Journal of Personality and Social Psychology
1967, Vol. 7, No. 4, 387–397

ATTITUDE AND SELECTIVE LEARNING:

WHERE ARE THE PHENOMENA OF YESTERYEAR? [1]

ANTHONY G. GREENWALD AND JOSEPH S. SAKUMURA

Ohio State University

In 3 experiments, Ss' attitudes on United States involvement in Vietnam were not found to affect learning of relevant propagandistic information. This was true (a) for measures of incidental as well as of intentional learning, and (b) for Ss aware that they were selected on the basis of their preexisting attitudes as well as for those who were unaware. Further, no reliable relationship between judged prior familiarity with information and subsequent learning was obtained. However, statements unsympathetic to United States involvement in Vietnam, a category with which Ss were relatively unfamiliar, were reliably better learned than those supporting involvement. This finding, together with supplementary novelty ratings on the experimental information, led to the conclusion that information novelty may enhance learning of propagandistic information.

The conclusion that attitude plays an important role in the learning and retention of attitude-relevant information received its best-known support in the study by Levine and Murphy (1943). Working with pro- and anti-Communist subjects and pro- and anti-Communist information, they concluded that ". . . an individual notes and remembers material which supports his social attitudes better than material which conflicts with these attitudes [p. 515]." Subsequently, using the racial segregation issue, Jones and Aneshansel (1956) and Jones and Kohler (1958) corroborated this finding of *selective learning* of acceptable information. While the Jones-Aneshansel and Jones-Kohler studies also demonstrated special conditions under which the selective learning finding was reversed, their support of the original Levine-Murphy result seemed to establish unequivocally that attitudes play a screening role in the learning process. Such a conclusion was highly congenial with findings demonstrating selective perception as a function of attitude (e.g., Postman, Bruner, & McGinnies, 1948).

[1] The research reported here was supported in large part by a grant to the senior author from the Mershon Social Science Program at Ohio State University. Lorne Rosenblood assisted in the data analysis, part of which was performed using facilities provided by the Computer Center at Ohio State University. The authors wish to thank Timothy C. Brock, Edward E. Jones, and Thomas M. Ostrom for their comments on an earlier draft of this report.

The three above-described studies constitute only the core of support for the selective learning phenomenon. Additional supporting studies have been published by Alper and Korchin (1952), Clark (1940), Edwards (1941), Taft (1954), and Watson and Hartman (1939).

Quite recently, Waly and Cook (1966) attempted to replicate the selective learning finding in three experiments using materials substantially similar to those of Jones and Kohler (1958). Waly and Cook hoped to obtain confirmative evidence, planning to employ the selective learning phenomenon as the basis of an indirect measure of attitude. A disturbing note was contributed to the selective learning literature when all of their experiments failed to reproduce the previous findings (see also Fitzgerald & Ausubel, 1963).

The present authors' interest in the selective learning phenomenon stems from a research project (Greenwald, 1967) in which the role of learning in the processes of attitude formation and change is being examined in detail. In this context, the phenomenon of selective learning of acceptable information is of obvious importance. The authors were, however, not satisfied with the existing evidence for this phenomenon, particularly because subject-selection procedures in previous studies had necessarily involved the failure to control a variable—prior familiarity with the information to be learned—that might

have been a determinant of the studies' findings. It is well known that, in natural settings, individuals receive more exposure to information that supports their attitudes than to nonsupportive information (Freedman & Sears, 1965; Secord & Backman, 1964). This difference in prior exposure might produce selective learning findings in the absence of any genuine underlying phenomenon. For example, the Levine-Murphy finding might be due simply to the fact that their pro-Communist subjects were more familiar with pro-Communist information than were their anti-Communist subjects. Such an alternative explanation is, in fact, consistent with the alternative explanations offered for attitudinally determined selective *perception* findings (cf. Solomon & Howes, 1951). The possibility that prior familiarity is responsible for previous selective learning effects was considered so reasonable by Waly and Cook (1966) that they continued to suggest this explanation (p. 287) even after failing to find any relationship between prior familiarity and learning in their own experiments.

