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Sex Differences in Selective Forgetting

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SEX DIFFERENCES IN SELECTIVE FORGETTING

by

John Daniel O'Malley

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

June

1952
LIFE

John Daniel O'Malley was born in Chicago, Illinois, December 18, 1926.

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CHAPTER I

INTRODUCTION

The object of this investigation is to discover what, if any, are the sex differences in selective forgetting as demonstrated in the differential recall of material closely related to the ego and previously formed attitudes. More concretely, if we can illustrate that selective forgetting does occur, then can it be further shown that men and women differ significantly in the amount of such forgetting, or do they vary so little that it is of no importance.

To accomplish this purpose, the most important consideration confronting us seems to be the reliability of the experiment which is used to demonstrate the phenomenon of selective forgetting as such. If this experiment were not one in which any question of its validity was reduced to a minimum, then further analysis of the data to discover sex differences would be utterly useless.

The purpose of this study, therefore, can be said to be two-fold, that is, to repeat a previous investigation in selective forgetting as regards sets or attitudes, so as to determine its reliability, with any recommended changes in procedure,
and then to analyze the data obtained to ascertain if any sex differences have been revealed.
CHAPTER II

PREVIOUS STUDIES IN SELECTIVE FORGETTING

A study of the experiments that have been conducted to investigate the factors influencing differential retention reveal that the greater number can be placed under three general classifications as to procedure, namely, those utilizing the recall of affectively rated words, those which make use of affective experiences, and those employing previously formed attitudes or sets. Others have used odors, names of completed and uncompleted puzzles, and so forth, to demonstrate differences in forgetting.

In the present discussion, the numerous laboratory studies, usually falling under the recall or recognition of words classification, will be excluded for, in introducing artificiality into the situation, it would seem that they do not provide optimum conditions in testing the phenomenon. It would be well, however, to include one or two of them to illustrate the general nature of the investigative procedure.

Stagner\(^1\) had each of two hundred college student subjects evaluate a list of words for their affective value, rating

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them as pleasant, unpleasant, or indifferent. Not all such studies have the subjective evaluation aspect this has. The group was given 150 seconds to memorize the words, and were then tested for immediate recall. The words were recalled in order of pleasant, unpleasant, and indifferent. Stagner found a fair correlation between memory value and the pleasant and unpleasant potency of the words. Most of the experimenters utilize a delayed recall period rather than the immediate, since no significant results are usually obtained with an immediate recall, the theory being that the influencing factors have not had sufficient time to operate.

Lynch made use of cards containing pleasant, unpleasant, and indifferent words with 1080 college student subjects.¹ The words used were sixteen which had been taken from Jung's list used in his association studies, and rated by Smith and Jones for their emotional value by using a psychogalvanometer. These words were then placed within a list of one hundred words and the subjects tested for recognition by marking the words in the list that were included in the original presentation. There were differences noted in the delayed recall periods tending to show a

greater retention of the pleasant words. There were, however, more incorrect markings than correct ones of the words as being in the original group, except in the immediate recall.

The results of this type of study generally indicate that there is greater retention, even though slight, of the words designated as pleasant. This is evident only in the delayed recalls, however. This latter point is confusing in light of the theory used by many of the experimenters to explain the difference in retention. They feel that such differences can be expected, since there are most probably more associations with the pleasant words than with the unpleasant, thus raising them to a higher level in memory. If this is so, then why do not the immediate recalls produce significant results? If a greater complex of associations with the pleasant words fully explained their superior retention, then no time interval would be needed between the presentation of the material and the subsequent test. Such is not the case, but this is not to say that such greater associations are not a factor influencing differences in retention.

We will now turn to the broader consideration of the experiments using the second general classification of procedures, namely, those utilizing the recall of affective experiences. The majority of such investigations in selective forgetting have had for their purpose its demonstration, utilizing many different
dynamic factors which might affect recall, without introducing such variables as sex differences.

One such study was found, however, which had as its purpose the discovery of sex differences in the forgetting of pleasant and unpleasant experiences. On the day following their Christmas vacation period, Meltzer asked seventy-seven men and fifty-five women college students to describe all of their experiences which had occurred during the vacation. They were then asked to rate these experiences as pleasant or unpleasant. More of the experiences reported were rated as pleasant than as unpleasant. Six weeks later, they were again requested to recall their experiences which took place during the Christmas vacation. At this time, the average percentage of the pleasant experiences recalled exceeded that of the unpleasant experiences. The women in the group had forgotten more of their unpleasant experiences than had the men.

