

Laboratory Activities for Behavioral Research

compiled and edited by

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1 Correlational Designs

*The Relationship between Objectivity and Creativity*¹

An important part of experimental psychology is the area of psychological testing and measurement (also called psychometrics). As one might imagine, there are many potential issues that can arise when measuring such things as attitudes, beliefs, and opinions. Such measurements are inherently more complicated than measuring purely objective things such as weights of objects or their lengths. As a result, the evolution of a psychological test is usually a long and involved process.

The present laboratory experiment is designed to investigate how two psychological tests are related to each other. The first, The Inventory of Student Explanation Preferences, or ISEP (Hergenhahn, 1962), is designed to measure an objectivity-subjectivity dimension. A high score supposedly indicates a tendency toward subjectivity and perhaps a mild rejection of the scientific method of acquiring knowledge. A low score supposedly indicates the acceptance of more objective explanations of various phenomena and perhaps a more favorable attitude toward science. The second test is an extremely crude measure of creativity in which a participant lists as many things as he or she can think of doing with a coat hanger. The participant is given three minutes to make the list. The number of items in the list constitutes the participant's creativity score.

Phase 1 – Collecting Data

Participants

You will need to recruit 4 participants (preferably other college students, but not necessarily psychology majors).

Materials

You will need to obtain a copy of the Lab 1 materials packet (see Appendix 1). The materials packet contains a copy of The Inventory of Student Explanation Preferences (ISEP) along with four answer sheets (one for each of your participants) and a scoring key. Also included are four sheets labeled “Coat Hanger Test” (again, one for each participant).

Procedure

1. Give two of your participants the ISEP first and the Coat Hanger Test second. Reverse the order for the other two participants (this is called counterbalancing).
2. Give the participant the ISEP answer sheet. Ask him/her to complete the information at the top of the page.
3. Read the instructions on the first page of the ISEP to your participant. If he/she has no questions, give the participant the test page and allow him/her to begin. Remind the participant that he/she must answer every question.

¹Adapted from an activity in Hergenhahn's (1970) *A Self-Directing Introduction to Psychological Experimentation*

4. Next, give the participant one of the sheets labeled “Coat Hanger Test” and read the following instructions:

“I want you to list as many different uses of a coat hanger as you can think of. The hanger can be arranged any way you wish. You will have three minutes to make your list. Ready? Begin.”

5. Use a stopwatch (or a timer on your phone) to determine the three minute time limit. Be sure to stop your participant at exactly three minutes.
6. Be sure to thank your participants for volunteering to participate in your experiment.

Data Preparation

1. Use the ISEP scoring key (in the materials packet) to score the ISEP. Each item (1-20) will have a weighted number assigned to it. The scoring key tells you how to assign these weights. For example, if the participant chooses “a” on Item 1, he/she is given 4 points for Item 1. If he/she chooses “c”, he/she gets 1 point for Item 1. Do this for each item. The participant’s total score is found by adding all of the weights for Items 1-20.
2. The score on the “Coat Hanger Test” is the number of items contained in the participant’s list. In scoring the test, be sure to look carefully for “chained” answers. An answer would be chained if the participant said a coat hanger could be used to hang shirts, pants, coats, etc. Chained answers should be counted as one response; that is, a coat hanger can be used to hang clothes.
3. Please submit a copy of your completed data summary sheet. Your completed data sheet is worth 10 points.

Phase 2 – Data Analysis and Write-up

To complete this phase, you’ll need the collected data from your class, which will be provided by your instructor.

Data Analysis

1. Compute appropriate descriptives for demographic data (age, gender)
2. Compute a Pearson correlation coefficient between the ISEP scores and the Coat Hanger Test scores.
3. Compute a Spearman rank correlation coefficient between the ISEP scores and the Coat Hanger Test scores.

How to write an APA lab report

Your lab report MUST be in correct APA format. As such, each of the major APA sections (introduction, method, results, discussion, references) must be present.

1. Introduction – restate the purpose of the study (see above) in your own words. This should not be more than one or two paragraphs.

