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THE CONTROLLED ASSOCIATION RESPONSES OF RELIGIOUS
AND LAY WOMEN AS MEASURED BY THE
LOYOLA LANGUAGE STUDY

by

Laura Louise Logsdon

A Thesis Submitted to the Faculty of the Graduate School
of Loyola University in Partial Fulfillment of
the Requirements for the Degree of
Master of Arts

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LIFE

Laura Louise Logsdon was born in Carey, Ohio, December 26, 1927.

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CHAPTER I

INTRODUCTION

The purpose of this study is to determine whether the Loyola Language Study might discriminate between Religious women and lay women when matched for age, education, and place of residence.

The Loyola Language Study is a form of controlled association test derived from the Kent-Rosanoff List of free association stimulus words. The instructions of the Loyola Language Study ask the subject to "Please write next to each of the words the one word which you think the greatest number of people would be most likely to think of when they see or hear the word in the list. Take as much time as you need to think about the word which seems to you to "go along" with each printed word". The test is a measure of "communality of thought" and the person's tendency to reveal the deviation of his own thought from the thought of the majority of people.

In the past, studies using various tests have indicated that Religious women tend to obtain different scores than the majority of people on such tests. Thus, it might be that a significant difference exists between the scores of the Loyola Language Study administered to Religious women and the scores of the same test administered to lay women.

The plan of the study includes the following chapter on the early experimentation with the association method; the development of the Loyola Language

Study and norms; several studies found in the literature relating to the comparison of groups with the association test method; a parallel study comparing Religious women with lay women with other types of tests and a study utilizing the method of the Loyola Language Study in controlling "set" to give popular responses to a word association test. A preliminary report on the results of a comparison of young nuns and young lay women tested by the Loyola Language Study follows along with the procedures. The results of the main study are then presented. A summary and conclusions regarding the data obtained and analyzed for significance of difference completes the study.

CHAPTER II

REVIEW OF RELATED LITERATURE

"When a person thinks logically, he organizes his thoughts according to a pattern or structure, which leads toward an end or conclusion. If, however, he relaxes and lets his thoughts come up spontaneously, without exerting any selection or direction, ideas will come to him which seem to acquire consciousness for their own sake and not for any distant purpose" (Arieti, 1955, pp. 254-55).

When the originators of the Loyola Language Study (LLS) planned their original research, they had a distinction in mind similar to the one made by Arieti (1955). They wanted to investigate the processes of association as they take place in a person who is not just letting the ideas occur. They instructed their subjects to try to direct the process as we shall see later (Snider, 1954).

In this brief history of Association Studies we must not overlook the analysis made by Brennan. Brennan (1937) thinks that the study of mental associations can help the investigator understand the personal characteristics, the mental set, and the facility with which a person handles his knowledge. To this end many fruitful research projects have been undertaken using various approaches to the study of association.

In Human Faculty Francis Galton (1883) describes his well-known experiment on free association. He noted the rate, character, date of formation, tendency

to recur, and relative precedence of associations to the same list of stimulus words on four different occasions. Later experimenters especially utilized three of Galton's methods of treating association data quantitatively, i.e., (1) the associative reaction time, (2) the frequency of repetition of the same associative response, and (3) a classification of the responses with a count of the number falling in each class (Woodworth, 1954). The LLS utilizes some aspects of the latter two methods, in treating its data, as we shall see later.

Galton's experimental method was simplified by Wundt. He required his subjects to give each response in the form of a single word. From this time on it became possible to examine and tabulate in each case the relation between one stimulus word and one response word (Murphy, 1949). The LLS requires the subject to give each response in the form of a single word.

According to Murphy (1949) Trautscholdt elaborated Wundt's system of classification and undertook a study of the statistics of the association method.

Jung (1919) devoted time and attention to the classification of psychological types from his work with the association method. Kraepelin and Sommer extended the method to the differentiation of types in psychopathology according to Murphy (1949). Snider (1954) and Johnson originated the LLS with the intention of measuring change in gravity of mental disease.

Murphy (1949) states that Cattell and Bryant established the first frequency table of free associations according to Wundt's classification method. This work led Cattell to investigate controlled association, "in which the subject was required to give not simply any one word, but a word bearing a specific relation to the stimulus word" (Cattell, 1889, p. 14). The LLS requires the subject to give the one word which he thinks most people would think of when they see or hear the stimulus words.

Stimulus words of family relationship were used by Thumbe and Marte in Germany and Esper in America. They found that commonness of response in groups of the same population could be predicted (Woodworth, 1954). Dinello (1958) investigated the influence of occupations on the LLS. The present study compares a group of one population with a group of another population according to vocational status.