The present experiments were designed to determine whether the selective learning phenomenon is attributable to attitude or is more properly conceptualized in terms of differential prior familiarity with acceptable and unacceptable material. The authors selected the issue of United States involvement in Vietnam because it was one on which student opinion was divided, and one for which the news and opinion media had provided the subjects with a large amount of prior information. In the first two experiments, subjects were exposed to information in the context of an alleged opinion survey and were subsequently tested for learning of this information without expecting such a test. This *incidental learning* procedure was used since it was felt that it corresponded more to a natural propaganda-exposure situation than did an intentional learning paradigm; that is, recipients of real propaganda do not normally expect to be tested for learning of the information to which they have been exposed. In the third experiment, an intentional learning test was introduced for reasons that will become clear below.

EXPERIMENT I

Method

Subjects. Thirty-nine male and female introductory psychology students at Ohio State University volunteered for a "Vietnam Opinion Survey" for which they were to receive credit toward a research-participation requirement. These subjects participated in six groups ranging in size from 2 to 10 students.

Materials. A pool of 20 statements supporting United States involvement in Vietnam and 19 statements opposing involvement was drawn from news media, senate hearings, editorials, etc. Each statement expressed a purported fact or an opinion pertinent to United States involvement in Vietnam, and the statements were standardized in length, being between 21 and 24 words. Initially, the 39 statements were screened by four judges who were asked to classify each one as favorable to United States involvement, unfavorable, or neutral. Twelve proinvolvement and 11 anti-involvement statements received unanimous agreement from the judges. A final set of 15 pro and 15 anti statements was drawn up, including these 23 and 7 others for which one judge or two had disagreed with the others by making a neutral judgment. Each statement was given a title that served identification purposes during the experiment, yet was designed not to summarize the statement's content. The following examples, prefaced by titles, are two pro statements followed by two anti statements.

Treaty obligations to South Vietnam: If America does not honor her treaty obligations to South Vietnam, other allies will lose confidence in her determination to keep other treaty commitments.

Present Saigon government: Despite its shortcomings, the present Saigon government is providing what is probably the most capable leadership currently attainable in South Vietnam.

Effects of bombing: The bombing of strategic targets in North Vietnam was supposed to halt infiltration which, however, has increased threefold since the bombing started.

American policy after Geneva: America undermined the 1954 Geneva Agreement by subsequently establishing military bases, stopping general elections, and placing Diem in power in South Vietnam.

Procedure. Subjects in each group were seated around a large seminar table and listened to tape-recorded instructions.[2] These instructions started by assuring subjects that their anonymity would be preserved throughout the study.

Subjects were then told to expect a taped reading of 30 statements, some of which, they were advised, would be more familiar to them than others. During the pause of 10 seconds after each statement was read, they were to judge the extent of their prior

[2] The authors are indebted to Dallas Cullen for her service as the tape-recorded voice in the three experiments reported here.

familiarity with its content. These judgments were to be made using a 5-point scale, ranging from no previous exposure to the statement or its equivalent (0) to more than five previous exposures (4). Each symbol intervening between 0 and 4 was given a specific definition in terms of specific types of prior exposure to equivalent or partly similar statements. An equivalent statement was defined as "one identical in meaning, though not necessarily using the same words, as the one you are judging."

The 30 statements were then read in an order that was randomized with respect to type of statement (pro- or anti-involvement). Each statement was prefaced by its title and the subject indicated his familiarity judgments on a rating sheet on which the 30 titles were printed in the order in which the statements were being read and on which the symbol definitions for the 5-point familiarity scale were reproduced.

After the familiarity judgments were completed, subjects were instructed to expect another taped presentation of the 30 statements, during which ratings of agreement with the content of each statement were to be made. These ratings employed a 6-point scale, from "strongly disagree" (−3) to "strongly agree" (+3); subjects were not allowed to express a neutral judgment on this scale of information *acceptability*. As with the familiarity judgments, the 30 statements were read with titles (same random order), and subjects were allowed 10 seconds following each statement in which to make a judgment.

When the acceptability judgments were completed, subjects passed in their rating sheets and were given four sheets of paper, each containing blank spaces, numbered consecutively on the sheets from 1 to 30. The taped instructions informed subjects that the titles of the 30 statements would be read with a 30-second interval between titles. During the interval following each title, subjects were to reproduce, as accurately as possible, the statement associated with the title. Instructions stressed reproduction of the *meaning* of each statement, allowing subjects to express this meaning in words of their own choosing. The titles of the 30 statements were read in the same order used on the previous rating tasks. Following completion of this unexpected *recall* test, the hypotheses underlying the experiment were explained, and subjects were asked to agree with a request not to discuss details of the procedure with friends or fellow students.

