what the rank should be, make the best decision you can. Remember, there are no right or wrong answers. Don't spend too much time trying to decide.
Indicate your first impressions.

Now take the answer sheet. Fill in your name and other information at the top. Now turn the page. Judge the statements for Card 1 and then rank them on the separate answer sheet. Do not mark in this booklet.

Key: AI = Achievement Imagery; B = Blandness; H = Hostility; I = Insecurity

TAT Card

1. A. He is dreaming of the day when he will become a great musician.
   B. He is afraid that he will never to able to play the violin well.
   C. His violin is on the table and he is waiting for his music lesson.
   D. He is angry at his mother because she makes him practice while he'd rather be outside playing.

   A. AI  B. I  C. B  D. H

2. A. He is demonstrating the way to climb a rope.
   B. He is watching his hated rival and hopes he will fall.
   C. He is in a rope climbing contest and is exerting every effort to win.
   D. Although he has tried his best, he sees that the race is lost.

   A. B  B. H  C. AI  D. I

3. A. She despises this man who is forcing his attention upon her.
   B. He admires her for the success she has achieved in her career.
   C. She is sorry that she did not do more to make their marriage a happy one.
   D. They are considering whether to buy this attractive table.

   A. H  B. AI  C. I  D. B
4. A. She is rushing to tell her sister they have won the contest.
   B. She has told her sister that she must hurry if she wants to meet her friends.
   C. She feels only scorn for her sister and her wild ways.
   D. She feels inferior to her sister who is everything that she had hoped to be.

   A. AI  B. B  C. H  D. I

5. A. He hates the people who have led him to this kind of life.
   B. He realizes now that he will never escape from the life he has been leading.
   C. He is tired and is leaving the party to get some sleep.
   D. He is determined to start anew and make something of himself.

   A. H  B. I  C. B  D. AI

6. A. She is explaining her despair of overcoming the limitations of her handicap.
   B. They are enacting a scene in a play.
   C. She has finally turned in fury on the woman who has so humiliated her.
   D. She is telling the other woman that despite her handicap she knows she will succeed.

   A. I  B. B  C. H  D. AI

7. A. He is thinking of how quiet the big city can become in the early morning.
   B. He is waiting in the dark to get back at his tormentors.
   C. He is sure that he will someday be one of the successful people living in this fashionable neighborhood.
   D. He feels that he will never be able to make the grade in the big city.

   A. B  B. H  C. AI  D. I

8. A. He is being awakened from a brief rest to resume work on his invention.
   B. The man is in despair because he can do nothing to help.
   C. He is waking up the other person from his sleep since it is daybreak.
   D. His menacing gesture reveals his deep bitterness toward the sleeping man.
9. A. The old lady is envious and resentful of the younger woman.  
   B. They are reminiscing about their years of happiness and success together.  
   C. The old lady wishes that she had been able to help the younger woman when she needed it.  
   D. They are watching the people pass on the street.  
   A. H B. AI C. I D. B  

10. A. He has just successfully completed an extremely difficult and dangerous emergency operation.  
    B. He has failed to save her life although he has tried his best.  
    C. He is rubbing the sleep out of his eyes in an effort to keep awake.  
    D. He is rejecting this woman because of his disgust for her and all that she stands for.  
    A. AI B. I C. B D. H  

Scoring: Rank 1 = 3 points; Rank 2 = 2 points; Rank 3 = 1 point; Rank 4 = 0 points.
APPENDIX B

TEST ANXIETY QUESTIONNAIRE
TEST ANXIETY QUESTIONNAIRE

Scoring: 15 cm scale. Low anxiety answers (i.e., feel very confident) = 1; Midpoint = 8; High anxiety answers (i.e., feel very unconfident) = 15.

QUESTIONNAIRE ON ATTITUDES TOWARD THREE KINDS OF TESTING SITUATIONS

Name ___________________________ Instructor ___________________________
Date _______________ Class: Day _____________ Time _____________

The questionnaire is designed to give you an opportunity to indicate how and what you feel in regard to three types of testing situations:

A. The group intelligence or aptitude test, such as those you took upon entrance to college,
B. The individual (face-to-face) type of intelligence test,
C. The course examination.

The value of this questionnaire will in large part depend on how frank you are in stating your opinions, feelings, and attitudes. Needless to say, your answers to the questions will be kept strictly confidential; they will under no circumstance be made known to any instructor or official of the University.

We are requesting you to give name, class, etc., only because it may be necessary for research purposes.

Each of you have taken a course examination and a group intelligence or aptitude test, but not all of you have taken an individual intelligence test. Those of you who have not taken such a test are requested to answer the relevant questions in terms of how you think you would react to them. We want to know what you think your attitudes and feelings toward taking such a test would be and not what you think they ought to be. If you have taken an individual intelligence test, answer the questions in terms of what you actually experienced.

For each question there is a line or scale on the ends of which are statements of opposing feelings or attitudes. In the middle of the line you will find the word "Midpoint" which is intended to reflect a feeling or attitude which is in between the statements of opposing feelings described above. You are required to put a mark (X) on that point on the line which you think best indicates the strength of your feeling or attitude about the particular question. The midpoint is only for your guidance. Do not hesitate to put a mark on any point on the line as long as that mark reflects the strength of your feeling or attitude.
If you have any questions at this time, please ask the person who has passed out the questionnaire.

THERE ARE NO "CATCH" QUESTIONS IN THIS QUESTIONNAIRE. PLEASE READ EACH QUESTION AND EACH SCALE VERY CAREFULLY.

THE MIDPOINT IS ONLY FOR YOUR GUIDANCE. DO NOT HESITATE TO PUT A MARK (X) ON ANY POINT ON THE LINE AS LONG AS THAT MARK REFLECTS THE STRENGTH OF YOUR FEELING OR ATTITUDE.

SECTION I

The following questions relate to your attitude toward and experience with group intelligence or aptitude tests. By group intelligence tests we refer to tests which are administered to several individuals at a time. These tests contain different types of items and are usually paper and pencil tests with answers requiring either fill-ins or choices of several possible answers. Scores on these tests are given with reference to the standing of the individual within the group tested or within specific age and educational norms. The Scholastic Aptitude Test (SAT) or the American College Testing Program (ACT) which you may have taken represent this type of test. Please try to remember how you usually reacted toward those tests and how you felt while taking them.

1. If you know that you are going to take a group intelligence test, how do you feel beforehand?

| Feel very unconfident | Midpoint | Feel very confident |

2. After you have taken a group intelligence test, how confident do you feel that you have done your best?

| Feel very unconfident | Midpoint | Feel very confident |

3. When you are taking a group intelligence test, to what extent do your emotional feelings interfere with or lower your performance?

| Do not interfere at all | Midpoint | Interfere a great deal |

4. Before taking a group intelligence test, to what extent are you aware of an "uneasy feeling"?

| Am very much aware of it | Midpoint | Am not aware of it at all |

5. While taking a group intelligence test to what extent do you experience an accelerated heartbeat?

| Heartbeat does not accelerate at all | Midpoint | Heartbeat noticeably accelerated |
6. **Before** taking a group intelligence test to what extent do you experience an accelerated heartbeat?

<table>
<thead>
<tr>
<th>Heartbeat does not accelerate at all</th>
<th>Midpoint</th>
<th>Heartbeat noticeably accelerated</th>
</tr>
</thead>
</table>

7. **While** taking a group intelligence test to what extent do you worry?

<table>
<thead>
<tr>
<th>Worry a lot</th>
<th>Midpoint</th>
<th>Worry not at all</th>
</tr>
</thead>
</table>

8. **Before** taking a group intelligence test to what extent do you worry?

<table>
<thead>
<tr>
<th>Worry a lot</th>
<th>Midpoint</th>
<th>Worry not at all</th>
</tr>
</thead>
</table>

9. **While** taking a group intelligence test to what extent do you perspire?

<table>
<thead>
<tr>
<th>Perspire not at all</th>
<th>Midpoint</th>
<th>Perspire a lot</th>
</tr>
</thead>
</table>

10. **Before** taking a group intelligence test to what extent do you perspire?

<table>
<thead>
<tr>
<th>Perspire not at all</th>
<th>Midpoint</th>
<th>Perspire a lot</th>
</tr>
</thead>
</table>

11. In comparison with other students how often do you think of ways of avoiding a group intelligence test?

<table>
<thead>
<tr>
<th>Less often than other students</th>
<th>Midpoint</th>
<th>More often than other students</th>
</tr>
</thead>
</table>

12. To what extent do you feel that your performance on the college entrance tests was affected by your emotional feelings at the time?

<table>
<thead>
<tr>
<th>Affected a great deal</th>
<th>Midpoint</th>
<th>Not affected at all</th>
</tr>
</thead>
</table>

**SECTION II**

The following paragraphs relate to your attitude towards individual intelligence tests and your experience with them. By individual intelligence tests we refer to tests which are administered to one individual at a time by an examiner. These tests contain different types of items and thus present a variety of tasks. Those tasks can be both verbal and manipulative, i.e., verbal or written answers to questions or manipulation of objects such as is involved in puzzles, form boards, etc. Examples of tests of this type would be the Stanford-
Binet test and the Wechsler-Bellevue test. Please try to remember how you have usually reacted towards these tests or how you would expect to react to them.

13. Have you ever taken any individual intelligence tests?

   Yes          No          (Circle the appropriate answer)

If your answer to the above question is YES, indicate in the questions below how you do or did react to individual intelligence tests.

If your answer to the above question is NO, indicate in the following questions how you think you would react to or feel about individual intelligence tests.

14. When you are taking an individual intelligence test, to what extent do (or would) your emotional feelings interfere with your performance?

   Would not interfere          Midpoint          Would interfere
   with it at all                a great deal

15. If you know that you are going to take an individual intelligence test, how do you feel (or expect that you would feel) beforehand?