There are many factors which may have, and most probably did, enter into Meltzer's study, thereby affecting his results.

1 There was another. The earliest investigation of feeling conditioning memory was conducted by Colgrove in 1898. He noted that women recall relatively more unpleasant experiences than do men. His procedural technique was to have his subjects answer the question, "Do you recall pleasant or unpleasant experiences better?"

The most important of these variables is that of superior prior learning of the pleasant experiences to that of the unpleasant. It is conceivable that most of the subjects had reviewed their pleasant experiences many more times than the unpleasant ones, even before the experimental learning took place. This element of rehearsal would, then, account for Meltzer's results. The procedure also admits the possibility that the subjects might withhold many of their experiences, especially the unpleasant, and this would tend to alter the findings based on the subsequent recall. The rationale behind this is, if they did withhold at the original description of 'all' their experiences during the stated period, it is quite probable that the same would be true at the recall six weeks later; and even more so, since there would be a natural amount of uncertainty as to which ones they had described originally. This uncertainty would prompt one to record fewer experiences than possible especially in the area of the unpleasant.

These objections can be made to most of the experiments in this class, but this is not to say that they are thus rendered invalid, for it is also possible that none of these things took place. Our purpose is to find and apply a procedure which will reduce these variables to a minimum.

Waters and Leeper repeated Meltzer's experiment with
one variation in procedure. After the final recall of the experiences during the Christmas vacation period, they had the subjects estimate the number of times they had thought about or mentioned these experiences since their happening. With this they had some measure of the review given to the pleasant and unpleasant experiences. In comparing the rehearsal differential and retention, Waters and Leeper found that the very pleasant and unpleasant ones were reviewed more often and remembered better than the experiences which were rated as only slightly pleasant or unpleasant or indifferent.

Menzies asked fifty college students to write down their experiences of the previous day. They were to evaluate them as to affective quality (pleasant, unpleasant, or indifferent) and degree or intensity. The subjects were tested for recall and re-evaluation after one- and three-week intervals. There were negative results as to the superior retention of the pleasant experiences. This finding can be explained in terms of the unequal affective decrement of the recalled experiences, for the figures show that the recall was correlated with the intensi-


ty of feeling tone, rather than with the quality.

Jersild has reported a study in which he had fifty-one college students recall and record as many of their pleasant and unpleasant experiences as they could for the three-week period preceding the experiment.\(^1\) The number of pleasant experiences reported greatly outnumbered the unpleasant. Three weeks later, the subjects were again asked to recall these experiences. A reliably greater percentage of the pleasant experiences was recalled. However, in this instance we again have the handicap of unequal affective decrement.

Koch had seventy-six of her college students recall the grades on ten of their true and false quizzes.\(^2\) This was done five weeks after the last quiz had been given and the subjects had rated their grades for affective quality and intensity. At the recall period, the grades were recalled in the order of pleasant, unpleasant, and indifferent. The results here also reveal that the intensity of the affective tone is an important factor, for both the very pleasant and unpleasant were recalled better than those which were indifferent or only slightly pleas-

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ant or unpleasant.

An interesting study was reported by Stagner, who had 150 college students report only the most pleasant and most unpleasant experience which happened to them within a fifteen day period prior to the experiment. The subjects were also to record all of their associations with these events. Three weeks later, the subjects were given a typewritten copy of the experiences they had reported and asked to reproduce as many of the initially reported associations as possible. A greater percentage of the associations with the pleasant experience than with the unpleasant was reported.

An unusual investigation was conducted by Sharp, in which she tested for the retention of pleasant (acceptable) and unpleasant (unacceptable) material, as contained in the case records of her subjects. In this manner, she was able to test for the retention of material which was definitely known to be acceptable or unacceptable. The results showed that the acceptable was remembered better than the unacceptable.


The above experiment brings us to the last group of studies to be considered, those which investigate the influence of previous attitudes or sets upon selective forgetting. This aspect is the least known from an experimental standpoint, but it is one which is far reaching in its applications. This is so, because of the theory of the frame of reference as being the most important factor influencing differential forgetting. This theory, and others, will be treated in Chapter III.