2. Method – Briefly describe the method of our study. Must contain the following subsections:
 - Participants: How many? Mean/sd/range of age? Genders?
 - Materials: Describe the ISEP and the Coat Hanger Test.
 - Procedure: Describe the procedure of data collection, and describe how data were scored.
3. Results – Write the results of both correlation analyses in the “Results” section of your lab report. Tell me what you did (i.e., what analysis?) and what you found (i.e., the results).
 - Example (don’t just copy this!): “We performed a Pearson correlation test between hours spent studying and GPA. Hours spent studying and GPA were strongly positively correlated, $r(123) = 0.61, p = .011$.”
4. Discussion – Answer the following questions. Note: I am not asking you to answer these in a bulleted list. Rather, craft your discussion section in such a way to smoothly address each of these questions in a flowing narrative. One good approach would be to answer each question (or related questions) in a separate paragraph. Note that you should find at least two or three additional references (journal articles, please!) to support your claims.
 - What was the purpose of the study?
 - What relationship was being investigated in the study? Would you expect to find such a relationship? Explain.
 - Explain the results, assuming that the two tests were actually measuring what they were designed to measure.
 - What are some possible weaknesses of the ISEP and/or the Coat Hanger Test of creativity?
 - Do you feel that your participants would score approximately the same on these two tests if they were administered again?
 - Would you expect performance on the creativity test to be related to IQ? To what other variables might either test be related?
 - Discuss other (possibly better) measures of creativity.
5. References – Please list any references that you used to support your discussion above. Most successful lab reports will have 2-3 relevant journal article references.

The completed lab report is worth 20 points.

2 Independent Groups Designs

*The Effect of Category Set on Anagram Solutions*²

Deese (1959) found that an important factor in free recall of verbal materials is the inter-item associative strength (IIAS) within the list to be recalled. IIAS is a measure of the interrelationships among units of a list. High IIAS exists if the units comprising a list tend to evoke each other frequently as associates, whereas IIAS is low if the units of the list seldom elicit one another as associates. When the items within a list are highly inter-associated, free recall is enhanced. The recall of a given word tends to increase total recall by eliciting other related words in the list of high IIAS.

Some investigators (Mayzner & Tresselt, 1958; Safren, 1962) saw a similarity between such verbal recall situations and anagram solution, and as such, they expected similar principles to operate in both situations. Safren (1962) attempted to exhibit this similarity by showing that a “category set” exists in anagram solution as well as in verbal recall (Deese, 1959). A category set may be viewed as a readiness to respond to words belonging to a common class or category (i.e., a group of words with high inter-item associative strength). Thus, a list of anagrams whose solutions belong to a common category might be expected to be solved more readily than a list comprised of unrelated word solutions. For example, all of the solutions to the anagrams in List 4 below (Table 1) are related to “beverages”, “breakfast”, “food”, and “taste”. If a category set comes into play during the course of solving a list, the solution time for the anagrams should be shorter than that for a control group which receives a list of equal length, but made up of unrelated words. Moreover, there should be a decrease in solution time for successive anagrams when subjects solve anagrams made from associatively related words since associations called up by previously solved anagrams will aid the participant in the solution of later problems in the list.

The participants in one group of Safren’s experiment received one of six different lists of six anagrams each. All word solutions (words from which anagrams were constructed) within any given list were highly interrelated. The control group subjects received one of 36 different lists of six anagrams each. However, the word solutions within each of these lists were unrelated.

The results of Safren’s experiment supported two main predictions: (a) that time for solution would be shorter for anagrams from organized lists where anagrams belonged to a common category, and (b) that the group with the organized lists would show a greater decrease in solution time over successive anagrams in the list.

This study is a partial replication of Safren’s experiment. A comparison of solution times and improvement within a given list of six anagrams will be made between two types of lists, organized and unrelated.

Phase 1 – Collecting Data

Participants

You will need to recruit 4 participants (preferably other college students, but not necessarily psychology majors). Two of them will be assigned to the organized list condition, and the other two will be assigned to the unrelated list condition.

²Adapted from an activity in Jung and Bailey’s (1976) *Contemporary Psychology Experiments: Adaptations for Laboratory* (2nd Ed.)

Materials

Table 1 below contains a total of 36 anagrams arranged in six lists of six anagrams each. The arrangements are such that the solutions in each list form a common category (e.g., List 1 solutions are words related to “military”).

From these organized lists, different lists of six unrelated words can be obtained by taking one word from each of the six organized lists. It is possible to form 36 different unrelated lists of six words with each word appearing six times as Safren did, but it will be sufficient for this experiment to use ONE unrelated list. Construct your list by using all words from any given row of Table 1 (across categories) as the unrelated list.