   Would feel very
   unconfident

   Midpoint

   Would feel very
   confident

16. While you are taking an individual intelligence test, how confident do you feel (or expect that you would feel) that you are doing your best?

   Would feel very
   confident

   Midpoint

   Would feel very
   unconfident

17. After you have taken an individual intelligence test, how confident do you feel (or expect that you would feel) that you have done your best?

   Would feel very
   unconfident

   Midpoint

   Would feel very
   confident

18. Before taking an individual intelligence test, to what extent are you (or would you be) aware of an "uneasy feeling"?

   Am not aware
   of it at all

   Midpoint

   Am very much
   aware of it
19. **While** taking an individual intelligence test, to what extent do you (would you) experience an accelerated heartbeat?

| Heartbeat does not accelerate at all | Midpoint | Heartbeat noticeably accelerated |

20. **Before** taking an individual intelligence test, to what extent do you (would you) experience an accelerated heartbeat?

| Heartbeat does not accelerate at all | Midpoint | Heartbeat noticeably accelerated |

21. **While** taking an individual intelligence test, to what extent do you (would you) worry?

| Worry a lot | Midpoint | Worry not at all |

22. **Before** taking an individual intelligence test, to what extent do you (would you) worry?

| Worry a lot | Midpoint | Worry not at all |

23. **While** taking an individual intelligence test, to what extent do you (would you) perspire?

| Would never perspire | Midpoint | Would perspire a lot |

24. **Before** taking an individual intelligence test, to what extent do you (would you) perspire?

| Would never perspire | Midpoint | Would perspire a lot |

25. In comparison to other students, how often do you (would you) think of ways of avoiding taking an individual intelligence test?

| More often than other students | Midpoint | Less often than other students |

**SECTION III**

The following questions relate to your attitude toward and experience with course examinations. We refer to major examinations, such as mid-terms and finals, in all courses, not specifically in any one course. Try to represent your usual feelings and attitudes toward these examinations in general, not toward any specific examination you have taken. We realize that the comparative ease or difficulty of a particular course and your attitude toward the subject matter of the course may influence your attitude toward the examinations; however,
we would like you to try to express your feelings toward course examinations generally. Remember that your answers to these questions will not be available, at any time, to any of your instructors or to any official of the University.

26. Before taking a course examination, to what extent are you aware of an "uneasy feeling"?

<table>
<thead>
<tr>
<th>Am not aware of</th>
<th>Midpoint</th>
<th>Am very much aware of it</th>
</tr>
</thead>
<tbody>
<tr>
<td>it at all</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

27. When you are taking a course examination, to what extent do you feel your emotional reactions interfere with or lower your performance?

<table>
<thead>
<tr>
<th>Do not interfere</th>
<th>Midpoint</th>
<th>Interfere a great deal</th>
</tr>
</thead>
<tbody>
<tr>
<td>with it at all</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

28. If you know that you are going to take a course examination, how do you feel beforehand?

<table>
<thead>
<tr>
<th>Feel very unconfident</th>
<th>Midpoint</th>
<th>Feel very confident</th>
</tr>
</thead>
</table>

29. After you have taken a course examination, how confident do you feel that you have done your best?

<table>
<thead>
<tr>
<th>Feel very unconfident</th>
<th>Midpoint</th>
<th>Feel very confident</th>
</tr>
</thead>
</table>

30. While taking a course examination, to what extent do you experience an accelerated heartbeat?

<table>
<thead>
<tr>
<th>Heartbeat does not accelerate at all</th>
<th>Midpoint</th>
<th>Heartbeat noticeably accelerated</th>
</tr>
</thead>
</table>

31. Before taking a course examination, to what extent do you experience an accelerated heartbeat?

<table>
<thead>
<tr>
<th>Heartbeat does not accelerate at all</th>
<th>Midpoint</th>
<th>Heartbeat noticeably accelerated</th>
</tr>
</thead>
</table>

32. While taking a course examination, to what extent do you worry?

<table>
<thead>
<tr>
<th>Worry a lot</th>
<th>Midpoint</th>
<th>Worry not at all</th>
</tr>
</thead>
</table>

33. Before taking a course examination, to what extent do you worry?

<table>
<thead>
<tr>
<th>Worry a lot</th>
<th>Midpoint</th>
<th>Worry not at all</th>
</tr>
</thead>
</table>
34. **While** taking a course examination, to what extent do you perspire?

| Never perspire | Midpoint | Perspire a lot |

35. **Before** taking a course examination, to what extent do you perspire?

| Never perspire | Midpoint | Perspire a lot |

36. When, in your opinion, you feel *well* prepared for a course examination, how do you usually feel just before the examination?

| Confident | Midpoint | Anxious |
APPENDIX C

ATTITUDE QUESTIONNAIRE
ATTITUDE QUESTIONNAIRE

Please answer the following questions in terms of how you felt about the program you have just taken. Indicate your feelings by circling the number of the choice which most closely reflects your opinion.

1. How difficult do you feel the program would be for the average college student?
   1. Very easy (would get 90 to 100 percent of the frames correct)
   2. Easy (would get 80 to 89 percent of the frames correct)
   3. Average (would get 70 to 79 percent of the frames correct)
   4. Hard (would get 60 to 69 percent of the frames correct)
   5. Very hard (would get 50 to 59 percent of the frames correct)
   6. Extremely hard (would get 49 percent or less of the frames correct)

2. How much do you think you learned from the material presented?
   1. Very much (learned 90 percent of the program)
   2. A good deal (learned 70 percent of the program)
   3. Average (learned 50 percent of the program)
   4. A little (learned 30 percent of the program)
   5. Very little (learned 10 percent of the program)

3. Would you be interested in taking an entire logic course with programmed instruction?
   1. Very interested (I found the subject matter and method of presentation very interesting)
   2. Interested (I would be interested if I have the time)
   3. Neutral (I don't care much one way or the other)
   4. Not too interested (I would rather not if I had the choice)
   5. Not at all interested (I would not be interested under any circumstances)

4. Has the program caused you to become interested in logic?
   1. Very interested (I would like to take a course in logic)
   2. Interested (I would consider taking a course in logic)
   3. Neutral
   4. Not too interested (I would rather not study any more logic)
   5. Not at all interested (I would never pursue logic any further)

5. How do you rate programmed instruction as a means of learning a subject?
   1. Prefer programmed instruction to class room learning
   2. For most subjects I would prefer programmed instruction
   3. Think programmed instruction most useful when used to supplement class room learning
4. For most subjects I would prefer class room instruction
5. Prefer class room learning to programed instruction

6. Did the program hold your interest?
   1. Very much
   2. A good deal
   3. Average
   4. A little
   5. Very little

7. Did you feel the frames were:
   1. Too repetitious?
   2. Repetitious?
   3. About right?
   4. Not quite repetitious enough?
   5. Not nearly repetitious enough?

8. Did you feel that programed instruction helped you learn the material more rapidly than you would have learned it from a textbook?
   1. Definitely
   2. Probably
   3. About the same
   4. Probably not
   5. Definitely not

9. Did you feel more certain about knowing the subject matter than you would have if it were presented in a textbook?
   1. Definitely more certain
   2. Somewhat more certain
   3. About the same
   4. Somewhat less certain
   5. Definitely not more certain

10. Did you feel that programed instruction helped you to concentrate on the material more than you would have been able to in a textbook?
    1. Definitely
    2. Probably
    3. About the same
    4. Probably not
    5. Definitely not

11. Did you find yourself trying to get through the material rather than to learn it?
    1. All of the time trying to learn
    2. Most of the time trying to learn
    3. About half learning and half trying to get through
    4. Most of the time trying to get through
    5. All of the time trying to get through
12. Did you feel you knew whether your answer was correct before you looked at the answer?
   1. Quite often
   2. Often
   3. Occasionally
   4. Seldom
   5. Very seldom

13. Did you feel that the programed material was specifically suited to your individual needs?
   1. Definitely suited to my needs
   2. Most of the time suited to my needs
   3. About half of the time suited to my needs
   4. Most of the time not suited to my needs
   5. Definitely not suited to my needs

14. Did you feel that you could work at your own pace?
   1. Definitely could work at my own pace
   2. Most of the time could work at my own pace
   3. About half of the time could work at my own pace
   4. Most of the time could not work at my own pace
   5. Definitely could not work at my own pace

15. What features about programed instruction do you find most beneficial?

16. What features about programed instruction do you find least beneficial?

17. What suggestions would you make to improve the program?

18. Describe any previous experience you have had with programed instruction?

19. Describe any previous experience you have had with logic fallacies?

20. Are you now taking a logic course? Yes or No ____. If yes, have you studied or discussed fallacies?
APPENDIX D

RETENTION POSTTEST
RETENTION TEST

Name ___________________________ Date __________________

Beside each of the following statements indicate by letter if it is a definition of

A. Equivocation
B. Obfuscation
C. Leading Question
D. False Obversion
E. False Conversion
F. Misuse of the Mean
G. Contradictory Assumptions
H. Misuse of Analogy
I. Begging the Question

1. A situation in which two assumptions occur, neither of which can be true in the presence of the other
2. Assuming just what we wish to prove
3. Directing an answer
4. Pivoting a statement at the verb
5. The use of a word in two different senses
6. Advocating the moderate position merely because it is midway between extreme positions
7. Presumption that if two things are alike in some respects, they are necessarily alike in others
8. Misuse of contrast or opposites
9. Using meaningless word groups either inadvertently or for the particular purpose of darkening or avoiding an issue
Beside each of the following statements indicate by letter if it is an example of

A. Equivocation  
B. Obfuscation  
C. Leading Question  
D. False Obversion  
E. False Conversion  
F. Misuse of the Mean  
G. Contradictory Assumptions  
H. Misuse of Analogy  
I. Begging the Question

1. CITIZEN: "Of the three candidates, Smythe is too liberal, Jones is too conservative, and I know nothing about Green except that he claims to be less liberal than Smythe and more liberal than Jones. So I shall vote for Green."