Edwards conducted a study in which he tested for the recall of material harmonizing with the individual's attitudes as regards the New Deal policy. A statement was read to the subjects which contained an equal number of both pro- and anti-New Deal statements. Edwards had previously measured the attitudes of the subjects. The data showed that retention was significantly greater for material which was compatible with the attitudes of the subjects than for material which was not. An objection to this study is found in the possibility of prior learning, for it is reasonable to assume that at least some of the arguments presented in the experiment were quite familiar to the subjects.

In their study of the effect of atheistic and theistic

attitudes. Watson and Hartmann did control the factor of prior learning of the arguments comprising the memory material. They found that material which was consistent with the attitudes of the subjects was recalled much more effectively than that which was opposed to their attitudes. The results are not, however, statistically reliable.

Levine and Murphy used attitudes toward the Soviet Union to demonstrate selective forgetting. Ten subjects were placed into two groups on the basis of their strong feelings for or against communism. The material to be learned consisted of two paragraphs, one mildly pro-Soviet, and the other bitterly anti-Soviet. The recalls in the forgetting period illustrated that one tends to remember material which supports his social attitudes better than material which conflicts with these attitudes. The involved procedure used necessarily limited the number of subjects. In this experiment also, the variable of prior learning may be a factor, although the learning period for the material lasted four weeks.


In an interesting investigation, Seeleman measured the effect of the subject's attitude toward the Negro, on the ability to recognize pictures of members of that race, which had been presented earlier. It was found that such attitudes can and do affect recall to a considerable extent.

Edwards has also shown that a person's attitude can be influential in distorting the recognition of material which is inconsistent with such frame.

Shaw reports a study by Maria Zillig in which it was demonstrated that attitudes establish predispositions to perceive events as harmonizing with that attitude and to ignore events which do not. Zillig arranged to have disliked children perform exercises more skillfully than the liked children. She then had the performances of the groups judged by the other children. The performances of the liked children had been rated as superior to that of the disliked children. Zillig felt that the children had

1 V. Seeleman, "Influence of Attitude upon Remembering of Pictorial Material," Archives of Psychology, 1940, XXXVI, 258.


apparently perceived the performance of the liked group as superior.

Such investigations as the past few, reveal the widespread influence of a frame of reference. Not only will attitudes exert a selective differential on the recall of material which was correctly assimilated, but they will even distort what is perceived so as to conform with those attitudes.

Shaw has reported a study using a procedure basically the same as that of Wallen, the latter of which will be discussed later. The subjects were asked to recall a bogus personality rating of themselves that was presented as genuine. Shaw found that when a subject is ego-involved, out of a total of correct recalls, a significantly greater number of them will be of those items representing a favorable evaluation of the subject. A favorable evaluation consisted of the subject being rated as having a desirable trait or as not having an undesirable trait. Just the opposite is the case for an unfavorable evaluation. Shaw also found, as had Wallen, that the agreement and disagreement of material with an opinion of the subject will influence selective forgetting.

In another investigation, Shaw and Spooner had seventeen subjects each rate a person whom they knew, as regards per-

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sonality. 1 One week later the subjects were given a bogus rating, represented as being a composite one, of the person they had previously rated. In subsequent reproductions of that bogus rating, the results showed a better recall of those items which were in agreement with the subject's opinion as originally given.

Our next consideration will be of an experiment conducted by Dr. Richard Wallen of Western Reserve University. 2 The procedure used in his investigation forms the basis of the present study. It has been selected, since it appears to be one of the most reliable investigations of the phenomenon with which we are dealing. An experiment which utilizes a frame of reference to illustrate selective forgetting was chosen, because of the import of the findings of the above mentioned studies in demonstrating the widespread influence of a frame of reference. It will suffice at this point to mention only the results of Wallen's study, for a detailed discussion of the procedure, and its advantages, will be made in Chapter IV. In using different control groups, Wallen found that, when the subjects are ego-involved,


selective forgetting takes place in such a way as to result in a recall that is more in accordance with the individual's frame of reference than was the total memory material; and that the relative desirability or undesirability of the material has no reliable effect on memory. Wallen's findings are statistically significant.
CHAPTER III

THEORIES EXPLAINING SELECTIVE FORGETTING

Although the scope of this investigation does not necessarily include the ultimate 'how' of selective forgetting, some mention should be made of the theories which have been proffered to explain the 'why' of such differential retention, in light of the experimental findings concerning its nature through demonstration.