After you choose your related list (choose ONE column of Table 1) and your unrelated list (choose ONE row of Table 1), prepare your stimuli by printing each anagram (not solved!) on a single index card. You should have two sets of six cards (six anagrams that are related, and six anagrams that are unrelated).

You will also need a data summary sheet, which may be found in Appendix 2.

TABLE 1 **SIX ORGANIZED LISTS OF ANAGRAMS***
(Solutions in Parentheses)

<i>List 1</i>	<i>List 2</i>	<i>List 3</i>	<i>List 4</i>	<i>List 5</i>	<i>List 6</i>
CANDOMM (COMMAND)	WHELIST (WHISTLE)	RIACH (CHAIR)	LIMK (MILK)	DOROCT (DOCTOR)	SAQURE (SQUARE)
REDOR (ORDER)	TARNI (TRAIN)	FOST (SOFT)	RECAM (CREAM)	URNSE (NURSE)	CIRLEC (CIRCLE)
RAMY (ARMY)	NESOI (NOISE)	OFAS (SOFA)	USGRA (SUGAR)	EHALHT (HEALTH)	DUNRO (ROUND)
OYEB (OBEY)	UNDOS (SOUND)	CUNSHIO (CUSHION)	EFECOF (COFFEE)	KISC (SICK)	BECU (CUBE)
SODLEŔI (SOLDIER)	SHLIRL (SHRILL)	WOLPIL (PILLOW)	SEWTE (SWEET)	MEDCIENI (MEDICINE)	CLOBK (BLOCK)
VANY (NAVY)	OLDU (LOUD)	COCHU (COUCH)	DINRK (DRINK)	ECRU (CURE)	LALB (BALL)

*Adapted from Safren, 1962.

Procedure

1. After your participant is seated comfortably in a quiet place, read the following instructions:

“This is an experiment on anagram solution. As you may know, an anagram is a word with its letters rearranged. I will show you a number of anagrams, one at a time. Your task is to determine without the aid of pencil and paper what the original word is. Word as quickly as you can since you will be given a maximum of 4 minutes for each anagram. As soon as you have a solution, tell me what it is. If you cannot solve an anagram in the allotted time, we will stop and go to the next one after I give you the answer. You will solve six different anagrams. Do you have any questions? (pause) Here is the first anagram.” After each anagram is completed, announce to your participant: “Here is the next anagram.”

2. Record the time (in seconds) for the solution of each anagram on the data summary sheet (see Appendix 2). You should use a stopwatch or a timer to record solution time. If your participant fails to solve an anagram within 4 minutes, stop him/her and record 240 seconds as the solution time. Give your participant the solution and then present the next anagram. As you go through the list, present the next anagram as soon as you have recorded the solution time for the preceding one. Do not discuss the experiment with your participant until all six anagrams have been presented!

3. Be sure to shuffle your list of cards before starting your next participant. Repeat the above procedure with the remaining participants, being sure that two of them see cards from the related condition and the remaining two see cards from the unrelated condition.
4. Thank each participant for their participation.

Data Preparation

1. Please submit a copy of your completed data summary sheet. Your completed data sheet is worth 10 points.

Phase 2 – Data Analysis and Write-up

To complete this phase, you'll need the collected data from your class, which will be provided by your instructor.

Data Analysis

1. Compute the mean solution times for anagrams 1 through 6 for the two conditions separately. Prepare a single graph showing any changes in solution times over successive problems for each of the two conditions.
2. Determine whether there is a statistically significant difference between mean solution times on the list for the organized and unrelated conditions by applying an independent samples *t*-test.

How to write an APA lab report

Your lab report MUST be in correct APA format. As such, each of the major APA sections (introduction, method, results, discussion, references) must be present.

1. Introduction – restate the purpose of the study (see above) in your own words. This should not be more than one or two paragraphs.
2. Method – Briefly describe the method of our study. Must contain the following subsections:
 - Participants: How many? Mean/sd/range of age? Genders?
 - Materials: Describe the two lists of anagrams. Use your specific lists as an example.
 - Procedure: Describe the procedure of data collection. What data were recorded?
3. Results – Describe any changes that are evident from the graph (refer to the graph as Figure 1, but put the figure at the END of the manuscript along with an appropriate caption). Also describe the results of the *t*-test. Tell me what you did (i.e., what analysis?) and what you found (i.e., the results).
 - Example (don't just copy this!): “We analyzed the mean number of drinks in an independent samples *t*-test with group (experimental vs. wait-list control) as a grouping variable. Over a two-day period, participants drank significantly fewer drinks in the experimental group ($M = 0.667$, $SD = 1.15$) than did those in the wait-list control group ($M = 8.00$, $SD = 2.00$), $t(4) = -5.51$, $p = .005$.”