2. MOTHER, who suspects her son of having gone in swimming contrary to her orders: "Son, did you get your hair wet in the river today?"

3. I know that, since he is bad, his brothers and sisters must be bad too, because if you give a rotten apple time it will ruin the whole bag.

4. FIRST PERSON: "The study of logic is worthwhile, indeed."
SECOND PERSON: "Why is the study of logic worthwhile?"
FIRST PERSON: "Because the study of the structure and techniques of reasoning is so valuable."

5. The following is a quotation from Lewis Carroll's Through the Looking Glass:

   Here the Red Queen began again. "Can you answer useful questions?" she said. "How is bread made?"
   "I know that!" Alice cried eagerly. "You take some flour--"
   "Where do you pick the flower?" the White Queen asked.
   "In a garden or in the hedges?"
   "Well, it isn't picked at all," Alice explained, "it's ground--"
   "How many acres of ground?" asked the White Queen. "You mustn't leave out so many things."

6. PATIENT: "The doctor said I cannot get out of bed until my fever subsides. He must have meant that I can get out of bed when my fever subsides."
7. It is necessarily true that all members of the Communist Party are enemies of democracy. Those whose actions brand them as enemies of democracy must therefore be considered members of the Communist Party.

8. WIFE: "George, have you decided to lead a straight life from now on?"

9. "My English teacher tells me that he enjoys reading only good books."
   "How does he know when they are good?"
   "He says that if they're not good he doesn't enjoy them."

10. POLITICIAN: "When you ask me if I favor the special bond issue for roads, I reply that I have always been for better roads. They are the arteries of our commerce. They are the pathways to progress. And yet I would not deem it wise to bankrupt ourselves even to pay for better roads. This is a serious question -- so serious that I think each person should think it through for himself. That is one of the glories of our American way of life -- that each person has a right to determine for himself which was he shall vote."

11. A young lady exclaims, "Of course he's prejudiced, but in an unbiased sort of way!"
SCORING KEY FOR RETENTION TEST

First Page

1. G
2. I
3. C
4. E
5. A
6. F
7. H
8. D
9. B

Second Page

1. F
2. C
3. H
4. I
5. A
6. D
7. E
8. D
9. I
10. B
11. G
APPENDIX E

EASY PROGRAM
1. This program is an introduction to TRADITIONAL LOGIC. Within it there will be developed a set of methods for analyzing and evaluating arguments. You will first be presented several concepts within __________ logic.

2. Many different types of sentences are used in ordinary discourse, but traditional logic focuses primarily on only one of these: this type of sentence is referred to as a CATEGORICAL STATEMENT. In traditional logic, and in this program, the basic type of sentence to be considered is called a __________ statement.

3. A categorical statement is one that makes a claim about the relations between two classes. (A CLASS is a collection or group of entities which have a common property or properties: e.g., lakes, trees, rocks, Arctic temperatures, wealthy CSUN students.) All dogs are animals relates to the class of dogs to the class of animals. This sentence is therefore a __________ statement.

4. All dogs are animals asserts that all members of the class of dogs are also members of the __________ of animals.

5. No mice are birds is also a categorical statement because it makes a claim about the relations between classes. It claims that no MEMBER of the class of mice is also a __________ of the class of birds.

6. Every categorical statement contains four elements. The first to be discussed, the SUBJECT TERM, indicates what class is being spoken of or described. In the statement, all wars are disastrous, the class of wars is described. The term wars, therefore, is the __________.

7. The subject term is often not a single word, but an entire phrase. The subject term of Most wise Chinese proverbs are available to Western civilisation is wise Chinese proverbs. The subject term of Most reptiles of North America are poisonous is __________.
8. The subject term is usually preceded by a second element called the QUANTIFIER. Quantifiers are NOT a part of the subject term, but simply indicate what portion of the subject class is referred to. They include such words as all, few, no, many, some, etc. Select and underline the quantifier in each statement:

1. Some sheiks are handsome spendthrifts.
2. Most armchairs are comfortable.
3. No mosquitoes are immortal.

1. Some 2. Most 3. No

9. The quantifier is not a part of the subject term. For example, the statements

1. All children are innocent.
2. Few children are cruel.

have different __________ but the same __________.

Quantifiers Subject

10. The following two statements

1. Most camels are fast drinkers.
2. Most Arabs are fast drinkers.

have the same __________ but different __________.

Quantifiers Subject

11. Select and underline the SUBJECT TERM in each statement:

1. All blondes are exciting.
2. Some redheads are exciting.
3. No calculus books are exciting.


12. Select and underline the QUANTIFIER in each statement:

1. No Frenchmen are English.
2. Many mothers are students.
3. Few wines are excellent.

1. No 2. Many 3. Few

13. A distinction should be drawn between the grammatical notion of SUBJECT and the logical notion of SUBJECT TERM. All students have a superior average are exempt from the final examination is a categorical statement. The grammatical subject of the statement is students. But the term students who have a superior average, since it identifies the subject class of the statement, is the ____________.

Subject term
14. Remember that the subject term is often more than one word and that the quantifier is not a part of the subject term. Identify and underline the SUBJECT TERM in:

No United States Army officers over the age of sixty-five are individuals who have died dishonorably.

United States Army officers over the age of sixty-five
1. Fallacies are mistakes in reasoning. Learning to recognize fallacies can be an interesting game as well as an important step in improved thinking. We can fall into serious error if we permit our own or other people's influence on us.

Fallacies or mistakes in reasoning.

2. If we would be guided by truth and reason, we must be constantly on guard against or mistakes in reasoning.

Fallacies

3. Fallacies vary greatly in the extent to which they distort the truth: they may do no more than make an argument more attractive, or they may completely distort the truth.

Truth

4. There are more than thirty-eight common fallacies. We shall examine five fallacies which deal with the misuse of the language and four fallacies of false presumption. We will first look at fallacies which deal with the misuse of the language. As commerce can proceed efficiently only when the dollar denotes the same thing to depositor, banker, and merchant so thoughts can be transferred efficiently and accurately only when words mean the same thing to speaker and to hearer. Imagine the confusion if the banker decided that a dollar means a hundred cents when he takes it in and fifty cents when he pays it out. Yet many a bitter argument and costly misunderstanding has been the result when two people use the same words or combinations of words to mean different things. This is an example of of the language.

Misuse

5. Fallacies of the misuse of language arise from the failure of language to convey exact and unequivocal meanings. These fallacies sometimes arise from the deliberate use of to deceive or entrap.

Language or words

6. Equivocation is the use of a word in two different senses. occurs as a logic fallacy when an inference is drawn from a word whose meaning has been deliberately or inadvertently shifted in the course of argument.

Equivocation
7. No logical progression of thought can occur if the terms are used first in one sense and then in another. The very fact that an inference is drawn indicates that we are expected to take the word in one sense only; we are not supposed to spot the **equivocation** - we are not in on the trick. A careful definition of terms is the best protection against **equivocation**.

8. Most of us will grant the premise that a person ought to do what is **right**. Let us also grant that a person ought to do what is right. Let us also grant that a person has the right to eat as much as he wishes. But anyone who concludes, or asks us to conclude, that a person ought therefore to eat as much as he wishes is committing the fallacy of equivocation, for the word **right** does not have the same meaning in the two premises.

9. It has been argued that the Taft-Hartley law is a slave labor law and that slave labor is prohibited under the Constitution. The catch here is that the term **slave labor** is first used figuratively and then literally.

10. **Obfuscation** means a darkening or obscuring. Words may be used to conceal or to obscure as well as to enlighten. The weakness of a questionable argument may be difficult to detect if the structure of the argument is concealed in a mass of words which contribute nothing to the meaning. The fallacy of obfuscation, then, consists in using meaningless word groups either inadvertently or for the particular purpose of **obfuscation** or avoiding an issue.

11. Obfuscation is often effective in argument because the mind refuses to trace the meaning through the maze of words and tends to assume that significant meaning is there because of language is impressive. One may guard against **obfuscation** by reducing wordy passages to their simplest elements and barest meaning.

12. Beside the following statement write if it is an example of equivocation or obfuscation.

Excerpt from a piece of literary criticism:

"Despite the insistent, denotative matter-of-factness at the surface of the presentation, the subsurface activity of *Hearth and Sea* is organized connotatively around two poles. By a process of accrual and coagulation, the images tend to build round the
opposed concepts of Home and Not-Home. Neither, of course, is truly conceptualistic; each is a kind of poetic intuition, charged with emotional values and woven, like a cable, of many strands..."

Obfuscation

13. Beside the following statement write if it is an example of equivocation or obfuscation.

During reconstruction days in the South, carpetbaggers anxious to produce a large Republican vote used to tell the newly freed slaves that according to the Bible there were only two kinds of people, politicians and sinners.

Equivocation

14. Beside the following statement write if it is an example of equivocation or obfuscation.

A so-called letter of recommendation contained the statement, "If you should become as well acquainted with Mr. Wilson as I am, I am sure that you would view his abilities as I view them."

Obfuscation

15. Beside the following statement write if it is an example of equivocation or obfuscation.

INDUSTRIALIST: "Everyone agrees that cooperation is desirable. Yet we have passed antitrust laws directed at large corporations, despite the fact these corporations are only examples of cooperation."

Equivocation

16. Presumably a question is a request for information. But it is often more than this. In a leading question a person is directed to the answer or led to imply or admit something he may or may not wish to. The question "Have you stopped beating your wife?" is a _______________ since to answer "No" implies that at one time or another you did beat your wife - a fact which may not yet have been established.