Rapaport (1946) experimented and wrote extensively on the diagnostic significance of association disturbances. He found that an increasing degree of maladjustment makes for an increased number of disturbances on single stimulus words. Similar gradations of disturbances are generally shown on the LLS. (Del Vecchio, 1957).

Kent-Rosanoff

The first extensive investigation of the "association of ideas" was made by Kent and Rosanoff (1910). They used a list of 100 familiar English common words as a free association test. "The general plan has been first to apply the test to normal persons, so as to derive empirically a normal standard and to determine, if possible, the nature and limits of normal variation; and then to apply it to cases of various forms of insanity and to compare the results with the normal standard, with a view to determining the nature of pathological variation (Kent-Rosanoff, 1910).

Their sample consisted of 1,000 normal subjects, mostly adult men and women of varying education and occupation from the eastern part of the United States. The test was administered individually and orally to each of the subjects. According to Kent-Rosanoff (1910) initially the responses were always to be timed but later on in the experiment timing was dropped.

A table of responses to each stimulus word with the frequency of each response was assembled. From these data was formulated the empirical principle of normal association: "The one tendency which appears to be almost universal among normal persons is the tendency to give in response to any stimulus word one or another of a small group of common reactions" (Kent-Rosanoff, 1910, p. 46).

Kent and Rosanoff (1910) then compared 247 pathological cases with their normal material and found in the former case that there was a weakening of the normal tendency to respond by common reactions as is shown in Table 1. Many of the patients gave more than 50 per cent individual reactions.

Table 1

Kent-Rosanoff Categories of Reactions for Comparison
of Normal and Insane Subjects

| Subjects | Common Reactions % | Doubtful Reactions % | Individual Reactions % |
|-----------------------|--------------------------|----------------------------|------------------------------|
| 1,000 normal subjects | 91.7 | 1.5 | 6.8 |
| 247 insane subjects | 70.7 | 2.5 | 26.8 |

Referring to "individual reactions" Kent and Rosanoff (1910) state that "they cannot all be regarded as abnormal, but they include nearly all those reactions which are worthy of special analysis in view of their possible pathological significance" (Kent-Rosanoff, 1910, p. 47). They concluded from an analysis of their entire experiment that "pathological associational tendencies constitute merely a special group of symptoms" (Kent-Rosanoff, 1910, p. 331).

It was evident that in association disorders there occurs a "gradual shading off" as the condition becomes more acute.

O'Connor (1928) collected norms from 1,000 male factory workers using the Kent-Rosanoff List and method. He made a comparison of his material with the Kent-Rosanoff norms. An example of this comparison is made in Table 2.

Table 2

An Example from a Comparison of O'Connor's Norms
with the Kent-Rosanoff Norms

| Stimulus Word | Response | Kent-Rosanoff f^a | O'Connor f |
|---------------|----------|------------------------|-----------------|
| Table | Chair | 267 | 333 |

^a
(f = frequency)

"The unanimity of so large a number of people suggests that the relation table-chair, epitomizes a general concept" (O'Connor, 1928, p. 40). He felt that a word on which so many persons concur must bear an objective relation to the original stimulus. O'Connor referred to the score obtained by the subject as his "group contact."

Norms were collected by Keene (1951) in 1933 with the Kent-Rosanoff List and method. Other stimulus words were employed following the Kent-Rosanoff List. His sample included five hundred Stanford students, 276 men and 224 women.

The Kent-Rosanoff method was modified by Schellenberg (1930) into a group test with printed forms and written answers. Norms were collected from 925 students at the University of Minnesota; 57 per cent men; 43 per cent women.

Russell and Jenkins (1954) used Schellenberg's method and collected norms for the Kent-Rosanoff List from 1,008 students at the University of Minnesota; 60 per cent male; 40 per cent female.

Russell and Jenkins (1960) studied their own 1954 results in the light of the above four major collections of free association data and concluded that:

- (1) There is a general tendency for the frequency of popular responses to increase with time. (Partial confirmation)
- (2) The words used as responses to stimuli tend to change slowly but systematically over time with the highest ranking responses having the highest stability. (Confirmed)
- (3) Abstract responses to stimuli have tended to decrease in popularity across the time period of this study. (Russell and Jenkins, 1960)

The authors attributed the above changes to "change in test-taking attitudes" and changes in the meaning of particular stimuli over a period of time.

1,000 school children were presented the Kent-Rosanoff List orally by Woodrow and Lowell (1916). Responses were written. Ten words were substituted for ten "difficult" Kent-Rosanoff stimulus words. This was the first large comparison of groups which showed great differences from the Kent-Rosanoff norms. This result indicated that a children's frequency table was essential for comparison of children's responses.