4. Discussion – Answer the following questions. Note: I am not asking you to answer these in a bulleted list. Rather, craft your discussion section in such a way to smoothly address each of these questions in a flowing narrative. One good approach would be to answer each question (or related questions) in a separate paragraph. Note that you should find at least two or three additional references (journal articles, please!) to support your claims.
 - What was the purpose of the study?
 - What changes in solution times appeared over the six successive anagrams for the organized list group? For the unrelated list group?
 - Were the unrelated and organized list groups approximately equal in solution time for each anagram at the outset of the experiment? At the end? Were any differences you observed in the expected direction?
 - Is it conceivable that the formation of a category set might actually impede rather than facilitate solution time? How? Can you suggest an experimental design to test the hypothesis that anagram solution might be impeded with the formation of a category set.
5. References – Please list any references that you used to support your discussion above. At a minimum, the lab report should contain the following references (cited above):
 - Deese, J. (1959). Influence of inter-item associative strength upon immediate recall. *Psychological Reports, 5*, 305-312.
 - Mayzner, M. S., & Tresselt, M. E. (1958). Anagram solution times: A function of letter order and word frequency. *Journal of Experimental Psychology, 56*, 376-379.
 - Safren, M. A. (1962). Associations, sets, and the solution of word problems. *Journal of Experimental Psychology, 64*, 40-45.

The completed lab report is worth 20 points.

3 Factorial Designs

*The Role of Storage and Retrieval Cues on Memory*³

What happens to material that we cannot remember? Is it truly forgotten and gone forever, or is it only momentarily lost? By using retrieval cues, Tulving and Pearlstone (1967) showed that material that was assumed forgotten or not available could, in fact, be recalled or made accessible. Similarly, many people experience difficulty in remembering at times, only to find later that under other conditions the same material is easily recalled. Apparently some external cues act to jog or trigger our memories, so to speak.

In order to study how these cues operate, Tulving and Osler (1968) presented a list of 24 unrelated words to participants to memorize. The total design employed 19 conditions, but for our purposes we will need to examine only four of them. Half the participants received a verbal cue along with each word while the other half did not. The cues were weak associates of the words in the list that were assumed to serve as possible aids to memory. At recall, each group was divided so that half the participants received the cues as possible aids and half did not.

The resulting four conditions can be summarized as follows:

- cues at both encoding and retrieval (CC)
- cues at encoding but not at retrieval (CNC)
- no cues at encoding but cues at retrieval (NCC)
- no cues at either encoding or retrieval (NCNC)

Tulving and Osler (1968) predicted and found that Group CC recalled more words than Group NCNC. Less clear predictions existed concerning the other two conditions. They were included to determine whether cues given only at input or only at output would result in better performance than that in the NCNC condition. Results showed that recall under these intermediate conditions was no better, and in fact, slightly worse than that obtained in the NCNC condition. The indication was that cues are not beneficial for recall unless they appear both at encoding and retrieval.

The present study is based on a portion of the Tulving and Osler (1968) study described above, and examines the effects of cues on recall.

Phase 1 – Collecting Data

Participants

You will need to recruit 4 participants (preferably other college students, but not necessarily psychology majors). Each participant will take part in exactly ONE of the four conditions above.

Materials

Table 1 below contains a list of 24 words from the Kent-Rosanoff (1910) word association list and one weak (between 1% and 7%) associate for each word. Copy each of the 24 words on a separate index card with the corresponding weak associate on the back side of the card.

³Adapted from an activity in Jung and Bailey's (1976) *Contemporary Psychology Experiments: Adaptations for Laboratory* (2nd Ed.)

Also, you will want to obtain the materials packet from Appendix 3. This packet includes answer sheets for each condition and a data summary sheet.