Leading question
17. There are several types of leading questions. One type directs the answers: "You worked hard on this problem, didn't you?" (Yes) "You haven't seen the defendant before, have you?" (No) Courts of law have strict rules to prevent attorneys from asking this kind of question because they ___________ the answer.

Direct

18. A second type of leading question is one in which the person questioned is often trapped by the implication of his answer. This is illustrated by asking a child who is suspected of stealing candy "What did you do with the candy?" Surprised by the question the child replies "I ate - I mean I didn't have any candy." The child was ___________ by the implication of his answer.

Trapped

19. A third type of leading question is sometimes used by advertisers to direct the public to their products. Its effect is to put the reader or listener on the defensive and to capitalize on the implications of his answer. "Is your car entirely safe? Install Sure-grip Tires today." This question suggests that your car may not be safe and puts you on the ___________.

Defensive

20. The fourth type of leading question carries a derogatory implication and calls for a "yes" or "no" answer, either of which will admit the implication. Our previous example of "Have you stopped beating your wife?" is the classic example of this type of leading ___________.

Question

21. Is the following statement an example of (1) Puts reader or listener on defensive; or (2) Carries a derogatory implication?

"Do you want to be popular, make friends easily, and earn enough money to provide you with the things you have always wanted?"

(1) Puts reader or listener on defensive

22. Is the following statement an example of (1) Carries a derogatory implication; or (2) Puts reader or listener on defensive?

"Have you stopped cheating on examinations?"

(1) Carries a derogatory implication

23. Is the following statement an example of (1) Directs the answer, or (2) Carries a derogatory implication?
"You and the witness are close friends, aren't you?"

(1) Directs the answer

24. Is the following statement an example of (1) Puts reader or listener on defensive; or (2) Traps by implication?

"Where did you go when you cut class?"

(2) Traps by implication

25. Is the following statement an example of (1) Puts reader or listener on defensive; or (2) Traps by implication?

"Would your wife and children have security in case you died today?"

(1) Puts reader or listener on defensive

26. Beside the following statement indicate if it is an example of equivocation, obfuscation or leading question.

Wife, who suspects her husband of gambling: "Did you win tonight, dear?"

Leading question

27. Beside the following statement indicate if it is an example of equivocation, obfuscation or leading question.

The people who have contributed to the growth of America have been progressive people. Americans should therefore support the Progressive Party.

Equivocation

28. Beside the following statement indicate if it is an example of equivocation, obfuscation or leading question.

SPORTSCASTER: "Will your team win tomorrow?"
COACH: "Well, we have a number of cripples, and our pass defense is poor, and it's rained all week so that we could not scrimmage, but if the boys really want to win and we can score more touchdowns than they can and then hold our margin, the opposition will really know that they have been in a football game."

Obfuscation
29. The error we know as **false obversion** is the misuse of contrast, or opposites. If we hear that young people learn with ease, we may tend to conclude that old people learn with __________. Thus, the legitimate contrast between young and old people - a contrast of age - has been extended to make it also a contrast of learning facility.

**Difficulty**

30. The contrast of learning facility we have just examined is **false obversion** is an unwarranted extension. It constitutes a misuse of contrast and results in the error of false __________.

**Obversion**

32. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question or false obversion.

__________ TOURIST: "If the winters in this area are unhealthful, it follows that the summers are healthful?"

**False obversion**

33. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question or false obversion.

__________ Before an important game, the coach was asked, "By what score will your team lose?"

**Leading question**

34. We **convert** a statement if we pivot it at the verb, and swing to predicate position and visa versa. Thus, for the statement "No elephants are human beings," the converse is "No human beings are elephants." With some propositions, such as this one, if the original statement is true, the __________ is also true.

**Convert or converse**

35. Many true statements, however, are false when converted. It may be true that "all freshmen are students," but we cannot be so sure that "all students are freshmen." In this case the __________ of the statement is false and is an example of false conversion.

**Convert or converse**
The distinction between false obversion and false conversion is that in false obversion legitimate contrast or opposites are unwarrantedly extended. In false conversion a statement is pivoted at the verb. The statement "men make good automobile drivers" is an example of False obversion when an unwarranted extension is made to say that therefore women are poor drivers. If we changed the original statement to "good automobile drivers are men" then we would be guilty of False conversion because we have pivoted the statement at the verb.

37. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

REPORTER: "Will you support the party's nominee, whoever he may be?"
CANDIDATE: "Since I am myself a candidate, that is a hard question. Even if I am not nominated, and I expect to be, I still believe in the principles for which I have fought ever since I first joined the party when I was twenty-one. I expect the American people to show by their vote that they approve of these principles. I expect them to declare with their ballots that they demand fair and honest government. Of course, if I am the nominee, I shall campaign as vigorously as any candidate in the party's long and honorable history."

Obfuscation

38. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

AMATEUR HOME BUILDER: "The directions say that this paint is suitable for all outside uses. It must not be suitable for inside use."

False obversion

39. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

You hear a person say, "All Italians are music-lovers," and you understand the statement to be the same as "All music-lovers are Italian."
False conversion

40. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

The proposition "All Phi Beta Kappas make good grades" is the same as "All who make good grades are Phi Beta Kappas."

False conversion

41. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

If men are good soldiers, then women are not good soldiers.

False obversion

42. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

PROSECUTOR to defendant who has pleaded not guilty to murder charge: "When did you first conceive this diabolical plot to take the life of your neighbor?"

Leading question

43. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

CLERGYMAN: "To say that the person who suffers is guilty of sin is the same as saying that the person who does not suffer is innocent of sin."

False obversion

44. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

A person argues that education is insurance for the safety and welfare of the country, but since insurance is a business, all education should be left to privately supported institutions.

Equivocation
45. We shall now examine four fallacies of false presumption. Anything we take for granted may be called a presumption. A false ______ is one in which we take for granted something that is not true.

Presumption

46. Our conclusions can never be more reliable than the presumptions on which they are based. If the basic presumption from which a conclusion is derived is __________, the conclusion can never be depended upon.

False or unreliable

47. Less than forty years ago it was widely believed that airplanes could never exceed the speed of sound - the presumption was that as a plane approached the "sonic barrier," the physical strain would prove too great and the plane would fall apart. These opinions and beliefs proved to be false, because the __________ on which they were based were themselves false.

Presumptions or assumptions

48. The four fallacies we shall now examine are alike in that the presumptions they involve are unreliable: The first fallacy of false presumption is misuse of the mean. The Greek idea of the golden mean was moderation in terms of the situation with which one is confronted. They is often a useful principle for evaluating and guiding conduct. The presumption, however, that one should avoid positions which seem extreme and accept a position between them, is false and constitutes a misuse of the ________.

Mean

49. When we accept a position simply because it is moderate with respect to more extreme positions, we have made a mistake in reasoning which we call ________________________.

Misuse of the mean

50. One defense against misuse of the mean is to regard skeptically the principle of accepting a position just because it is the middle position or because it is __________ with respect to more extreme positions. Another defense is to set up other positions and examine them to see why they should not be accepted instead.

Moderate

51. Sometimes a person uses a self-contradictory proposition - a situation in which two assumptions occur, neither of which can be true in the presence of the other. To presume that both could be true is a false __________, an error we shall call contradictory assumption.
Assumption or presumption

52. To argue about what happens when an irresistible force meets an immovable object is to commit this fallacy, for the ideas of irresistibility and immobility are mutually contradictory, and any presumption that the two might occur together is _________.

False, wrong or contradictory assumption

53. If we should say, "It took him a long time to read that illegible letter," or "He came upon many undiscoverable truths," we would be using contradictory ____________________.

Assumptions

54. Indicate if the following statement commits the fallacy of misuse of the mean or contradictory assumptions.

_________________________ When a federal judge in Texas instructed a jury to return a verdict of innocent in a car-theft case, the jury foreman dutifully announced: "We find the boy that stole the car not guilty, Your Honor."

Contradictory assumptions

55. Indicate if the following statement commits the fallacy of misuse of the mean or contradictory assumptions.

_________________________ VOTER: "I wish you wouldn't stay on the fence so much."
SENATOR: "I'm never on the fence, for the truth is always in the middle of the road."

Misuse of the mean

56. Analogy is the observation of similarity between two or more things - in logic, it refers to the presumption that if the things are alike in one or more respects, they may be found alike also in other ____________________.

Respects or ways

57. Reasoning by analogy is, as many have observed, primitive, fertile, useful, dangerous, and inevitable. William James has pointed out that, historically, man began reasoning by ___________ before he began reasoning by abstract symbols.

Analogy
58. When we reflect upon the number of things we have learned to do because we have watched people doing similar things, we may well wonder whether we could get along without ________________.

Analogy

59. How, then, can such a useful and essential method of reasoning be dangerous? The presumption that if two things are alike in some respects they are necessarily ________________ in others is itself false.

Alike

60. If the similarities are merely apparent and not real, if they are real but superficial, or if they are real but sharply limited in number, we have very little ground for insisting that other ________________ exist.

Similarities

61. The distinction between the proper use of analogy and its misuse is both real and important. One difference between proper use and ________________ of analogy in reasoning is a difference between "possibly" and "certainly".

Misuse

62. To put it another way, an analogy may be correctly ________________ as an illustration or to suggest a solution to a problem. But it is misused when it is offered as proof.

Used

63. Indicate if the following statement is an example of misuse of the mean; contradictory assumptions or misuse of analogy.

________________________

INSTRUCTOR: "The purpose of this conference is to discuss your excessive absences in my course."

STUDENT: "My reason for being absent is that although you are a fine teacher your students do not learn anything."

Contradictory assumptions

64. Indicate if the following statement is an example of misuse of the mean; contradictory assumptions or misuse of analogy.