Loyola Language Study

Olof Johnson in 1953 shortened the Kent-Rosanoff List to eighty stimulus words chosen at random from that list. He further modified the test to a written form and changed the instructions for the subject to respond with the one word that most people would be most likely to say when they saw or heard each stimulus word (Snider, 1954).

Reverend Louis B. Snider, S.J. cooperated in the work of Johnson and completed his work, that is, collected norms for the test from 400 men and 400 women of a stratified random sampling of the Metropolitan Boston area. Stratification was done on the basis of age and education for each sex separately.

The purpose of the researchers was to "enable investigators to match experimental and control groups for gravity of mental disease and which would help to determine, by retest, the degree of recovery in each group" (Snider, 1954). The assumption underlying the test was that gravity of disease would be related to the patient's ability to recognize the deviation of his own thought from the thought of the majority of people. After norms had been established to represent "what most people would be most likely to say," each patient's responses could be mathematically determined.

In an early comparison of 70 chronic patients with 100 normal subjects Snider and Johnson (1954) used a plus and minus scoring system with a mean for normals of plus two and a range of a plus 25 for a percentile rank of 90 and a minus 33 for a percentile rank of 10. For the patients, 72 per cent had a score worse than minus 33 which was the 10th percentile for the normals. The patients mean was minus 50.7.

For a detailed analysis of the rationale and scoring procedures involved in the LLS the reader is referred to Stanek (1956).

Father Snider brought the test to Chicago where it was copyrighted as the Loyola Language Study in 1954.

Norms for the LLS in the Chicago area were established by Stanek (1956). He used the method and same size sample as was used in the establishment of the Boston norms. He also found that age bore an inverse relationship and education a positive relationship to test scores on the LLS; males achieve significantly lower scores on the LLS than did females. A set of tentative norms for each of the above factors was established by Stanek.

Guppy (1959) using the methods employed at Boston and Chicago established

norms for the Seattle area. He also compared the Chicago norms with the Seattle norms and found that "when the frequency of all responses to a stimulus word are taken into consideration in scoring, as is the case where standard scores are used, the standard scores computed for those responses, whether given by persons in Seattle or Chicago, are essentially the same" (Guppy, 1959, p. 64).

Thus we have traced the origin and derivation of the Kent-Rosanoff List, with the establishment of norms and we have done the same for the Loyola Language Study, the difference in the two tests resting in the controlled instructions of the LLS. The results from the two tests differ somewhat, however. The particular responses that the subjects choose with high frequency when taking the free association test are not identical with those they chose when taking the LLS (Even, 1958). Even also found that in the free association technique respondents give a larger number of singleton responses than they do with the LLS using the same stimuli.

Validity coefficients for the test of 25 significant stimulus words of the LLS indicated that the test was suitable for differentiating between various degrees of mental illness. Reliability was estimated by the split-half and test-retest methods. For detailed information on the technical aspects of validity and reliability of the LLS the reader is referred to Herr (1957).

Rumann (1960) established norms for early adolescents in the Chicago area.

Dinello (1958) conducted an investigation of diverse occupational groups measured by the LLS. He obtained the mean total-test Z scores for persons in one occupational group and compared them with the mean total-test Z scores for persons in another occupational group. He discovered a trend for those in managerial and sales positions to show more communality of thought than those in clerical and accounting positions. The present study comparing religious women and

lay women, will use different methods of comparison in order to discriminate, whereas total scores for the test of 80 words were compared in the above study.

Goodenough (1942) has contributed most to the investigation of the comparison of diverse groups of women utilizing a form of the free association test. A homograph test of 240 stimulus words was administered to 500 officers and 500 privates of the WAAC in the early days of World War II with the intention of obtaining a leadership scale for the selection of future officers. It was found that officers tended to give more "active" and "masculine" responses to the stimuli whereas the privates gave more "passive" and "feminine" responses.

A further comparison of groups of women was made by Goodenough (1946). Different groups of divorced, married, and single women over thirty-two years of age were tested with each set of scores obtained compared with the others. A scoring key for females had been previously devised (Goodenough, 1942). Results obtained from the comparison showed that the attainment of high scores was much less frequent among married women than among the divorced or single women. Married women also gave the smallest amount of rare responses. Divorced women gave the most "masculine" responses but were also high in "feminine" responses. Single women obtained a fair distribution of each type of response and obtained lower scores than the divorced women. In the present study two groups of single women are compared with Religious life the criterion of difference rather than marital status.