TABLE 1 : STIMULUS WORDS AND LOW ASSOCIATE RETRIEVAL CUES

TABLE	(desk)	DREAM	(nightmare)
DARK	(room)	LIGHT	(bright)
BLACK	(cat)	SWIFT	(river)
SLOW	(stop)	LONG	(narrow)
GIRL	(friend)	BITTER	(taste)
HIGH	(mountain)	SQUARE	(block)
HARD	(easy)	BED	(sheet)
EAGLE	(scout)	HEAVY	(hold)
HOUSE	(garage)	SCISSORS	(paper)
ROUGH	(road)	SALT	(water)
ANGER	(hate)	KING	(crown)
SOUR	(lemon)	TOBACCO	(pipe)

Note: Stimulus words shown in upper case, cues in lower case.

Procedure

1. The words to be recalled will be presented VISUALLY to the participants at a rate of one word every 4 seconds. For the cued encoding conditions (CC, CNC), the experimenter will also pronounce the corresponding weak associate that is assumed to serve as the retrieval cue at recall.
2. Read the following instructions to all your participants before presenting the words:

“This is a study of factors affecting memory. I will show you a series of 24 unrelated words which I want you to read silently and try to remember because I will ask you to recall them afterwards. I will show you each word on a separate card for about 4 seconds each.”

3. For the participants in the cued encoding (CC and CNC) conditions ONLY, read the following *additional* instructions:

“As an aid to your memory, I will say a word aloud as I show each of the 24 words to be recalled. Use these spoken words as hints if you can, but you will not have to recall them later.”

4. Prepare an answer sheet for each participant (you may use those from the packet in Appendix 3. For the cued retrieval conditions (CC, NCC), the answer sheets will include the 24 weak associates in a single column in an order that is different from the one used during encoding.
5. Take a 30-second break after the last word is presented before testing for recall. Then provide the participant with the appropriate answer sheet and read the appropriate instructions (below) for recall:

- For the non-cued retrieval conditions (CNC, NCNC): “You may have 5 minutes to recall as many of the words which I have showed you on the cards as you can. You may write them down in any order.”
 - For the cued retrieval conditions (CC, NCC): “Here is a list of 24 words that might be helpful hints to aid your recall of the words that I showed you on the cards. You may have 5 minutes to recall as many of the words on the cards as you can. You may write them down in any order.”
6. At the end of the 5 minute recall period, take the answer sheet, ask your participant to describe any strategies that may have been used, whether the intended cues were helpful, and answer any questions that your participant may have about the experiment. Thank each participant for their participation.
 7. Be sure to shuffle your list of cards before starting your next participant. Repeat the above procedure with the remaining participants, being sure that each takes part in a DIFFERENT condition (CC, NCC, CNC, NCNC)

Data Preparation

1. Record the number of correctly recalled words AND the number of incorrectly called words (false intrusions, NOT omissions) in each of the four conditions on the data summary sheet. Please submit your completed data summary sheet. This portion of Lab 3 is worth 10 points.

Phase 2 – Data Analysis and Write-up

To complete this phase, you’ll need the collected data from your class, which will be provided by your instructor.

Data Analysis

1. Determine the mean number of correctly recalled words (as well as SD) for each of the four conditions. Perform a 2 (encoding: cue vs. no cue) x 2 (retrieval: cue vs. no cue) factorial analysis of variance on these data.

How to write an APA lab report

Your lab report MUST be in correct APA format. As such, each of the major APA sections (introduction, method, results, discussion, references) must be present.

1. Introduction – restate the purpose of the study (see above) in your own words. This should not be more than one or two paragraphs.
2. Method – Briefly describe the method of our study. Must contain the following subsections:
 - Participants: How many? Mean/sd/range of age? Genders?
 - Materials: Describe the list of words and cues.
 - Procedure: Describe the procedure of data collection. What data were recorded?