Recall measure. Responses on the recall test were scored on the basis of degree of reproduction of the meaning of each of the 30 statements. The minimum score for a single statement was 0, assigned if the subject left the space for that statement blank or wrote down only the title of the statement. A score of 1 indicated partial reproduction of the verbal content of the statement, but with inaccurate meaning; 2 indicated partial content recall, including partial reproduction of the statement's meaning. The maximum score of 3 was given when the subject reproduced accurately the whole essential meaning of the statement.[3]

Recall data for 10 subjects were scored by two judges who agreed exactly on 69% of their judgments and disagreed by more than 1 point on the 4-point scale for only 3% of their judgments. For the subsample of 10 subjects, an interrater reliability correlation coefficient was calculated for each of the 30 statements. These 30 *r*'s ranged from .50 to 1.00, with a median at .87. This level of agreement between judges was considered satisfactory.

Review of procedure. Subjects first heard a set of 30 statements, 15 pro-United States involvement in Vietnam and 15 anti-involvement, in the context of rating them on prior familiarity. The statements were heard a second time while subjects made ratings of acceptability of the content of each statement. Following these two hearings, subjects received an unexpected test for recall of the content of the statements.

Results [4]

Correlates of learning. In previous selective learning studies, since subgroups of subjects were largely homogeneous on attitude measures, data have been analyzed by examining differences in learning levels of acceptable and unacceptable material for pro, neutral, and anti subgroups. Although the present sample was not selected so as to produce homogeneous subgroups, a correlational analysis at least as powerful as those used in previous studies was available due to collection of familiarity and acceptability data for each statement for each subject.

The primary data anaysis consisted of computation of intrastatement product-moment correlations among the three variables of acceptability, familiarity, and recall.

When familiarity and acceptability were correlated across subjects and within statements, the 30 *r*'s obtained ranged from −.55 to .78, with the median at .22. The fact that 13 of the 30 *r*'s were significant in the positive direction beyond the .05 level (one negative *r* was significant) indicated a reliable relationship between familiarity and acceptability for information pertinent to the Vietnam-involvement issue.[5]

---

[3] There were, of course, cases in which the subject recalled the content of a statement other than the one corresponding to the title given, and cases in which the same statement was recalled in response to two or more titles. In these cases, each recalled statement was judged in terms of the original statement to which it was most similar, and the recall score assigned to a given statement was the greatest of the two or more scores it received.

[4] Data on the reliability of the measures of familiarity, acceptability, and recall will be presented following the Results section for Experiment III.

[5] The correlation data will not be presented separately for pro and anti statements in this report

For familiarity versus recall, the r's ranged from $-.39$ to .43, with the median at $-.06$. Three of these 30 r's were significant, one in the positive direction and two in the negative direction. These data gave no evidence of a relationship between familiarity and recall for information on the Vietnam-involvement issue.

For acceptability versus recall, the range in r was from $-.77$ to .41, with the median at .03. The r's for six of the statements attained significance at the .05 level, three in the positive direction and three negative. This set of correlations represents a failure to confirm the selective-learning phenomenon.

A secondary analysis was conducted by calculating the mean acceptability, familiarity, and recall scores for each of the 30 statements. Correlation of mean acceptability versus mean familiarity across the 30 statements was .67 ($p < .001$). For familiarity versus recall, r was $-.02$ (ns), and for acceptability versus recall, r was .06 (ns). These secondary findings confirm those of the primary analysis.[6]

EXPERIMENT II

The finding of a reliable correlation between familiarity and acceptability provided support for the possibility that previous findings of selective learning of acceptable information might be explained in terms of differential prior familiarity. The lack of any relationship between either acceptability or familiarity and recall was unexpected. It was felt that this negative finding might have been due to the use of statement titles as stimuli for the recall test. It may be that these titles were more suggestive of the statements' contents than intended or that there were substantial interstatement differences in the suggestiveness of titles. In either of these ways, the titles could have controlled sufficient variance on the recall measure to have obscured the observation of possible relationships between familiarity or acceptability and recall. To eliminate these possibilities, a second experiment was conducted, being an exact replication of the first with the substitution of a recall test that did not require presentation of statement titles.

Method

Thirty-seven male and female introductory psychology students participated in six groups ranging in size from two to nine students. Except for the modified recall test, procedures for this experiment exactly replicated those of Experiment I. The recall test was changed by asking subjects to recall as many of the 30 statements as they could in a 15-minute recall period that followed the familiarity and acceptability rating procedures. Although the statement titles had been used for identifying the statements on the earlier rating tasks, no mention of them was made in connection with the recall test. Subjects were asked to recall the statements in any order they pleased and to stress accuracy of meaning rather than verbatim accuracy in their recall attempts. They were told that reproduction of the statement titles was not desired on the recall test.