________________________

STUDENT: "Since a person can read him like a book, you will find him full of either information or entertainment."

Misuse of analogy
65. If we assume just what we wish to prove, we are committing the fallacy known as **begging the question**. There are several ways in which a person may ____________________________.

**Beg the question**

66. One way is to define an expression in terms of itself - a procedure which the rules of definition do not permit. "A good man is a man who is good" is an unsatisfactory explanation because the concepts of ________ and ________ are simply repeated, not explained.

Good  man

67. A more subtle way of committing this fallacy is by stating a proposition, which should be established by evidence, in descriptive words or epithets. When a person complains that "students of agriculture should not be compelled to waste their time studying such subjects as literature, philosophy, and the fine arts," he is begging the question by the use of the phrase "waste their time." He has done nothing to establish that such study is a ____________.

Waste

68. A third way of begging the question is to reason in a circle. Such reasoning is analogous to that of the three morons, each of whom tied his horse to another's, thinking that he had thereby secured his own horse. A chain of reasoning **DOES/DOES NOT** (circle one) prove itself - one of the links must be proved independently.

Does not

69. Indicate if the following statement is an example of (1) defining an expression in terms of itself; (2) stating a proposition in descriptive words or epithets; or (3) circular reasoning.

__________  A visitor to a military installation asked how the officer in charge of a signal knew that the signal was punctually given, he was told that the officer kept his watch by the local jeweler's regulator. When the visitor asked how the officer knew the jeweler's regulator was accurate, he was told that it was kept in line with the signal given at the fort.

(3) Circular reasoning

70. Indicate if the following statement is an example of (1) defining an expression in terms of itself or (2) stating a proposition in descriptive words or epithets.
STUDENT: "This argument is fallacious. I know it is fallacious because it is not valid. It is not valid because it contains a fallacy."

(1) Defining an expression in terms of itself
APPENDIX F

HARD PROGRAM
1. This program is an introduction to TRADITIONAL LOGIC. Within it there will be developed a set of methods for analyzing and evaluating arguments. You will first be presented several basic concepts within ____________ logic.

Traditional

2. Many different types of sentences are used in ordinary discourse, but traditional logic focuses primarily on only one of these: this type of sentence is referred to as a CATEGORICAL STATEMENT. In traditional logic, and in this program, the basic type of sentence to be considered is called a ____________ statement.

Categorical

5. No mice are birds is also a categorical statement because it makes a claim about the relations between classes. It claims that no member of the class of mice is also a ____________ of the class of birds.

Member

6. Every categorical statement contains four elements. The first to be discussed, the SUBJECT TERM, indicates what class is being spoken of or described. In the statement, All wars are disastrous, the class of wars is described. The term wars, therefore, is the ____________.

Subject term

8. The subject term is usually preceded by a second element called the QUANTIFIER. Quantifiers are not a part of the subject term, but simply indicate what portion of the subject class is referred to. They include such words as all, few, no, many, etc. Select and underline the quantifier in each statement:

1. Some sheiks are handsome spendthrifts.
2. Most armchairs are comfortable.
3. No mosquitoes are immortal.

1. Some 2. Most 3. No

14. Identify and underline the SUBJECT TERM in:

No United States Army officers over the age of sixty-five are individuals who have died dishonorably.

United States Army officers over the age of sixty-five
HARD PROGRAM

1. Fallacies are mistakes in reasoning. Learning to recognize fallacies can be an interesting game as well as an important step in improved thinking. We can fall into serious error if we permit our own or other peoples _______ to influence us.

Fallacies or mistakes in reasoning

4. There are more than thirty-eight common fallacies. We shall examine five fallacies that deal with the misuse of the language and four fallacies of false presumption. As commerce can proceed efficiently only when the dollar denotes the same thing to depositor, banker, and merchant so thoughts can be transferred efficiently and accurately only when words mean the same thing to speaker and to hearer. Imagine the confusion if the banker decided that a dollar means a hundred cents when he takes it in and fifty cents when he pays it out. Yet many a bitter argument and costly misunderstanding has been the result when two people use the same words or combinations of words to mean different things. This is an example of _______ of the language.

Misuse

6. **Equivocation** is the use of a word in two different senses. _______ occurs as a logic fallacy when an inference is drawn from a word whose meaning has been deliberately or inadvertently shifted in the course of argument.

Equivocation

7. No logical progression of thought can occur if the terms are used first in one sense and then in another. The very fact that an inference is drawn indicates that we are expected to take the word in one sense only; we are not supposed to spot the _______ - we are not in on the trick.

Equivocation

10. **Obfuscation** means a darkening or obscuring. Words may be used to conceal or to obscure as well as to enlighten. The weakness of a questionable argument may be difficult to detect if the structure of the argument is concealed in a mass of words which contribute nothing to the meaning. The fallacy of obfuscation, then, consists in using meaningless word groups either inadvertently or for the particular purpose of _______ or avoiding an issue.

Darkening, obscuring or concealing

12. Beside the following statement write if it is an example of equivocation or obfuscation.
REPORTER: "Whom do you favor for the Presidency, the General or the Senator?"

IMPORTANT POLITICAL PERSONAGE: "I like the General very much. I like his personality, his domestic and foreign views, and his power to get votes. Nor do I like the Senator any less. His personality is pleasing, his domestic views are quite acceptable to thinking people, and he is adept at wooing the voter."

Obfuscation

15. Beside the following statement write if it is an example of equivocation or obfuscation.

INDUSTRIALIST: "Everyone agrees that cooperation is desirable. Yet we have passed antitrust laws directed at large corporations, despite the fact these corporations are only examples of cooperation."

Equivocation

16. Presumably a question is a request for information. But it is often more than this. In a leading question a person is directed to the answer or led to imply or admit something he may not wish to. The question "Have you stopped beating your wife?" is a since to answer "No" implies that at one time or another you did beat your wife - a fact which may not yet have been established.

Leading question

23. Is the following statement an example of (1) directs the answer; or (2) traps by implication.

"You and the witness are close friends, aren't you?"

(1) Directs the answer

29. The error we know as false obversion is the misuse of contrast, or opposites. If we hear that young people learn with ease, we may tend to conclude that old people learn with _________. Thus, the legitimate contrast between young and old people - a contrast of age - has been extended to make it also a contrast of learning facility.

Difficulty

30. The contrast of learning facility we have just examined is an unwarranted extension, and it constitutes a misuse of _________.

Contrast
31. For a pharmacy to advertise that its prescriptions are filled by registered pharmacists does not indicate that other pharmacies do not employ registered pharmacists. To conclude that other pharmacies do not employ registered pharmacists is an unwarranted

Extension

34. We convert a statement if we pivot it at the verb, and swing to predicate position and visa versa. Thus, for the statement "No elephants are human beings," the converse is "No human beings are elephants." With some propositions, such as this one, if the original statement is true, the __________ is also true.

Convert or converse

37. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

REPORTER: "Will you support the party's nominee, whoever he may be?"
CANDIDATE: "Since I am myself a candidate, that is a hard question. Even if I am not nominated, and I expect to be, I still believe in the principles for which I have fought every since I first joined the party when I was twenty-one. I expect the American people to show by their vote that they approve of these principles. I expect them to declare with their ballots that they demand fair and honest government. Of course, if I am the nominee, I shall campaign as vigorously as any candidate in the party's long and honorable history."

Obfuscation

38. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

AMATEUR HOME BUILDER: "The directions say that this paint is suitable for all outside uses. It must not be suitable for inside use."

False obversion

39. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

PROSPECTIVE PURCHASER: "The specifications say that all deluxe models have turn indicators. I gather that only deluxe models have the turn indicators."
False conversion

43. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

CLERGYMAN: "To say that the person who suffers is guilty of sin is the same as saying that the person who does not suffer is innocent of sin."

False obversion

44. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

A person argues that education is insurance for the safety and welfare of the country, but since insurance is a business, all education should be left to privately supported institutions.

Equivocation

46. Our conclusions can never be more reliable than the presumptions on which they are based. If the basic presumption from which a conclusion is derived is ____________, the conclusion can never be depended upon.

False or unreliable

48. The four fallacies we shall now examine are alike in that the presumptions they involve are unreliable: The first fallacy of false presumption is misuse of the mean. The Greek idea of the golden mean was moderation in terms of the situation with which one is confronted. This is often a useful principle for evaluating and guiding conduct. The presumption, however, that one should avoid positions which seem extreme and accept a position between them, merely because it is between them, is false and constitutes a misuse of the ____________.

Mean

51. Sometimes a person uses a self-contradictory proposition - a situation in which two assumptions occur, neither of which can be true in the presence of the other. To presume that both could be true is a false ____________, an error we shall call contradictory assumption.

Assumption or presumption

54. Indicate if the following statement commits the fallacy of misuse of the mean or contradictory assumptions.
John insists that he wants a college education, but thinks he does not have to study.

Contradictory assumptions

62. To put it another way, an analogy may be correctly used as an illustration or to suggest a solution to a problem. But it is misused when it is offered as _________.

Proof

63. Indicate if the following statement is an example of misuse of the mean; contradictory assumptions or misuse of analogy.

_______  INSTRUCTOR: "The purpose of this conference is to discuss your excessive absences in my course."
STUDENT: "My reason for being absent is that although you are a fine teacher your students do not learn anything."

Contradictory assumptions

65. If we assume just what we wish to prove, we are committing the fallacy known as begging the question. There are several ways in which a person may ___________________________.

Beg the question

66. One way is to define an expression in terms of itself - a procedure which the rules of definition do not permit. "A good man is a man who is good" is an unsatisfactory explanation because the concepts of _______ and _______ are simply repeated, not explained.

Good Man

70. Indicate if the following statement is an example of (1) defining an expression in terms of itself; (2) stating a proposition in descriptive words or epithets; or (3) circular reasoning.