3. Results – Describe the results of the ANOVA. Tell me what you did (i.e., what analysis?) and what you found (i.e., the results).
 - Example (don't just copy this!): “Attitude change scores were subjected to a 2 x 2 factorial analysis of variance having two levels of message discrepancy (small, large) and two levels of source expertise (high, low). The main effect of message discrepancy yielded an F ratio of $F(1, 24) = 44.4, p < .001$, indicating that the mean change score was significantly greater for large-discrepancy messages ($M = 4.78, SD = 1.99$) than for small- discrepancy messages ($M = 2.17, SD = 1.25$). The main effect of source expertise yielded an F ratio of $F(1, 24) = 25.4, p < .01$, indicating that the mean change score was significantly higher in the high-expertise message source ($M = 5.49, SD = 2.25$) than in the low-expertise message source ($M = 0.88, SD = 1.21$). The interaction effect was non-significant, $F(1, 24) = 1.22, p > .05$.”
4. Discussion – Answer the following questions. Note: I am not asking you to answer these in a bulleted list. Rather, craft your discussion section in such a way to smoothly address each of these questions in a flowing narrative. One good approach would be to answer each question (or related questions) in a separate paragraph. Note that you should find at least two or three additional references (journal articles, please!) to support your claims.
 - What was the purpose of the study?
 - What conclusions can you draw about the usefulness of the cues given during encoding? During retrieval?
 - Were cues useful if provided only at encoding but not at retrieval? How might they have been a source of interference? Were any cue words incorrectly recalled in the CNC condition?
 - Were cues helpful if introduced only at retrieval (that is, the NCC condition)?
 - What strategies did any of your participants report using? What did they report about the use of cues?
5. References – Please list any references that you used to support your discussion above. At a minimum, the lab report should contain the following references (cited above):
 - Kent, G. H., & Rosanoff, A. J. (1910). A study of association in insanity. *American Journal of Insanity, 67*, 37-96.
 - Tulving, E., & Osler, S. (1968). Effectiveness of retrieval cues in memory for words. *Journal of Experimental Psychology, 77*, 593-601.
 - Tulving, E., & Pearlstone, Z. (1966). Availability versus accessibility of information in memory of words. *Journal of Verbal Learning and Verbal Behavior, 5*, 381-391.

The completed lab report is worth 20 points.

Appendix 1

Contents:

- 1 copy of data summary sheet
- 1 copy of Inventory of Student Explanation Preferences (ISEP) 2 pages
- 4 copies of Answer Sheet for ISEP and Coat Hanger Test (labeled by participant)
- 1 copy of Scoring Key for ISEP

Data Summary Sheet – Lab 1

Instructions: For each participant, record age, gender, ISEP score, and Coat Hanger Test score. Do not reveal this data sheet to any of your participants until the completion of the study.

Participant	Age	Gender	ISEP	Coat Hanger Test
1				
2				
3				
4				

Inventory of Student Explanation Preferences
Directions and Explanations

This is an inventory to investigate how you feel about certain issues. On the following pages you will find statements concerning a wide range of ideas. After each statement you will find four possible responses. Please choose the alternative which *best* states your position. You *must* choose one of the alternatives for each of the statements.

Some of the items may appear rather personal. You may be sure that the results obtained from this inventory will be regarded as confidential information.

As you read each statement you are asked to indicate (on the answer sheet) quickly your response to the item. People have different reactions to these statements. This is not a test in which there are "right" and "wrong" answers. What is wanted here is your own immediate personal reaction.

1. Extrasensory perception, or the ability to obtain information from a source by other than normal sense stimulation, is:
 - a. an ability we all have to a certain extent.
 - b. an ability only a select few possess.
 - c. non-existent.
 - d. a matter of luck and probability.
2. The best prediction for what happens after death is that:
 - a. the soul leaves the body and continues living.
 - b. the body deteriorates and nothing continues living.
 - c. the spirit continues living and is judged by God.
 - d. either the spirit lives on or the body deteriorates; both are equally possible.
3. The abominable snowmen of the Himalayan Mountains are best explained as:
 - a. a species of animal that has been isolated from civilization for many centuries.
 - b. an optical illusion seen because people want to see them.
 - c. actually a primitive human species that evolved differently because of its relative isolation.
 - d. a legend made up by natives to draw interest upon their country.
4. The appearance of great men throughout history is best explained as:
 - a. the result of probability; that is, if enough men are born, some are bound to be brilliant.
 - b. the result of divine power placing these men on earth for a specific reason.
 - c. the result of opportunities provided by rich environments such as the availability of books, good teachers, etc.
 - d. the result of both cultural and biological heredity.
5. Flying saucers are best explained as:
 - a. vehicles employed by inhabitants of another planet.
 - b. vehicles belonging to either our government or another, being kept secret until they are completely developed.
 - c. optical illusions caused by some physical characteristics of space.
 - d. non-existent, not really seen by anyone.
6. Examples of individuals recalling or remembering a previous life, such as Bridey Murphy, are best explained as:
 - a. evidence that most of us did live in a previous life.
 - b. evidence which only suggests the possibility of a previous existence.
 - c. stories made up in order to sell books to the unknowing public.
 - d. evidence that some people believe they had previous existence but is probably not actually true.
7. Communication with the dead is:
 - a. impossible.
 - b. possible for anyone but only under certain conditions.
 - c. possible for only a few select people.
 - d. possible someday, but at the present time it cannot be done.
8. Concerning the statement, "It is possible for a mother to know what her child is thinking although they are many miles apart," which of the following is the best explanation:
 - a. this type of phenomenon is possible and indeed occurs all the time.
 - b. this is possible but occurs under very special circumstances.
 - c. this can be explained in terms of probability; for example, if a mother tries often enough to guess what her child is thinking, she is bound to be right a few times.
 - d. this is possible only when there is an effort made by both the mother and child.
9. God is:
 - a. an illusion created by man.
 - b. someone who created the universe and then left.
 - c. the supreme power governing everything in the universe.
 - d. a power in the universe creating things and giving them life although having no further concern with them.
10. Prediction of events is possible because:
 - a. things that happen in the past tend to happen, under similar circumstances, in the future.
 - b. some people possess innate knowledge of what is going to happen in the future.