The theory which seems to have spurred a great number of the studies, and which forms the basis of one of the more important, is primarily that long held by the scholastics and many psychologists on memory. Stated simply, perhaps too much so, it maintains that the experiences which are not in harmony with an individual's attitudes, beliefs, and desires tend to be altered or forgotten. This forgetting can be an active process, rather than a passive one the operation of which is correlated with time. Freud utilized this theory, but with a modification stating that the forgetting process was repression.

The experiments, dealing with affectively rated words, which fall within the first class considered in Chapter II, do not generally postulate the above theory of memory as an expla-
nation of their results. Rather, they are explained in terms of emotional tone potency, or else wealth of associations. The pleasant words, those with high emotional value, and those which are members of a vast association complex tend, in general, to be more efficiently recalled than are others not so classified. This differential is only found when the learned material is tested in delayed recall. As has been noted previously, this latter point throws considerable doubt upon the sufficiency of the theory. If the factors of affective quality and associations explain the differential retention of words, then significant differences should be found in the immediate tests of recall as well as in the delayed, for these factors would seem to be operative even before the experimental learning period.

In the study conducted by Menzie, which investigated the retention of pleasant and unpleasant experiences, the results showed no differential retention in favor of the pleasant experiences.¹ This finding was explained on the basis of affective intensity of the experiences, that is, there was a correlation between the intensity of feeling tone and retention. This is undoubtedly a factor influencing forgetting, but others have found a difference based solely on quality (pleasant or unpleasant).

Stagner found a qualitative differential after having his subjects report their most pleasant and most unpleasant experience for a given period, with the accompanying associations. There was an attempt here to have the experiences be of a comparable intensity, but it is quite possible that they were not.

The results of the studies of Jersild and Waters and Leeper differ, but the experimenters explain them, at least partially, on the basis of rehearsal. Jersild felt that the unpleasant experiences tend to be forgotten because they are rehearsed, in thought or word, less often than are the pleasant experiences. In comparing the rehearsal differences and recall, Waters and Leeper found that both the very pleasant and unpleasant were reviewed more often and remembered better than the experiences which were only slightly pleasant or unpleasant or indifferent. The results of these two experiments are in conflict; however, Jersild did not have the subjects rate the experiences


for degree or intensity of affective tone as had Waters and Leeper. An explanation of these findings could be that there was differential learning or more frequent review of some of the experiences even before the experimental learning took place.

An objection to this theory of rehearsal is offered in Wallen's investigation.¹ There the procedure was to have the subject's personality rated in such a way that the rating did not conform to his opinion of himself. If there was any rehearsal after the experimental learning it was most probably of those items which did not conform with the subject's opinion. The results, however, show that if such rehearsal existed then it must have been ineffective, for the ratings conflicting with the subject's estimation of himself were the least accurately recalled.

Stagner attempted to explain selective forgetting in terms of retroactive inhibition. The unpleasant experiences of the individual represent situations which must be altered, so they are followed by other responses to nullify the conflict and are, therefore, more subject to the influence of retroactive inhibition. On the other hand, pleasant experiences represent situations which are complete in themselves, and about which no further action is needed. Such may be the case, but there is little

or no experimental evidence to support the contention. Just the opposite would seem to be the present situation.

In light of the divergent results of some of the experiments, Edwards has emphasized that the focus of many of the investigations in selective forgetting appears to be on what may be considered only auxiliary or assistive factors. He maintains that the most important consideration is not the pleasantness or unpleasantness of the experience as such, but rather, whether or not the experience is in harmony with the individual's attitudes, desires, or values. In other words, the question should be if the particular experience is one which conforms to, or is in conflict with, the frame of reference of the individual. The experiments included in Chapter II which make use of a procedure involving attitudes, all bear witness to the soundness of this explanation. It was consistently reported that the experiences which conform or harmonize with an existing frame of reference will tend to be learned and recalled better than those experiences which conflict with the frame. With this consideration in mind then, it would be possible to predict the direction of selective forgetting by ascertaining a particular frame of refer-

ence.