_______  STUDENT: "This argument is fallacious. I know it is fallacious because it is not valid. It is not valid because it contains a fallacy."

(1) Defining an expression in terms of itself
APPENDIX G

FREE CHOICE PROGRAM
SAMPLE PROGRAM GIVEN TO SUBJECTS ON THE FREE CHOICE (FC) PROGRAM

1. This program is an introduction to TRADITIONAL LOGIC. Within it there will be developed a set of methods for analyzing and evaluating arguments. You will first be presented several basic concepts within _______________ logic.

Traditional
Go to frame 2

2. Many different types of sentences are used in ordinary discourse, but traditional logic focuses primarily on only one of these: this type of sentence is referred to as a CATEGORICAL STATEMENT. In traditional logic, and in this program, the basic type of sentence to be considered is called a ____________ statement.

Categorical
Choose A or B (answer the question and then go to the indicated frame).
A. 3 frames - How many do you expect to get right? ___ Go to frame 3
B. 1 frame - Do you expect to get the frame right? ___ Go to frame 6

3. A categorical statement is one that makes a claim about the relations between two classes. (A CLASS is a collection or group of entities which have a common property or properties: e.g., lakes, trees, rocks, Arctic temperatures, wealthy CSUN students.) All dogs are animals relates to the class of dogs to the class of animals. This sentence is therefore a ________________.

Categorical statement
Go to frame 4

4. All dogs are animals asserts that all members of the class of dogs are also members of the ________________ of animals.

Class
Go to frame 5

5. No mice are birds is also a categorical statement because it makes a claim about the relations between classes. It claims that no MEMBER of the class of mice is also a ______________ of the class of birds.

Member
Go to frame 7
6. No mice are birds is also a categorical statement because it makes a claim about the relations between classes. It claims that no member of the class of mice is also a ______ of the class of birds.

Member

Go to frame 7

7. Every categorical statement contains four elements. The first to be discussed, the SUBJECT TERM, indicates what class is being spoken of or described. In the statement, All wars are disastrous, the class of wars is described. The term wars, therefore, is the _________.

Subject term

Choose A or B (answer the question and then go the the indicated frame).

A. 8 frames - How many do you expect to get right? ___ Go to frame 8.
B. 2 frames - How many do you expect to get right? ___ Go to frame 16.

8. The subject term is often not a single word, but an entire phrase. The subject term of Most wise Chinese proverbs are available to Western civilisation is wise Chinese proverbs. The subject term of Most reptiles of North America are poisonous is _________.

Reptiles of North America

Go to frame 9

9. The subject term is usually preceded by a second element called the QUANTIFIER. Quantifiers are NOT a part of the subject term, but simply indicate what portion of the subject class is referred to. They include such words as all, few, no, many, some, etc. Select and underline the quantifier in each statement:

1. Some sheiks are handsome spendthrifts.
2. Most armchairs are comfortable.
3. No mosquitoes are immortal.

1. Some 2. Most 3. No

Go to frame 10

10. The quantifier is not a part of the subject term. For example, the statements

1. All children are innocent.
2. Few children are cruel.
The following two statements:
1. Most camels are fast drinkers.
2. Most Arabs are fast drinkers.

have the same but different quantifiers.

Select and underline the subject term in each statement:
1. All blondes are exciting.
2. Some redheads are exciting.
3. No calculus books are exciting.


Select and underline the quantifier in each statement:
1. No Frenchmen are English.
2. Many mothers are students.
3. Few wines are excellent.

1. No 2. Many 3. Few

A distinction should be drawn between the grammatical notion of subject and the logical notion of subject term. All students who have a superior average are exempt from the final examination is a categorical statement. The grammatical subject of the statement is students. But the term students who have a superior average, since it identifies the subject class of the statement, is the subject term.

Remember that the subject term is often more than one word and that the quantifier is not a part of the subject term. Identify and underline the subject term in:

No United States Army officers over the age of sixty-five are individuals who have died dishonorably.
United States Army officers over the age of sixty-five.

END OF PROGRAM

16. The subject term is usually preceded by a second element called the QUANTIFIER. Quantifiers are not a part of the subject term, but simply indicate what portion of the subject class is referred to. They include such words as all, few, no, many, etc. Select and underline the quantifier in each statement:

1. Some sheiks are handsome spendthrifts.
2. Most armchairs are comfortable.
3. No mosquitoes are immortal.

1. Some 2. Most 3. No

Go to frame 17

17. Identify and underline the SUBJECT TERM in:

No United States Army officers over the age of sixty-five are individuals who have died dishonorably.

United States Army officers over the age of sixty-five

END OF PROGRAM
FREE CHOICE PROGRAM

1. Fallacies are mistakes in reasoning. Learning to recognize fallacies can be an interesting game as well as an important step in improved thinking. We can fall into serious error if we permit our own or other peoples _________ to influence us.

Fallacies or mistakes in reasoning

Choose A or B (answer the question and then go to the indicated frame).

A. 4 frames - How many do you expect to get right? ___ Go to frame 2.
B. 1 frame - Do you expect to get the frame right? ___ Go to frame 6.

2. If we would be guided by truth and reason, we must be constantly on guard against _________ or mistakes in reasoning.

Fallacies

Go to frame 3

3. Fallacies vary greatly in the extent to which they distort the truth: they may do no more than make an argument more attractive, or they may completely distort the _________.

Truth

Go to frame 4

4. There are more than thirty-eight common fallacies. We shall examine five fallacies which deal with misuse of the language and four fallacies of false presumption. We will first look at fallacies which deal with the misuse of the language. As commerce can proceed efficiently only when the dollar denotes the same thing to depositor, banker, and merchant so thoughts can be transferred efficiently and accurately only when words mean the same thing to speaker and to hearer. Imagine the confusion if the banker decided that a dollar means a hundred cents when he takes it in and fifty cents when he pays it out. Yet many a bitter argument and costly misunderstanding has been the result when two people use the same words or combinations of words to mean different things. This is an example of _________.

Misuse

Go to frame 5

5. Fallacies of the misuse of language arise from failure of
language to convey exact and unequivocal meanings. These fallacies sometimes arise from the deliberate use of ________ to deceive or entrap.

Language or words

Go to frame 7

OPTIONAL Review
A. Go back to frame 2.
B. Go to frame 6.

6. There are more than thirty-eight common fallacies. We shall examine five fallacies that deal with the misuse of the language and four fallacies of false presumption. As commerce can proceed efficiently only when the dollar denotes the same thing to depositor, banker, and merchant so thoughts can be transferred efficiently and accurately only when words mean the same thing to speaker and to hearer. Imagine the confusion if the banker decided that a dollar means a hundred cents when he takes it in and fifty cents when he pays it out. Yet many a bitter argument and costly misunderstanding has been the result when two people use the same words or combinations of words to mean different things. This is an example of ____________ of the language.

Misuse

Go to frame 7

OPTIONAL Review
A. Go back to frame 2.
B. Go back to frame 6.

7. **Equivocation** is the use of a word in two different senses. ________ occurs as a logic fallacy when an inference is drawn from a word whose meaning has been deliberately or inadvertently shifted in the course of argument.

Equivocation

Choose A or B (answer the question and then go to the indicated frame).
A. 9 frames - How many do you expect to get right? ____ Go to frame 8.
B. 4 frames - How many do you expect to get right? ____ Go to frame 17.

8. No logical progression of thought can occur if the terms are used first in one sense and then in another. The very fact that an inference is drawn indicates that we are expected to take the word
in one sense only; we are not supposed to spot the **equivocation** - we are not in on the trick. A careful definition of terms is the best protection against ______________.

**Equivocation**

Go to frame 9

9. Most of us will grant the premise that a person ought to do what is **right**. Let us also grant that a person has the right to eat as much as he wishes. But anyone who concludes, or asks us to conclude, that a person ought therefore to eat as much as he wishes is committing the fallacy of equivocation, for the word ______________ does not have the same meaning in the two premises.

**Right**

Go to frame 10

10. It has been argued that the Taft-Hartley law is a **slave labor** law and that slave labor is prohibited under the Constitution. The catch here is that the term ______________ is first used figuratively and then literally.

**Slave labor**

Go to frame 11

11. **Obfuscation** means a darkening or obscuring. Words may be used to conceal or to obscure as well as to enlighten. The weakness of a questionable argument may be difficult to detect if the structure of the argument is concealed in a mass of words which contribute nothing to the meaning. The fallacy of obfuscation, then, consists in using meaningless word groups either inadvertently or for the particular purpose of ______________ or avoiding an issue.

**Darkening, obscuring or concealing**

Go to frame 12

12. Obfuscation is often effective in argument because the mind refuses to trace the meaning through the maze of words and tends to assume that significant meaning is there because the language is impressive. One may guard against ______________ by reducing wordy passages to their simplest elements and barest meaning.

**Obfuscation**

Go to frame 13
13. Beside the following statement write if it is an example of equivocation or obfuscation.

Excerpt from a piece of literary criticism: "Despite the insistent, denotative matter-of-factness at the surface of the presentation, the subsurface activity of Hearth and Sea is organized connotatively around two poles. By a process of accrual and coagulation, the images tend to build round the opposed concepts of Home and Not-Home. Neither, of course, is truly conceptu-alistic; each is a kind of poetic intuition, charged with emotional values and woven, like a cable, of many strands..."

Obfuscation

Go to frame 14

14. Beside the following statement write if it is an example of equivocation or obfuscation.

During reconstruction days in the South, carpet-baggers anxious to produce a large Republican vote used to tell the newly freed slaves that according to the Bible there were only two kinds of people, publicans and sinners.

Equivocation

Go to frame 15

15. Beside the following statement write if it is an example of equivocation or obfuscation.

A so-called letter of recommendation contained the statement, "If you should become as well acquainted with Mr. Wilson as I am, I am sure that you would view his abilities as I view them."