Cobb (1952) used Goodenough's test and method in measuring leadership in college women. Known college leaders' scores were compared with scores of non-participants in activities requiring leadership. It was found that leaders gave more masculine responses than the non-leaders.

Licht (1947) and McIntosh (1944) compared "contact" vs. "content" workers with two different association methods. Their results indicate that "contact" workers such as teachers and salesmen obtain higher communality scores than "content" workers such as research workers.

Three groups of law, medical, and liberal arts students' responses to a free association test were compared by Foley and MacMillan (1943). Words having legal and medical as well as everyday meanings made up the test. Each group gave responses characteristic to its particular field.

For a review of free and controlled association tests involving tests for psychopathology, especially schizophrenia, the reader is referred to Del Vecchio (1957).

In Appendix I is given the complete report of the only experiment found in the review of literature that approximated the type of controlled test that is the LIS. Jenkins (1959) tested 129 college students with the Kent-Rosanoff List under standard and "popular response set" ("Try to make the response most college students would make") conditions. It was found that "popular set" increases markedly the number of popular responses. This has also been true of the results from research with the LIS (Herr, 1957).

A Parallel Study

Mother M. Elaine Sandra (1957) studied the personality patterns of five groups of women:

- (1) 150 junior professed belonging to 17 active religious institutes primarily devoted to teaching;
- (2) 150 novices from the same religious institutes;
- (3) 150 candidates within three months of their entrance into the same institutes;

- (4) 150 Catholic students attending eight different colleges for women;
- (5) 150 Protestant students attending four Protestant schools for women.

Three tests were administered to the above five groups; the Bier Modified Version of the Minnesota Multiphasic Personality Inventory; a sentence completion test devised for the investigation; and the Draw-a-Person Test, which was evaluated on the basis of a specially devised checklist. Evaluation of the influence of religion on personality was made in the following way:

- (a) Significant differences in personality test scores between the group of candidates and the two groups of religious women respectively reveal the influence of training in the religious life.
- (b) Significant differences in personality test scores between the group of candidates to the religious life and Catholic college students indicate the influence of personality characteristics typifying those attracted to the religious life.
- (c) Significant differences in personality patterns between Catholic and Protestant students reveal the influence of general Catholic life. (Sandra, 1957, p. 1).

Religious women obtained psychologically less favorable scores in this study. ". . . perfectionistic and introversive tendencies. . . may be thought of as characterizing from a psychological point of view those attracted to the religious life" (Sandra, 1957, p. 1).

Mother M. Elaine concluded from the data that: "An important contribution of the present research was the demonstration of the similarity of the personality profiles of religious women with those of college-educated women in general. When looked on separately, it might be seen that the deviant profiles secured by groups in the religious life are indicative of poorer psychological adjustment. The findings of this study indicated, however, that those profiles followed the same basic trend as those of college-level groups. Consequently,

there would seem to be fundamentally no more reason for interpreting the personality profiles of religious women as indicative of poorer psychological adjustment than there would be for so interpreting those of college samples in general (Sandra, 1957, p. 2).

Mother M. Elaine attributed the similarity of test profiles for all groups to four factors common to all subjects: college education, unmarried status, better than average socio-economic level, and uncertainty with respect to the attainment of individually selected life goals (Sandra, 1957). In the present study of Religious women and lay women with the LLS the factor common to both groups is unmarried status.

Becker (1961) administered a battery of personality tests including the LLS to eighteen "successful" Religious women. He found that their scores on the LLS fell within the normal range. An additional conclusion was made that the LLS "genuinely confirms the findings of the other psychological tools used in this study" (Becker, 1961). The sample of Religious women used in the present study was not evaluated as to how "successful" each person was. They were selected from ordinary groups of ordinary Religious women.

In summary, we have shown in this review of literature how the early and critical experiments with free and controlled association are related to the LLS. In particular we have traced the development of the Kent-Rosanoff List from which the LLS was derived. The origin and normalization studies of the LLS were presented, including the Dinello study, directly related to the present study. Goodenough's studies comparing different groups of women with a homograph free association test, along with Cobb's study of college women, exhausted the literature available on the comparison of diverse groups of women with the association

method. Several studies were then cited involving diverse occupational groups and the association method. That groups of diverse nature respond differently on association tests has thus been revealed by this review of literature.

It was then shown in a review of a parallel study that Religious women as a group compared to lay women tend to make different (poorer) scores on certain other tests.

A study with the LLS and a selected group of "successful" nuns showed that these nuns obtained scores within the normal range for Chicago area women.