Other experiments dealing with attitudes, especially those of Seeleman, Zillig, as reported in the study by Shaw and Spooner, and Edwards, indicate the widespread influence of a frame of reference. It has been found that an individual will recast or distort material so that it will be in conformance with the frame. Lund observed that if a group is to remember ideas to be presented to them, then the group should first be persuaded that the ideas are in accord with those which they already possess.

The implications of these findings, in attitudinal studies, for the clinical and social psychologist are quite evident.

1 V. Seeleman, "Influence of Attitude upon Remembering of Pictorial Material," Archives of Psychology, 1940, XXXVI, 258.


CHAPTER IV

EXPERIMENTAL PROCEDURE

The subjects who took part in this investigation were enrolled in elementary psychology courses in Loyola University. The total test group contained 198 subjects. There were one hundred women, with a mean age of 19.0, and ninety-eight men, with a mean age of 22.3.

A check list of forty personality-descriptive adjectives was presented to each subject. The adjectives were listed in alphabetical order, and separated into eight groups of five. The subjects were tested in groups of around thirty. After receiving the check list, the subjects were asked to mark a 'plus' sign beside those words which they thought described them, and a 'zero' beside those words which they believed did not describe them. The subjects were encouraged to be sincere and were told that the papers would be treated as confidential information. As much time as necessary was given to enable each subject to complete the check list. When all were finished, they were asked to write the names of three to five people in the school who knew them. These self-estimates are to be considered as indicative of the subjects' attitudes towards themselves. This gives us the frame
of reference.

By a systematic alteration of the self-ratings, a 'bogus rating' was constructed so that half of the ratings were identical with the self-rating while the other half were not. One week after the self-ratings had been obtained, these bogus ratings were given to the subjects. Each subject was given a sheet containing his name and a set of numbered spaces marked plus or zero. The subjects were then told that they had been rated by some person who knew them and that these sheets contained the record of the ratings. The sheets had been creased as if they had been in an envelope, presumably when being sent to one of the persons whose name appeared on the back of the original rating sheet. This was the purpose of having the subjects write the names of three to five people, who knew them, in the school. The experimenter then read the list of traits corresponding to the numbers on the papers. Such a method permits the exposure of different material to each subject while controlling the rate and time of exposure. The list was read slowly two times. Immediately after the second reading, the bogus rating sheets were collected.

As soon as the sheets were collected, and without previous warning, the subjects were asked to recall the marks assigned to them by their unknown raters. The recalls were written on a sheet containing all of the adjectives used in the original list,
and were arranged in an identical order. The subjects were asked to mark a 'plus' sign beside each adjective so attributed to them on the rating of their personality just presented, and a 'zero' beside those traits which were not attributed to them.

The purpose of the immediate recall is to eliminate from final consideration all of those items recalled incorrectly at this point. By doing this, we treat in the final tabulation after the second recall, only those items that would appear to be on the same level of learning. In this manner we can reduce to a minimum the variable of prior learning, which was objected to in many of the previous investigations. Thus, if we use only those items for comparison, that have been correctly recalled on the immediate recall, then the differences in errors made in the delayed recall of these items will be due only to factors operating after the immediate recall, and not superior initial learning of some of the personality-descriptive terms, or normal immediate forgetting in other instances.

Forty-eight hours after the immediate recall period, and without prior warning, the subjects were again asked to reproduce the rating given to them. The recalls were again written on a sheet containing all of the adjectives used in the original list, as in the first recall. When all of the recall sheets had been collected, the entire experiment was explained to the subjects, much to their obvious relief.
CHAPTER V

COMPILING OF DATA AND DISCUSSION OF FINDINGS

Since the data resulting from this procedure is necessarily complex, a system of symbols will assist in an orderly presentation. Each of the personality-descriptive adjectives could have been checked or not checked on the self-rating of the subject, and checked or not checked on the bogus rating. We shall use $\times$ and $0$ to illustrate whether or not a term on one of the ratings was attributed to the subject. The first in order of appearance will represent the self-rating, and the next in position, the bogus rating. For example, suppose that a subject considered himself as 'adaptable' and so rates himself on the self-rating sheet, and suppose also that he was 'rated' so on the bogus rating. Such a pattern of relations is symbolized as $\times\times$. Thus, $\times\times$ would mean that he rated himself as having the trait and the bogus rating also attributed it to him; $\times0$ would mean that he rated himself as having the trait but the bogus rating did not apply it to him; $00$ would mean that he did not rate himself as having the trait and the bogus rating did not do so either; $0\times$ would mean that he rated himself as not having the trait but the bogus rating did so apply it to him.