Obfuscation

Go to frame 16

16. Beside the following statement write if it is an example of equivocation or obfuscation.

INDUSTRIALIST: "Everyone agrees that cooperation is desirable. Yet we have passed antitrust laws directed at large corporations, despite the fact these corporations are only examples of cooperation."

Equivocation

Go to frame 21
OPTIONAL Review
A. Go back to frame 8.
B. Go to frame 17.

17. No logical progress of thought can occur if the terms are used first in one sense and then in another. The very fact that an inference is drawn indicates that we are expected to take the word in one sense only; we are not supposed to spot the ________ - we are not in on the trick.

Equivocation

Go to frame 18

18. Obfuscation means a darkening or obscuring. Words may be used to conceal or to obscure as well as to enlighten. The weakness of a questionable argument may be difficult to detect if the structure of the argument is concealed in a mass of words which contribute nothing to the meaning. The fallacy of obfuscation, then, consists in using meaningless word groups either inadvertently or for the particular purpose of ________ or avoiding an issue.

Darkening, obscuring or concealing

Go to frame 19

19. Beside the following statement write if it is an example of equivocation or obfuscation.

__________
REPORTER: "Whom do you favor for the Presidency, the General or the Senator?"
IMPORTANT POLITICAL PERSONAGE: "I like the General very much. I like his personality, his domestic and foreign views, and his power to get votes. Nor do I like the Senator any less. His personality is pleasing, his domestic views are quite acceptable to thinking people, and he is adept at wooing the voter."

Obfuscation

Go to frame 20

20. Beside the following statement write if it is an example of equivocation or obfuscation.

__________
INDUSTRIALIST: "Everyone agrees that cooperation is desirable. Yet we have passed antitrust laws directed at large corporations, despite the fact these corporations are only examples of cooperation."
Equivocation

Go to frame 21

OPTIONAL Review
A. Go back to frame 8.
B. Go back to frame 17.

21. Presumably a question is a request for information. But it is often more than this. In a leading question a person is directed to the answer or led to imply or admit something he may not wish to. The question "Have you stopped beating your wife?" is a

since to answer "No" implies that at one time or another you did beat your wife - a fact which may not yet have been established.

Leading question

Choose A or B (answer the question and then go to the indicated frame).

A. 12 frames - How many do you expect to get right? ____ Go to frame 22.
B. 1 frame - Do you expect to get the frame right? ____ Go to frame 34.

22. There are several types of leading questions. One type directs the answers: "You worked hard on this problem, didn't you?" (Yes) "You haven't seen the defendant before, have you?" (No) Courts of law have strict rules to prevent attorneys from asking this kind of question because they __________ the answer.

Direct

Go to frame 23

23. A second type of leading question is one in which the person questioned is often trapped by the implication of his answer. This is illustrated by asking a child who is suspected of stealing candy "What did you do with the candy?" Surprised by the question the child replies "I ate - I mean I didn't have any candy." The child was __________ by the implication of his answer.

Trapped

Go to frame 24

24. A third type of leading question is sometimes used by advertisers to direct the public to their products. Its effect is to put the reader or listener on the defensive and to capitalize on the implications of his answer. "Is your car entirely safe? Install
Sure-grip Tires today." This question suggests that your car may not be safe and puts you on the __________.

Defensive

Go to frame 25

25. The fourth type of leading question carries a derogatory implication and calls for a "yes" or "no" answer, either of which will admit the implication. Our previous example of "Have you stopped beating your wife?" is the classic example of this type of leading __________.

Question

Go to frame 26

26. Is the following statement an example of (1) puts reader or listener on defensive; or (2) carries a derogatory implication?

"Do you want to be popular, make friends easily, and earn enough money to provide you with the things you have always wanted?"

(1) Puts reader or listener on defensive

Go to frame 27

27. Is the following statement an example of (1) carries a derogatory implication; or (2) puts reader or listener on defensive?

"Have you stopped cheating on examinations?"

(1) Carries a derogatory implication

Go to frame 28

28. Is the following statement an example of (1) directs the answer; or (2) carries a derogatory implication?

"You and the witness are close friends, aren't you?"

(1) Directs the answer

Go to frame 29

29. Is the following statement an example of (1) puts reader or listener on defensive; or (2) traps by implication?

"Where did you go when you cut class?"

(2) Traps by implication

Go to frame 30
30. Is the following statement an example of (1) puts reader or listener on defensive; or (2) traps by implication?

"Would your wife and children have security in case you died today?"

(1) Puts reader or listener on defensive

Go to frame 31

31. Beside the following statement indicate if it is an example of equivocation, obfuscation or leading question.

Wife, who suspects her husband of gambling: "Did you win tonight, dear?"

Leading question

Go to frame 32

32. Beside the following statement indicate if it is an example of equivocation, obfuscation or leading question.

The people who have contributed to the growth of America have been progressive people. Americans should therefore support the Progressive Party.

Equivocation

Go to frame 33

33. Beside the following statement indicate if it is an example of equivocation, obfuscation or leading question.

SPORTCASTER: "Will your team win tomorrow?"

COACH: "Well, we have a number of cripples, and our pass defense is poor, and it's rained all week so that we could not scrimmage, but if the boys really want to win and we can score more touchdowns than they can and then hold our margin, the opposition will really know that they have been in a football game."

Obfuscation

Go to frame 35

OPTIONAL Review

A. Go back to frame 22.
B. Go to frame 34.

34. Is the following statement an example of (1) directs the answer; or (2) traps by implication.
"You and the witness are close friends, aren't you?"

(1) Directs the answer
Go to frame 35

OPTIONAL Review
A. Go back to frame 22
B. Go back to frame 34

35. The error we know as false obversion is the misuse of contrast, or opposites. If we hear that young people learn with ease, we may tend to conclude that old people learn with _________. Thus, the legitimate contrast between young and old people - a contrast of age - has been extended to make it also a contrast of learning facility.

Difficulty
Choose A or B (answer the question and then go to the indicated frame).
A. 3 frames - How many do you expect to get right? ___ Go to frame 36.
B. 2 frames - How many do you expect to get right? ___ Go to frame 39.

36. The contrast of learning facility we have just examined in false obversion is an unwarranted extension. It constitutes a misuse of contrast and results in the error of false _________.

Obversion
Go to frame 37

37. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question or false obversion.
___________ TOURIST: "If the winters in this area are unhealthful, it follows that the summers are healthful?"

False obversion
Go to frame 38

38. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question or false obversion.
___________ Before an important game, the coach was asked, "By what score will your team lose?"
Leading question
Go to frame 41

OPTIONAL Review
A. Go back to frame 36.
B. Go to frame 39.

39. The contrast of learning facility we have just examined is an unwarranted extension, and it constitutes a misuse of ________.
Contrast
Go to frame 40

40. For a pharmacy to advertise that its prescriptions are filled by registered pharmacists does not indicate that other pharmacies do not employ registered pharmacists. To conclude that other pharmacies do not employ registered pharmacists is an unwarranted ________.
Extension
Go to frame 41

OPTIONAL Review
A. Go back to frame 36.
B. Go back to frame 39.

41. We convert a statement if we pivot it at the verb, and swing to predicate position and visa versa. Thus, for the statement "No elephants are human beings," the converse is "No human beings are elephants." With some propositions, such as this one, if the original statement is true, the ________ is also true.
Convert or converse
Choose A or B (answer the question and then go to the indicated frame).
A. 13 frames - How many do you expect to get right? _____ Go to frame 42.
B. 6 frames - How many do you expect to get right? _____ Go to frame 55.

42. Many true statements, however, are false when converted. It may be true that "all freshmen are students," but we cannot be so sure that "all students are freshmen." In this case the ________ of the statement is false and is an example of false conversion.
Convert or converse

Go to frame 43

43. The distinction between false obversion and false conversion is that in false obversion legitimate contrast or opposites are unwarrantedly extended. In false conversion a statement is pivoted at the verb. The statement "men make good automobile drivers" is an example of ________ when an unwarranted extension is made to say that therefore women are poor drivers. If we changed the original statement to "good automobile drivers are men" then we would be guilty of ________ because we have pivoted the statement at the verb.

False obversion False conversion

Go to frame 44

44. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

REPORTER: "Will you support the party's nominee, whoever he may be?"
CANDIDATE: "Since I am myself a candidate, that is a hard question. Even if I am not nominated, and I expect to be, I still believe in the principles for which I have fought ever since I first joined the party when I was twenty-one. I expect the American people to show by their vote that they approve of these principles. I expect them to declare with their ballots that they demand fair and honest government. Of course, if I am the nominee, I shall campaign as vigorously as any candidate in the party's long and honorable history."

Obfuscation

Go to frame 45

45. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

AMATEUR HOME BUILDER: "The directions say that this paint is suitable for all outside uses. It must not be suitable for inside use."

False obversion

Go to frame 46
46. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

You hear a person say, "All Italians are music-lovers," and you understand the statement to be the same as "All music-lovers are Italians."

False conversion

Go to frame 47

47. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

The proposition "All Phi Beta Kappas make good grades" is the same as "All who make good grades are Phi Beta Kappas."

False conversion

Go to frame 48

48. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

If men are good soldiers, then women are not good soldiers.

False conversion

Go to frame 49

49. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

PROSECUTOR to defendant who has pleaded not guilty to murder charge: "When did you first conceive this diabolical plot to take the life of your neighbor?"

Leading question

50. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

CLERGYMAN: "To say that the person who suffers is guilty of sin is the same as saying that the person who does not suffer is innocent of sin."

False obversion
51. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

A person argues that education is insurance for the safety and welfare of the country, but since insurance is a business, all education should be left to privately supported institutions.