CHAPTER III

PRELIMINARY STUDY AND PROCEDURES

The purpose of the preliminary study was to ascertain whether or not the Loyola Language Study would discriminate between young Religious women and young college women on the basis of the ability to give common responses to the stimulus words of the test. The tests of the 50 young Religious women were selected from Father Snider's data collected in 1954. The sample of 50 young college women's tests was selected from Stewart's (1956) study. The mean age of the young college women was 18.7 years with a S.D. of .9 years. The mean age of the young Religious was 19.6 years with a S.D. of 1.2 years. All of the young nuns had a high school education, 24 were in 1st year novitiate, 26 in 2nd year novitiate of one religious order with active pursuits. All of the young lay women were in first year of college at one university.

Frequencies of occurrence of responses to each of the 25 significant (Herr, 1957) stimulus words of the LLS were counted. Taking the three most frequent responses to each stimulus word as a basis of comparison, the frequency with which the nuns made each response was compared with the frequency with which the lay women made each response. The X^2 test (Underwood, 1954) was used to determine whether the relative frequencies of these responses were significantly different.

Of the 75 response pairs considered (the three most frequent responses of

nuns and lay people respectively, to each of the 25 stimulus words), two were significantly different at the .05 level and one was significantly different at the .01 level. To the stimulus word "bread" the 50 nuns gave the response "food" 12 times while the 50 lay women gave the response three times. The difference between 12 and three is significant at the .05 level. To the stimulus word "head" the 50 nuns gave the response "face" one time while the 50 lay women gave the response eight times, which is significantly different at the .05 level. To the stimulus "stove" the 50 nuns gave the response "cook" three times while the 50 lay women gave the response 16 times, which is significantly different at the .01 level.

It is to be noted that when using the .05 level of significance as a decision point for testing differences between pairs, one should expect by pure chance alone, to obtain this many or more different pairs, five times in 100; similarly one should expect a difference at the .01 level or greater one time in 100 by pure chance alone. Hence, making 75 comparisons, one should expect a difference at the .05 level or greater 3.75 times and a difference at the .01 level or greater .75 times. Therefore, the obtained three differences at the .05 level or greater and one difference at the .01 level or greater can be explained fairly well by chance alone.

Besides comparing frequencies with which nuns and lay people responded with some particular kind of response to each of the 25 stimulus words, we also considered the mean Z scores of the nuns by their own single responses to each of the 25 words and compared this with the mean Z scores made by the 50 lay people by their single responses to each of the same 25 stimulus words. A t test (Underwood, 1954) was made to determine the significance of differences between

these means. Responses to three of the stimulus words gave significantly different means. See Table 3.

Table 3
Total Mean Z Scores for Each of the Three Words
Significantly Different by t Test

| Stimulus Word | Mean for Lay Women | (S.D.) | Mean for Nuns | (S.D.) | Level of Significance P |
|---------------|--------------------|--------|---------------|--------|-------------------------|
| Bed | 17.88 | 8.40 | 21.84 | 10.7 | $<.05>.02$ |
| Tobacco | 21.69 | 9.85 | 26.12 | 10.7 | $<.05>.02$ |
| Sleep | 23.38 | 10.00 | 18.68 | 9.7 | $<.02$ |

The trend for the younger nuns to obtain poorer scores on the LLS indicated that the LLS scores of older groups of Religious women might also be different from those of lay women. If the trend continued one could say that the Religious life influences women's ability to deal with communality of response in a particular manner.

While the above three words are discriminating of younger nuns and younger lay women, and while the mean of the Z scores of the younger nuns tends to be higher than those of the young lay women, the scores of the young nuns were not beyond the normal range of the Chicago norms of equal age and education. The Chicago norms are discussed further in the presentation of results of the main study. The normal range is considered to be one standard deviation above or below the mean, and the justification for considering this the normal range can be had by consulting the validation studies cited by Herr (1957). The 50 young Sisters had a mean total score for the 25 words of 506.02 whereas the young lay people had a mean total score for the 25 words of 504.96.

CHAPTER IV

RESULTS OF THE MAIN STUDY

Data for the major part of the present study were collected on the LLS from Religious and lay women. The tests were obtained by personal contact; by letter to amenable subjects explaining the purpose of the study, and from graduate psychology classes. Table 4 shows a general classification of the women according to "occupation."

Table 4
Occupational Classification of Older
Religious and Lay Women

| Occupation | Nuns f^a | Occupation | Lay Women f |
|---------------|---------------|------------|------------------|
| Teaching | 43 | Teaching | 41 |
| Contemplative | 7 | Clerical | 9 |

^a
 f = frequency

The mean age of the Religious women was 50.1 years with a S.D. of 10.1 years. The mean age of the lay women was 50.0 years with a S.D. of 10.1 years, and by actual count 3/4 of the women in each group fell between the ages of 39.9 and 60.1 years.