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Before we can proceed to any treatment of the results as regards sex differences, it must be shown that selective forgetting has occurred. Table I illustrates the relationship between the self- and bogus ratings, the total number of the various types of responses, and the total number of errors that occurred in the reproduction of the bogus rating.

**TABLE I**

**AGREEMENT BETWEEN THE SELF- AND BOGUS RATINGS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Number of Responses</th>
<th>Number of Errors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (98)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xx....</td>
<td>909</td>
<td>92</td>
</tr>
<tr>
<td>xo....</td>
<td>811</td>
<td>169</td>
</tr>
<tr>
<td>oo....</td>
<td>803</td>
<td>94</td>
</tr>
<tr>
<td>ox....</td>
<td>720</td>
<td>181</td>
</tr>
<tr>
<td>Female (100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>xx....</td>
<td>988</td>
<td>71</td>
</tr>
<tr>
<td>xo....</td>
<td>916</td>
<td>141</td>
</tr>
<tr>
<td>oo....</td>
<td>941</td>
<td>70</td>
</tr>
<tr>
<td>ox....</td>
<td>786</td>
<td>136</td>
</tr>
</tbody>
</table>

After averaging the number of responses and errors, and setting up the appropriate comparisons of the proportions of errors made in the recall of the different items, we can test the sig-
nificance of any differences that may be found. From an inspection of the data in Table II, the significance of differences in percentage can be seen. There are fewer errors where the self- and bogus ratings are in agreement than where the two ratings disagree. This is true in all cases except in the female group, types xx xo, where there is a low level of confidence.

TABLE II
SIGNIFICANCE OF DIFFERENCES

<table>
<thead>
<tr>
<th>Type</th>
<th>Average Responses</th>
<th>Average Errors</th>
<th>Errors (Per Cent)</th>
<th>t</th>
<th>Level of Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xx...</td>
<td>9.3</td>
<td>.9</td>
<td>9.67</td>
<td>2.1</td>
<td>.05</td>
</tr>
<tr>
<td>xo...</td>
<td>8.3</td>
<td>1.7</td>
<td>20.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>oo...</td>
<td>8.2</td>
<td>.9</td>
<td>10.97</td>
<td>2.5</td>
<td>.02</td>
</tr>
<tr>
<td>ox...</td>
<td>7.3</td>
<td>1.8</td>
<td>24.65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>xx...</td>
<td>9.9</td>
<td>.7</td>
<td>7.07</td>
<td>1.8</td>
<td>.1</td>
</tr>
<tr>
<td>xo...</td>
<td>9.2</td>
<td>1.4</td>
<td>15.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>oo...</td>
<td>9.7</td>
<td>.7</td>
<td>7.42</td>
<td>2.2</td>
<td>.05</td>
</tr>
<tr>
<td>ox...</td>
<td>7.9</td>
<td>1.4</td>
<td>17.84</td>
<td></td>
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</tr>
</tbody>
</table>

1 The formula used was to obtain the standard error of the percentage (proportion) \( s = \sqrt{\frac{p(1-p)}{N}} \), and then the standard error of the difference between the percentages \( s_{p-p'} = \sqrt{s_p^2 + s_{p'}^2} \), and finally to ascertain the level of confidence (t) \( t = \frac{p-p'}{s_{p-p'}} \); Refer to: Croxton, F. and Cowden, D., Applied General Statistics, New York, 1947, 337.
Thus, since there were a significantly greater number of errors when the bogus rating did not agree with the self-rating, than when the two agreed, selective forgetting has taken place. In other words, the subjects tended to reproduce a rating that was in conformity with their own attitude, as indicated in the self-rating, rather than the bogus rating.

As differential retention has been demonstrated in both groups, we may now consider any differences in the amount of such forgetting as regards sex differences. The appropriate comparisons of the data have been included in Table III, where it will be noted that in no instance was the difference great enough to be statistically significant. The women do tend in all cases to have superior recalls of the bogus ratings, but as the differences are not reliable we cannot feel free to extend this any further than to regard it as a slight tendency.