The recall scoring scheme employed for Experiment I was used for the present recall data, with one modification: Reproduction of a statement title was scored 1 rather than 0, in accordance with the fact that title reproduction involved some recall in Experiment II, whereas the titles had been provided as stimuli for the recall test in Experiment I.

Results

The intrastatement correlations between familiarity and acceptability ranged from $-.17$ to .95 with a median at .32. Fifteen of these were significant in the positive direction beyond the .05 level.

For familiarity versus recall, the r's ranged from $-.30$ to .34, the median being .04. Two of these were significant at the .05 level, both in the positive direction.

The range of correlations for acceptability versus recall was from $-.23$ to .39 with a median at $-.01$. Only the largest positive correlation among these was significant at the .05 level.

A secondary analysis was again conducted by computing correlations among mean familiarity, acceptability, and recall scores across the 30 statements. For familiarity versus acceptability, $r = .74$ ($p < .001$), for familiarity versus recall, $r = -.10$ (ns), and for acceptability versus recall, $r = -.28$ (ns).

In summary, the results of Experiment II entirely supported those of Experiment I. A reliable relationship between familiarity and acceptability was found, with neither of these variables being related to performance on the recall test. In conclusion, the failure to find relationships between familiarity or acceptability and recall in Experiment I cannot be

---

since none of the analyses indicated different correlation patterns as a function of statement type.

All tests of significance reported in this paper are two-tailed.

[6] An additional correlational analysis may be performed by correlating pairs of variables within subjects, across statements. This intraindividual analysis will be reported for the more extensive data of Experiment III, below.

attributed to the use of statement titles on the Experiment I recall test.

EXPERIMENT III

After completion of the first two experiments, it seemed appropriate to consider the possibility that there was indeed *no* selective learning occurring in the experimental situation. On this assumption, the authors began to look for specific differences in procedure between the present experiments and previous ones, in the hope that one of these differences might offer a meaningful explanation of the present failure to confirm the selective learning phenomenon.

The search for differences between the "nonconfirming" procedures (the authors' and Waly & Cook's, 1966) and those of the earlier studies demonstrating selective learning yielded the following leads. In the Levine-Murphy, Jones-Aneshansel, and Jones-Kohler studies, subjects were probably aware that (*a*) they were selected on the basis of the experimenter's knowledge of their preexisting attitudes, and (*b*) the experimenter was interested in a relationship between these preexisting attitudes and performance on a task of *intentional* learning of attitude-relevant material. This observation is undoubtedly true in the case of the Levine-Murphy study, in which subjects were selected on the basis of their reputations as pro- or anti-Communist, and no attempt was made to conceal the purpose of the experiment; it is highly possible in the other two studies since the experimenter made no attempt to mask the relationship between a previous attitude test and the experiment in which subjects were asked to learn attitude-relevant material. In contrast, Waly and Cook made an effort, apparently successful, to conceal the relationship between their learning experiment and a previous attitude measure. The present authors' procedures were even further removed from those of the reference studies in that subjects were *not* selected on the basis of their preexisting attitudes and could not have been aware of the experimenter's interest in the relation between attitude and learning (prior to the moment of testing for learning), owing to the use of an incidental learning procedure.

Experiment III was conducted as a means of checking on these possible leads. Several modifications of the authors' previous procedures were introduced in order to make subjects aware (*a*) that they were selected on the basis of their preexisting attitudes, and (*b*) that the experimenter had an interest in a relation between these attitudes and performance at intentional learning of attitude-relevant information.

Method

Subjects. Volunteers from the introductory psychology pool were solicited by means of a sign-up sheet that specifically requested participants who had "clear opinions, either for or against United States involvement in the Vietnam war." A total of 45 male and female subjects were run in four groups varying in size between 10 and 13 students.