Table 5 shows the range of education for the two groups of older Religious and lay women. Both samples were English speaking and residents of Chicago area.

Table 5
Years of Education for Older
Religious and Lay Women

| Years of Ed. | Frequency for Nuns | Frequency for Lay | Years of Ed. | Frequency for Nuns | Frequency for Lay |
|-----------------|-----------------------|----------------------|-----------------|-----------------------|----------------------|
| 8 | 1 | 0 | 13 | 3 | 3 |
| 9 | 0 | 2 | 14 | 3 | 6 |
| 10 | 2 | 2 | 15 | 1 | 1 |
| 11 | 1 | 0 | 16 | 10 | 10 |
| 12 | 6 | 5 | 17 | 10 | 7 |
| | | | 18 | 13 | 14 |

As the test booklets of the LLS were returned to the writer they were scored with the scoring manual for Chicago women's norms described by Herr, (1957).

The data and scores thus obtained were treated in the same manner as the data described in the preliminary study for the same purposes. The χ^2 formula was applied to the pairs of response frequencies. Upon comparing the two top frequency responses to each of the 25 stimulus words for nuns and lay women respectively, seven were significantly different at the .01 level of confidence, and two at the .05 level. The nuns have the higher frequency for responses to the stimuli words stomach-food, and whistle-noise. The lay women have the higher frequency for responses to the stimuli words head-foot, bread-butter, table-chair, house-home, stomach-ache, high-low, religion-God. Table 6 shows the nine significantly different words for the two groups. It is to be noted that the nuns higher frequency for the response stomach-food is not significantly different, while the lay women's higher frequency of response for stomach-ache is significantly different at the .01 level of confidence.

Table 6
Words Significantly Different by X^2 for
Older Religious and Lay Women

| Stimulus | Response | f ^a for Nuns | f for Lay | Level of Significance P |
|----------|----------|-------------------------|-----------|-------------------------|
| Head | foot | 1 | 13 | <.01 |
| | hair | 6 | 5 | |
| Bread | butter | 18 | 32 | <.01 |
| Table | chair | 12 | 26 | <.01 |
| | food | 10 | 11 | |
| House | home | 18 | 34 | <.01 |
| | family | 5 | 1 | |
| Stove | heat | 28 | 11 | <.01 |
| | cooking | 6 | 7 | |
| Stomach | food | 19 | 14 | <.01 |
| | ache | 2 | 17 | |
| Whistle | noise | 15 | 1 | <.01 |
| | train | 3 | 8 | |
| High | low | 5 | 14 | <.05 >.02 |
| | tall | 3 | 2 | |
| Religion | God | 15 | 26 | <.05 >.02 |
| | church | 11 | 10 | |

^af = frequency

Making 50 comparisons, one should expect a difference at the .05 level or greater 2.5 times and a difference at the .01 level or greater .50 times. Therefore the obtained seven differences at the .01 level or greater cannot be explained by chance whereas the two obtained differences at the .05 level or greater may be explained by chance alone.

The total mean Z scores of all the responses for each stimulus word made by the 50 older nuns were then compared with the mean of the total Z scores of responses made by the 50 older lay women. A t test (Underwood, 1954) was made to determine significance of difference between means. Responses to seven of the stimulus words gave significantly different means. See Table 7.

Table 7
Total Mean Z Scores for Each of the Seven Words
Significantly Different by t Test

| Stimulus Word | Mean for Lay Women | (S.D.) | Mean for Nuns | (S.D.) | Level of Significance P |
|---------------|--------------------|--------|---------------|--------|-------------------------|
| House | 16.16 | 10.54 | 22.44 | 10.43 | < .01 |
| Table | 17.56 | 9.17 | 24.76 | 9.65 | < .01 |
| Bread | 17.94 | 8.99 | 23.32 | 10.57 | < .01 |
| Stove | 22.16 | 9.60 | 16.36 | 10.55 | < .05 |
| Head | 21.78 | 9.14 | 26.16 | 11.27 | < .05 |
| High | 19.90 | 10.78 | 26.16 | 11.53 | < .05 |
| Rough | 18.92 | 11.90 | 25.22 | 11.88 | < .05 |