**TABLE III**

OBSERVED SEX DIFFERENCES

<table>
<thead>
<tr>
<th>Type</th>
<th>Percent of Errors Male</th>
<th>Percent of Errors Female</th>
<th>t</th>
<th>Level of Confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>xx...</td>
<td>9.67</td>
<td>7.07</td>
<td>.9</td>
<td>4.4</td>
</tr>
<tr>
<td>xo...</td>
<td>20.48</td>
<td>15.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>oo...</td>
<td>10.97</td>
<td>7.42</td>
<td>1.2</td>
<td>.2</td>
</tr>
<tr>
<td>ox...</td>
<td>24.65</td>
<td>17.84</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Therefore, the conclusions at which we must arrive are that, as demonstrated by the differential retention of material intimately related with the attitude toward the self, there exists selective forgetting, and as between the sexes, the differences in the amount of such forgetting is negligible. In other words, although it was seen that a previously formed attitude will influence the memory of both men and women as pertains to that particular frame of reference, neither men nor women predominate in the amount of such selective forgetting.

An examination of the individual data has revealed that out of the entire group of 198 subjects, four of them had no errors whatsoever in either the immediate or the delayed recalls. Three of these subjects were in the female group. If we were to exclude the results of these four subjects from the final tabulation of the data, the differences observed between the sexes would be even less than shown in Table III. It was not expected that any subjects would reproduce the bogus rating on the forty personality traits perfectly. No indication of this was given in a pilot experiment preceding the present investigation, and no mention of such an occurrence was made in the reports of the other investigations made by Wallen and Shaw, using basically the identical procedure. Inquiries made of these subjects revealed no deviation from the ordinary procedure during the experimental
periods. The only apparent explanation seems to be that these subjects have unusual memories, or else were ego-involved in the experiment to a very pronounced degree.

The aspect of the desirability of the traits themselves, as influencing retention, was not considered in this study, since it was found in other experiments using the same procedure, that when the subject is ego-involved, the subject's judgment of the desirability of the trait will not have any reliable effect upon the accuracy of recall.

The most telling objections to, or explanations of the results in, the studies in selective forgetting are, as we have noted, the possibilities of superior prior learning before the experimental learning took place, and of rehearsal in thought or word, tending to favor the experiences with the greatest intensity tone, during the interval between the experimental learning and the recalls. It is quite conceivable that in our own investigation the subjects were more familiar with the adjectives which they thought applied to their personalities, than with those which they felt did not. However, this factor of prior learning in the present study was regulated by the application of the immediate recall, the purpose of which was to eliminate those items recalled incorrectly at that point. Thus, in considering for errors in the delayed recall only those items recalled correctly at the
immediate recall, we will be dealing only with materials presum-
ably on the same level of mastery. The other possibility, of re-
hearsal differential after the experimental learning period, may
also have occurred in our investigation. If it did, it would
seem that the rehearsal would have been of the ratings which dis-
agreed with the subject's opinion of himself, rather than those
which were in conformity with his frame of reference, unless, of
course, the subject was very ego-centered. The results do not,
however, indicate a rehearsal differential, for the items where
the two ratings disagreed were the least accurately recalled.

It would be highly presumptuous to maintain that the
factors of prior learning and rehearsal differential did not in
any degree enter into this study, for they may well have done so.
The point to be made, though, is that the experimental procedure
utilized, as developed by Wallen, reduces the influence of these
variables to a minimum.

Other factors influencing the individual may also have
assisted, or even resisted, this demonstration of selective for-
getting. It is not to be unexpected that the totality of the
person, as such, will confound even the most ingenious plans of
man to isolate some particular, especially higher, function of
the individual being.
CHAPTER VI

OBSERVATIONS

The ratings on the bogus rating sheet, consisting of numbered spaces marked plus or zero, were separated into eight groups of five. This was done to follow the pattern of the original rating list containing the forty personality descriptive adjectives, which was obtained from Dr. Wallen. On that list the traits were listed alphabetically, in eight groups of five. It was not known, though, if Wallen had the bogus rating so arranged. From discussions with the subjects after the entire experiment was completed, it was learned that this separation permitted several groups of zero and plus signs to be memorized. Since the recall check-list was also in alphabetical order, some of the subjects were thus able to put down several groups of markings without adverting to the traits themselves. This cannot be considered as a variable which assisted the demonstration of selective forgetting; quite to the contrary, it actually hindered it. If these subjects were able to mark several groups thus, there would be no errors in those reproductions. Despite this fact, however, selective forgetting was found. To remedy this situation, the separations into groups should be eliminated in all phases of the experiment, and the descriptive adjectives also removed from the
alphabetical order and placed in a mixed fashion, without one sheet in the series conforming to another. To do this would definitely complicate an already involved compiling of data, for even with all of the sheets being in order, working with this number of subjects entails a treatment of eight thousand items more than four different times.