- c. the probability of making a correct guess at one time or another is high.
 - d. events in the universe are completely dependent upon preceding circumstances; if they are known, you know what necessarily must happen.
11. Man is considered a superior being because:
 - a. we are created in God's image.
 - b. through the evolutionary process we have developed higher mental abilities.
 - c. we outnumber other animals.
 - d. it is more comfortable for us to believe we are.
 12. Knowledge concerning good and evil is best explained as:
 - a. intuitive and available to everyone.
 - b. knowledge that comes only through experience.
 - c. information that is only available to a few people and must be learned by other people from them.
 - d. being available only in the Bible.
 13. The method employed by science can:
 - a. eventually obtain information concerning everything.
 - b. investigate only a small aspect of the universe.
 - c. be applied only to material things.
 - d. be applied only partially to both material and spiritual phenomena.
 14. Which of the following would you accept as the best evidence for the existence of a supreme being:
 - a. information in the Bible.
 - b. certain experiences indicate the existence of one.
 - c. the universe is just too complicated to have evolved the way it has without some preconceived design.
 - d. there is no evidence indicating the existence of a supreme being.
 15. Concerning the idea that a pregnant woman can directly influence the personality of her child by wishing or thinking certain things, which of the following is most correct:
 - a. it is impossible.
 - b. it is highly unlikely.
 - c. true only for certain mothers and children.
 - d. it is always true.
 16. Some cultures, present and past, seem to be more advanced than others. This is most likely because:
 - a. the people in the more advanced cultures are more intelligent.
 - b. some cultures are situated in such a way that food and other resources are readily available, allowing them to spend time developing ideas.
 - c. some cultures have information revealed to them.
 - d. some cultures just happen to invent tools that allow them to advance.
 17. Children tend to be like their parents in many ways. This is most likely because of:
 - a. learning; being around parents so much they naturally pick up many of their characteristics.
 - b. heredity; they have many of their parents' traits within themselves at birth.
 - c. both heredity and learning.
 - d. social pressure to act like one's parents.
 18. Miracles such as walking on water or changing water into wine are:
 - a. possible.
 - b. impossible.
 - c. things of the past, although at one time they were apparently possible.
 - d. completely psychological, but in a sense do exist.
 19. Faith healing, or being cured of an illness by coming into contact with a religious person, is:
 - a. possible because some people have the divinely inspired ability to heal.
 - b. impossible under any circumstances.
 - c. possible only because the person being healed believes in the abilities of the healer.
 - d. impossible now but possible during the time of Christ.
 20. Concerning the statement, "An individual is responsible for any crime he commits and should be punished accordingly," which of the following best indicates your position:
 - a. agree because we all possess a free will and decide freely before committing an act.
 - b. disagree because we are the victims of our environments; therefore, society is to blame, not the individual.
 - c. disagree because at times people lose control over their will and act as animals. This cannot be helped.
 - d. agree because if wrongdoings were not punished as examples, social order would not be possible.