While the above seven words are discriminating of older nuns and older lay women, and while the mean of the Z scores for six of the seven discriminating words show higher scores for nuns, the scores do not go beyond the normal range as explained by Herr (1957). The 50 older women had a mean total score for the 25 stimulus words and responses on the LLS of 507.40 whereas the older nuns had a mean total score for the 25 words of 574.62.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this study was to determine whether or not the Loyola Language Study, which is a type of controlled association test, would discriminate between Religious and lay women. The criterion on which the discriminative power was based was the ability to give common responses to the stimulus words of the test. A preliminary study had shown that young nuns tended to give responses showing less commonality on the test than the young lay women with whom the young nuns were compared. A sample of 50 older nuns and 50 older lay women was then selected and matched with each other for age, education and place of residence. The LLS scores were obtained and tested for significance of difference of frequency of response to each stimulus word by the X^2 formula. A t test was then made on the mean Z scores for each of the stimulus words and responses. The results of these two measures of significance of difference showed that as a group the older nuns tended to obtain different frequencies of response to the stimulus words and obtain higher mean Z scores for each word. That differences might be expected was shown from a review of the literature which indicated that diverse groups of women tend to differ on word association tests. A study was also cited that showed that Religious women obtained different scores on other tests than did normative samples.

When we compared the mean scores of our two older groups with the norms

established for Chicago women, we found some interesting facts. The mean of the group of 53 normal Chicago women used in the Stanek-Del Vecchio normative study, reinterpreted by Herr, was 480 with a standard deviation of 85.23. The females were so selected that they included all ages from 19 to 54 years and all education levels from 7 to 13 years or more. The normal range may be taken to lie between 395 and 565. These scores represent the normal mean plus and minus one standard deviation. Matched with these 53 women for age and education were 53 schizophrenic patients from an Illinois Mental Institution. Their mean LLS score was 660.00 with a standard deviation of 100.49.¹

The mean for our older lay persons fell well within the limits of the normal range, and that for our Religious women was beyond these limits by only one tenth of a standard deviation. Nevertheless, there is a difference between the means of the older lay and Religious women in this study, which is significant beyond the .01 level of confidence. The mean for the lay women was 507.40 with a S.D. of 95.40. The mean for the Religious women was 574.62 with a S. D. of 107.85. A difference of 55.13 would be needed for significance at the .01 level of confidence for 50 pairs of subjects.

There was no need to apply Herr's suggested corrections for age and education to these scores in evaluating the difference in means, because the same corrections would apply to the lay and Religious women owing to the matching procedures. Nevertheless, the correction was applied in order to estimate the magnitude of the influence of these two variables on the absolute scores. The mean for each of the two groups was lowered by about three points.

¹Data from the private file of Rev. V. V. Herr, S.J. containing the collected research data of the Loyola Language Project.

We were then able to evaluate the results taken as a whole. The older lay women deviate from the mean LLS scaled Z scores for the Chicago sample by 27 scaled points. The mean of this sample is practically identical with that of the 400 Chicago women. The lay women in our sample had poorer scores than the average, and this difference is probably due to their being unmarried women. The Religious women had poorer average scaled scores than those of the lay women by 67 points. A factor which might account for this mean difference is the fact that they are living in a community somewhat apart from the world outside. Thus they do not seem to be able to guess what most people would think with the same facility as lay women. In the case of one stimulus namely stove, we noticed that they were significantly better able to do so, but in the other six cases they were not.

Our analysis of the qualitative differences, that is differences in kind of responses which had top frequencies, showed that the Religious again sometimes differ from the lay persons. They tended to think up top frequency responses that would be understandable from the kind of life they lead; for instance, the response heat to the stimulus stove was more frequent for nuns than for lay women. But the response foot to the stimulus head was more frequent for lay than for Religious women.

So in conclusion, the Loyola Language Study does discriminate elderly lay and Religious women, but on the basis of the present research with the sample of fifty pairs, predictions cannot be made for individuals.

It is to be recalled, also, that the Religious women at the younger age level were not discriminated from the younger lay women. So perhaps the life which the nuns lead away from the "things of the world" is responsible for the lowered

commonality scores. Obviously then, on the basis of our study, the Loyola Language Study cannot be used as a screening device for candidates to Religious life.

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APPENDIX I

"Effects on Word-Association of the Set to Give Popular Responses"

"Two questions prompted the study of the effect of the instruction "to give popular responses" on word-association test behavior. First, can Ss who normally make uncommon responses produce and identify common responses when they are instructed to do so? Second, can an investigator use the "popular set" to maximize his likelihood of identifying common responses when he has only a small sample of Ss available? The first question is of theoretical interest and the second of some practical importance."