Some of the descriptive adjectives should be replaced with ones less concrete. Several of the subjects felt that some terms were mutually exclusive, and since the bogus ratings were constructed by a systematical change of the original self-rating without advertance to the traits themselves, there existed some apparent contradictions.

The subjects took part in this experiment in small groups of generally around thirty. It was noted that there was a high degree of ego-involvement of the subjects in the experiment. This was, of course, the situation we wanted to produce. There was also something of a social situation, since all of the subjects were given ratings by unknown raters. When these ratings were presented to the subjects and the list of corresponding traits read for the first time, there was much laughter and consultation when all learned that everyone else had also been rated adversely. When, however, the list was read the second time, which was immediately after the first reading, the dropping of a
pin could have been heard, since all of the subjects were deeply engrossed in reviewing the rating that had been given to them.

While the data of some subjects showed little or no selective forgetting, others exhibited a high degree of it. This would lead to an interesting investigation of the function of selective forgetting, if it is a normal protective device or a psychopathic mechanism. If it is merely a matter of degree, this might be shown by an experiment testing the difference in the amount of such forgetting done by normal and abnormal groups.

The results of the present investigation, as regards the finding of little or no sex differences in the degree or amount of selective forgetting, may not be considered of moment to those who, as a matter of nature or schooling, generally regard things in an objective light; however, there is value in a quantitative and controlled demonstration of this fact.
BIBLIOGRAPHY

I. PRIMARY SOURCES


Seeleman, V., "Influence of Attitude upon Remembering of Pictorial Material," Archives of Psychology, 1940, XXXVI, 258.


II. SECONDARY SOURCES


APPENDIX

EXPERIMENTAL MATERIAL

This unit contains three different personality description sheets used to record the experimental data.

Personality Description Sheet I was used to obtain the self-rating of the individual, and contains the forty personality descriptive adjectives.

Personality Description Sheet II was used to present the bogus rating to each subject. The numbered spaces contained either a plus or zero, and the personality traits corresponding to the numbers were read to the subjects. The instructions on this sheet were present only to convince the subject that someone else had rated him, and that the rating was genuine. They were the instructions presumably for the unknown rater.

Personality Description Sheet III was presented to each subject for the recalls, immediate and delayed, of the bogus rating.
READ DIRECTIONS CAREFULLY:

The list of adjectives on the right provides an opportunity to rate your own personality. Read the list slowly, pausing at each word to see whether that word is one which you think can be applied to you. If you think it is a word which describes your personality mark a + in the space beside it. If you think that it does not apply to you, mark 0 in the space. Remember, if the term fits you mark it +, if it does not fit you mark it 0.

Please be sincere. Your markings will be treated as confidential information and will be used for research only. Please sign your name now.

Name ____________________________
Age _______ Sex _______
Date ______________
PERSONALITY DESCRIPTION SHEET II

Please complete description sheet according to the enclosed instructions, placing either a plus or zero sign opposite the numeral corresponding to the personality trait that you are considering.

|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 1 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 2 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 3 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 4 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 5 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 6 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 7 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 8 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 9 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20|   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
PERSONALITY DESCRIPTION SHEET III

adaptable
ambitious
bashful
cautious
considerate

conspicuous
cowardly
cynical
egoistic
emotional

fickle
fidgety
frank
friendly
generous

good-natured
honorable
hypocritical
idealistic
impulsive

indiscreet
lazy
meek
moody
nervous

optimistic
plodding
purposeless
punctual
proud

rash
refined
religious
resourceful
serious

snobbish
weak-willed
well-groomed
witty
zestful
APPROVAL SHEET

The thesis submitted by John Daniel O'Malley has been read and approved by 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.

May 29, 1957

Date

Vincent V. Kerr
Signature of Adviser