Equivocation

52. We shall now examine four fallacies of false presumption. Anything we take for granted may be called a presumption. A false _______ is one in which we take for granted something that is not true.

Presumption

53. Our conclusions can never be more reliable than the presumptions on which they are based. If the basic presumption from which a conclusion is derived is ____________, the conclusion can never be depended upon.

False

54. Less than forty years ago it was widely believed that airplanes could never exceed the speed of sound - the presumption was that as a plane approached the "sonic barrier," the physical strain would prove too great and the plane would fall apart. These opinions and beliefs proved to be false, because the ____________ on which they were based were themselves false.

Presumptions or assumptions

55. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.
REPORTER: "Will you support the party's nominee, whoever he may be?"
CANDIDATE: "Since I am myself a candidate, that is a hard question. Even if I am not nominated, and I expect to be, I still believe in the principles for which I have fought ever since I first joined the party when I was twenty-one. I expect the American people to show by their vote that they approve of these principles. I expect them to declare with their ballots that they demand fair and honest government. Of course, if I am the nominee, I shall campaign as vigorously as any candidate in the party's long and honorable history."

Obfuscation

Go to frame 56

56. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

AMATEUR HOME BUILDER: "The directions say that this paint is suitable for all outside uses. It must not be suitable for inside use."

False obversion

Go to frame 57

57. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

PROSPECTIVE PURCHASER: "The specifications say that all deluxe models have turn indicators. I gather that only deluxe models have the turn indicators."

False conversion

Go to frame 58

58. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

CLERGYMAN: "To say that the person who suffers is guilty of sin is the same as saying that the person who does not suffer is innocent of sin."

False obversion

Go to frame 59
59. Beside the following statement indicate if it is an example of equivocation, obfuscation, leading question, false obversion or false conversion.

A person argues that education is insurance for the safety and welfare of the country, but since insurance is a business, all education should be left to privately supported institutions.

Equivocation

Go to frame 60

60. Our conclusions can never be more reliable than the presumptions on which they are based. If the basic presumption from which a conclusion is derived is ____________, the conclusion can never be depended upon.

False or unreliable

Go to frame 61

OPTIONAL Review

A. Go back to frame 42
B. Go back to frame 55

61. The four fallacies we shall now examine are alike in that the presumptions they involve are unreliable: The first fallacy of false presumption is misuse of the mean. The Greek idea of the golden mean was moderation in terms of the situation with which one is confronted. This is often a useful principle for evaluating and guiding conduct. The presumption, however, that one should avoid positions which seem extreme and accept a position between them, merely because it is between them, is false and constitutes a misuse of the ____________.

Mean

Choose A or B (answer the question and then go to the indicated frame).

A. 16 frames - How many do you expect to get right? ____ Go to frame 62.
B. 4 frames - How many do you expect to get right? ____ Go to frame 78.

62. When we accept a position simply because it is moderate with respect to more extreme positions, we have made a mistake in reasoning which we call _________________.

Misuse of the mean
63. One defense against misuse of the mean is to regard skeptically the principle of accepting a position just because it is the middle position or because it is ____________ with respect to more extreme positions. Another defense is to set up other positions and examine them to see why they should not be accepted instead.

Moderate

64. Sometimes a person uses a self-contradictory proposition—a situation in which two assumptions occur, neither of which can be true in the presence of the other. To presume that both could be true is a false __________, an error we shall call contradictory assumption.

Assumption or presumptions

65. To argue about what happens when an irresistible force meets an immovable object is to commit this fallacy, for the ideas of irresistibility and immobility are mutually contradictory, and any presumption that the two might occur together is __________.

False, wrong or contradictory assumption

66. If we should say, "It took him a long time to read that illegible letter," or "He came upon many undiscoverable truths," we would be using contradictory ____________.

Assumptions

67. Indicate if the following statement commits the fallacy of misuse of the mean or contradictory assumptions.

__________ When a federal judge in Texas instructed a jury to return a verdict of innocent in a car-theft case, the jury foreman dutifully announced: "We find the boy that stole the car not guilty, Your Honor."

Contradictory assumptions
68. Indicate if the following statement commits the fallacy of misuse of the mean or contradictory assumptions.

VOTER: "I wish you wouldn't stay on the fence so much."

SENATOR: "I'm never on the fence, for the truth is always in the middle of the road."

Misuse of the mean

Go to frame 69

69. Analogy is the observation of similarity between two or more things - in logic, it refers to the presumption that if the things are alike in one or more respects, they may be found alike also in other ________.

Respects or ways

Go to frame 70

70. Reasoning by analogy is, as many have observed, primitive, fertile, useful, dangerous, and inevitable. William James has pointed out that, historically, man began reasoning by ________ before he began reasoning by abstract symbols.

Analogy

Go to frame 71

71. When we reflect upon the number of things we have learned to do because we have watched people doing similar things, we may well wonder whether we could get along without ________.

Analogy

Go to frame 72

72. How, then, can such a useful and essential method of reasoning be dangerous? The presumption that if two things are alike in some respects they are necessarily ________ in others is itself false.

Alike

Go to frame 73

73. If the similarities are merely apparent and not real, if they are real but superficial, or if they are real but sharply limited in number, we have very little ground for insisting that other ________ exist.

Similarities
74. The distinction between the proper use of analogy and its misuse is both real and important. One difference between proper use and _______ of analogy in reasoning is a difference between "possibly" and "certainly".

Misuse

75. To put it another way, an analogy may be correctly _______ as an illustration or to suggest a solution to a problem. But it is misused when it is offered as proof.

Used

76. Indicate if the following statement is an example of misuse of the mean; contradictory assumptions or misuse of analogy.

_________ INSTRUCTOR: "The purpose of this conference is to discuss your excessive absences in my course."
STUDENT: "My reason for being absent is that although you are a fine teacher your students do not learn anything."

Contradictory assumptions

77. Indicate if the following statement is an example of misuse of the mean; contradictory assumptions or misuse of analogy.

_________ STUDENT: "Since a person can read him like a book, you will find him full of either information or entertainment."

Misuse of analogy

78. Sometimes a person uses a self-contradictory proposition - a situation in which two assumptions occur, neither of which can be true in the presence of the other. To presume that both could be true is a false ____________, an error we shall call contradictory assumption.
Assumption or presumption
Go to frame 79

79. Indicate if the following statement commits the fallacy of misuse of the mean or contradictory assumptions.

__________ John insists that he wants a college education, but thinks he does not have to study.

Contradictory assumptions
Go to frame 80

80. Topput it another way, an analogy may be correctly used as an illustration or to suggest a solution to a problem. But it is misused when it is offered as ____________.

Proof
Go to frame 81

81. Indicate if the following statement is an example of misuse of the mean; contradictory assumptions or misuse of analogy.

__________ INSTRUCTOR: "The purpose of this conference is to discuss your excessive absences in my course."
STUDENT: "My reason for being absent is that although you are a fine teacher your students do not learn anything."

Contradictory assumptions
Go to frame 82

OPTIONAL Review
A. Go back to frame 62.
B. Go back to frame 78.

82. If we assume just what we wish to prove, we are committing the fallacy known as begging the question. There are several ways in which a person may ________________.

Beg the question
Choose A or B (answer the question and then go to the indicated frame).

A. 5 frames - How many do you expect to get right? ___ Go to frame 83.
B. 2 frames - How many do you expect to get right? ___ Go to frame 88.
83. One way is to define an expression in terms of itself - a pro-
cedure which the rules of definition do not permit. "A good man
is a man who is good" is an unsatisfactory explanation because
the concepts of ________ and _________ are simply repeated, not explained.

Good Man

Go to frame 84

84. A more subtle way of committing this fallacy is by stating a pro-
position, which should be established by evidence, in descriptive
words or epithets. When a person complains that "students of
agriculture should not be compelled to waste their time studying
such subjects as literature, philosophy, and the fine arts," he
is begging the question by the use of the phrase "waste their
time." He has done nothing to establish that such study is a

Waste

Go to frame 85

85. A third way of begging the question is to reason in a circle.
Such reasoning is analogous to that of the three morons, each of
whom tied his horse to another's, thinking that he had thereby
secured his own horse. A chain of reasoning DOES/DOES NOT (circle
one) prove itself - one of the links must be proved independently.

Does not

Go to frame 86

86. Indicate if the following statement is an example of (1) defining
an expression in terms of itself; (2) stating a proposition in
descriptive words or epithets; or (3) circular reasoning.

A visitor to a military installation asked how
the officer in charge of a signal knew that the
signal was punctually given, he was told that the
officer kept his watch by the local jeweler's
regulator. When the visitor asked how the offi-
cer knew the jeweler's regulator was accurate,
he was told that it was kept in line with the
signal given at the fort.

(3) Circular reasoning

Go to frame 87

87. Indicate if the following statement is an example of (1) defining
an expression in terms of itself or (2) stating a proposition in
descriptive words or epithets.
STUDENT: "This argument is fallacious. I know it is fallacious because it is not valid. It is not valid because it contains a fallacy."

(1) Defining an expression in terms of itself

END OF PROGRAM

OPTIONAL Review

A. Go back to frame 83
B. Go to frame 88

88. One way is to define an expression in terms of itself - a procedure which the rules of definition do not permit. "A good man is a man who is good" is an unsatisfactory explanation because the concepts of _________ and _________ are simply repeated, not explained.

Good Man

Go to frame 89

89. Indicate if the following statement is an example of (1) defining an expression in terms of itself; (2) stating a proposition in descriptive words or epithets; or (3) circular reasoning.

STUDENT: "This argument is fallacious. I know it is fallacious because it is not valid. It is not valid because it contains a fallacy."

(1) Defining an expression in terms of itself

END OF PROGRAM

OPTIONAL Review

A. Go back to frame 83
B. Go back to frame 88