"Students in advanced courses in psychology (N=66) and English (N=63) were given the Kent-Rosanoff Test under standard and "popular response set" (Try to make the response most college students would make) conditions. Test periods were separated by one month for the first group and five minutes for the second. All tests were scored by giving one point each response shown as the most common in the Minnesota norms"

(Table 1)

| Commonality Scores under Standard and "Popular Set" Instructions | | | | | | | |
|--|--------------|------|-----------|---------|------|------|-----|
| Group 1 | | | | Group 2 | | | |
| Score: Standard Test | Mean | 38.2 | S.D. 11.1 | Mean | 38.1 | S.D. | 9.6 |
| Score: "Popular" Test | Mean | 49.4 | S.D. 9.4 | Mean | 46.7 | S.D. | 8.9 |
| Gain: Test 1 to Test 2 | Mean | 11.2 | S.D. 8.4 | Mean | 8.6 | S.D. | 8.2 |
| Gain: Highest Quartile Ss | Mean | 3.8 | | Mean | 1.7 | | |
| Gain: Lowest Quartile Ss | Mean | 16.1 | | Mean | 14.6 | | |
| Correlation: Test 1, Test 2 | r = plus .67 | | | | | | |

"It is clear from Table 1 that "popular set" increases markedly the number of popular responses. Ss in the highest quartile on the standard test show little gain; Ss in the lowest quartile show very great gains. The intercorrelation of the two test conditions shows, however, that status on the first test does contribute to the score on the second test. Tabulations by items showed that the frequencies of the popular response increased for 89 items and remained essentially unchanged for 11 items. It appears that the questions which suggested this study may be answered affirmatively. In addition, the instructors involved suggest from their knowledge of the Ss that high "gain scores" are related to what might be called "social sensitivity"." (Jenkins, 1959)

LOYOLA LANGUAGE STUDY TEST BOOKLET

REVISED

LOYOLA LANGUAGE STUDY

Instructions

WHEN PEOPLE see or hear a word, they often think of another word. If you say the word *stem*, most people would think of *flower*. Some, but not the greatest number, might think of *pipe*, *grass*, *stop*, and so forth.

This study wants to find out what word you think the *greatest number of people* would be most likely to think of when they see or hear each of the words on the next two pages.

Please write next to each of the words the *one word* which you think the *greatest number of people* would be most likely to think of when they see or hear the word in the list. Take as much time as you need to think about the word which seems to you to "go along" with each printed word. Then choose the *one word* which you think the *greatest number of people* would be most likely to think of when they see or hear the given word. Write the *one word* which you choose beside the printed word. Do not skip any word.

Remember, you are not asked to write down just any word that comes to your mind. You should write down the *one word* which you think the *greatest number of people* would be most likely to think of.

Important: please fill out the information blank on page 4.

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Beside each of the words printed below write the *one word* which you think the *greatest number of people* would be most likely to think of when they see or hear that word.

| | |
|-----------|-----------|
| soldier | sour |
| hungry | king |
| butterfly | deep |
| long | sleep |
| head | black |
| anger | hammer |
| afraid | table |
| fruit | thirsty |
| dark | quiet |
| red | hard |
| loud | blue |
| bath | sweet |
| eating | stomach |
| joy | working |
| rough | comfort |
| heavy | soft |
| high | short |
| white | beautiful |
| command | cold |

| | |
|----------|----------|
| whiskey | whistle |
| yellow | carpet |
| window | needle |
| scissors | hand |
| foot | thief |
| doctor | dream |
| wish | trouble |
| house | religion |
| justice | street |
| river | health |
| sickness | ocean |
| mountain | bed |
| stove | child |
| girl | tobacco |
| salt | woman |
| man | cabbage |
| cheese | citizen |
| baby | earth |
| moon | lion |
| spider | butter |
| bread | music |

The following information is essential for research purposes. Without it, no good can come from the trouble you have taken to fill out the two previous pages.

RESIDENCE (city and state).....

BIRTHPLACE (city and state).....

MONTH AND YEAR OF BIRTH.....

SEX (male or female).....

Highest year of school completed (circle one):

5 6 7 8 9 10 11 12 13 14 15 16 17 18

From what countries did your parents' people come?

Father's people.....

Mother's people.....

YOUR OCCUPATION.....

If you are a student or housewife, what is your father's or husband's occupation?.....

If you wish, give your name and address

NAME.....

STREET.....

CITY.....

Return to:

LOYOLA LANGUAGE STUDY

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Chicago 11, Illinois

APPROVAL SHEET

The thesis submitted by Laura Louise Logsdon has been read and approved by a board of three members of the Department of Psychology.

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

The thesis is therefore accepted in partial fulfillment of the requirements for the Degree of Master of Arts.

5/24/61
Date

Vincent V. Herr SJ
Signature of Adviser