Inventory of Student Explanation Preferences

Male _____ Female _____ Age _____ College Class F S J S (circle one)

Major _____

Circle your choice

- 1. a b c d
- 2. a b c d
- 3. a b c d
- 4. a b c d
- 5. a b c d
- 6. a b c d
- 7. a b c d
- 8. a b c d
- 9. a b c d
- 10. a b c d
- 11. a b c d
- 12. a b c d
- 13. a b c d
- 14. a b c d
- 15. a b c d
- 16. a b c d
- 17. a b c d
- 18. a b c d
- 19. a b c d
- 20. a b c d

Score _____

Coat Hanger Test

- 1
- 2
- 3
- 4
- 5
- 6
- 7
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- 21
- 22
- 23
- 24
- 25

Score _____

Inventory of Student Explanation Preferences

Male _____ Female _____ Age _____ College Class F S J S (circle one)

Major _____

Circle your choice

- 1. a b c d
- 2. a b c d
- 3. a b c d
- 4. a b c d
- 5. a b c d
- 6. a b c d
- 7. a b c d
- 8. a b c d
- 9. a b c d
- 10. a b c d
- 11. a b c d
- 12. a b c d
- 13. a b c d
- 14. a b c d
- 15. a b c d
- 16. a b c d
- 17. a b c d
- 18. a b c d
- 19. a b c d
- 20. a b c d

Score _____

Coat Hanger Test

- 1
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- 24
- 25

Score _____

Inventory of Student Explanation Preferences

Male _____ Female _____ Age _____ College Class F S J S (circle one)

Major _____

Circle your choice

- 1. a b c d
- 2. a b c d
- 3. a b c d
- 4. a b c d
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- 6. a b c d
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- 8. a b c d
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- 11. a b c d
- 12. a b c d
- 13. a b c d
- 14. a b c d
- 15. a b c d
- 16. a b c d
- 17. a b c d
- 18. a b c d
- 19. a b c d
- 20. a b c d

Score _____

Coat Hanger Test

- 1
- 2
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- 24
- 25

Score _____

Inventory of Student Explanation Preferences

Male _____ Female _____ Age _____ College Class F S J S (circle one)

Major _____

Circle your choice

- 1. a b c d
- 2. a b c d
- 3. a b c d
- 4. a b c d
- 5. a b c d
- 6. a b c d
- 7. a b c d
- 8. a b c d
- 9. a b c d
- 10. a b c d
- 11. a b c d
- 12. a b c d
- 13. a b c d
- 14. a b c d
- 15. a b c d
- 16. a b c d
- 17. a b c d
- 18. a b c d
- 19. a b c d
- 20. a b c d

Score _____

Coat Hanger Test

- 1
- 2
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- 23
- 24
- 25

Score _____

Scoring Key for the ISEP

<u>Item Number</u>	<u>Alternative Number</u>			
	<u>(a)</u>	<u>(b)</u>	<u>(c)</u>	<u>(d)</u>
1.	4	3	1	2
2.	3	1	4	2
3.	3	1	4	2
4.	3	4	2	1
5.	4	3	1	2
6.	4	3	2	1
7.	1	4	3	2
8.	4	2	1	3
9.	1	2	4	3
10.	2	4	3	1
11.	4	1	3	2
12.	2	1	3	4
13.	1	4	2	3
14.	4	3	2	1
15.	1	2	3	4
16.	3	1	4	2
17.	2	4	1	3
18.	4	1	3	2
19.	4	2	1	3
20.	4	2	3	1

Appendix 2

Data Summary Sheet – Lab 2

Instructions: For each participant, record age, gender, and solution times (in seconds) for each of the six anagram solutions. Do not reveal this data sheet to any of your participants until the completion of the study.

Organized (related) List

Participant	Age	Gender
1		
2		

1st	2nd	3rd	4th	5th	6th

Unrelated List

Participant	Age	Gender
3		
4		

1st	2nd	3rd	4th	5th	6th

Appendix 3

Contents:

- 1 copy of data summary sheet
- 4 answer sheets (labeled by condition at the bottom)

Data Summary Sheet – Lab 3

Instructions: For each participant, the condition has already been recorded. You will need to additionally record age, gender, number of words correctly recalled, and the number of incorrectly recalled words (do NOT include omissions). Do not reveal this data sheet to any of your participants until the completion of the study.

Participant	Condition	Age	Gender	Number correctly recalled	Number incorrectly recalled
1	CC				
2	NCC				
3	CNC				
4	NCNC				