Materials. As an incidental finding of the first two experiments, it was noted that subjects generally rated themselves as more familiar with proinvolvement information than with antiinvolvement information. In the present experiment, it was desired both to reduce the quantity of information to be learned to a level comparable to that used by Jones and Kohler (1958), that is, 12 statements, and to select pro- and anti-involvement statements that were approximately equivalent in familiarity. To meet this need, it was necessary to select 6 relatively unfamiliar proinvolvement statements (based on ratings obtained in Experiments I and II) and 6 relatively familiar anti-involvement statements from the 30 statements previously used. The 12 selected statements had received mean familiarity ratings between 1.00 and 2.00 on the familiarity scale, that is, between "previously heard or read (one or more times) a partly similar, but *not* equivalent statement" and "previously heard or read, *but only once,* this or an equivalent statement." Mean familiarity for the selected pro statements was 1.68, compared to 1.61 for the anti statements. The titles previously used for the 12 statements were not used at all in the present experiment.

Procedure. When subjects had been seated for the experiment, the taped instructions commenced with reminders that anonymity would be preserved and that subjects had been selected for participation because of their clear opinions on the Vietnam-involvement issue. At this point, each subject was asked to indicate in writing whether he was for or against United States involvement in Vietnam. This indication was made at the bottom of a sheet later to be used for the statement-rating task.

Subjects were next informed that 12 statements pertinent to United States involvement in Vietnam would be read. Each statement was to be rated on three dimensions: familiarity, acceptability, and ease of remembering. (The last of these had not been employed in the first two experiments.) Each statement was to be read once, followed by a 20-

second pause during which the subject was to make all three of these judgments.

Prior to the taped reading of the statements, the symbols to be used in judging the three dimensions were described in detail. Familiarity and acceptability rating instructions were identical to those used previously. For the ease of remembering judgments, subjects were asked to make the hypothetical assumption that they would be asked a week hence to recall each statement. A 5-point rating scale was used, with 1 indicating that the statement would be "very difficult to remember" in a week and 5 indicating "very easy to remember." This rating dimension was added to those previously used in recognition of the possibility that some properties of the information other than familiarity or acceptability might affect recall. While finding of a relationship between ease of remembering ratings and recall would not serve to identify such properties with any precision, it would indicate that such properties exist and that subjects are sensitive to them.

For the rating task, the order of presentation of the 12 statements was randomized with respect to statement type and, further, the first 6 statements for two of the four groups of subjects were used as the last 6 statements for the other two groups. This procedure avoided any systematic distortions in the ratings that might have resulted from subjects' unfamiliarity with the rating dimensions and symbol definitions.

After completion of the ratings, subjects were given an unexpected recall test similar to that used in Experiment II. Five minutes were allowed for reproduction of the meaningful content of as many of the statements as the subject could remember. Subjects were then instructed to listen to a second reading of the 12 statements after which a second recall test was administered. The process of rereading the statements and testing for recall was repeated for a third and a fourth recall test. For the second, third, and fourth readings, the 12 statements were read with minimal (3-second) intervals between successive statements. A different random order of the statements was used for each reading. Five minutes were allowed for each recall test. Subjects were never informed about the total number of recall tests to be adminstered; prior to each new reading of the 12 statements, instructions indicated only that that reading would be followed by a recall test.

Following the fourth recall test, the experimental hypotheses were explained, and the subjects were asked not to discuss details of the experiment.

To summarize the procedure: Subjects first heard 12 statements pertinent to United States involvement in Vietnam (6 pro and 6 anti) while rating them on three dimensions potentially related to recall of statement content. After this one hearing, an unexpected recall test was administered, followed by three more (expected) recall tests, each preceded by a new reading of the statements. Since subjects had been recruited on the basis of their preexisting attitudes, this procedure obtained data on (*a*) incidental learning (first recall test) of attitude-relevant information for subjects aware of the basis for their selection, and (*b*) intentional learning (last three recall tests) for subjects aware that the experimenter was interested in a relationship between preexisting attitudes and learning of attitude-relevant information.

Results

The data were first analyzed by the intra-statement correlation procedure used in the previous two experiments. This analysis is summarized in Table 1. As in the previous experiments, no significant relationship between a predictor variable (familiarity, ease of re-

TABLE 1

CORRELATIONAL DATA OF EXPERIMENT III[a]

Relationship	1st analysis		2nd analysis	3rd analysis	
	Range of r's	Median r[b]	ρ	Range of r's	Median r[c]
Acceptability-Incidental learning	−.21, .30	.00 (0)	−.08	−.72, .44	.04 (9)
Acceptability-Intentional learning	−.26, .43	−.04 (1)	−.06	−.77, .58	−.01 (1)
Familiarity-Incidental learning	−.26, .33	.04 (1)	.12	−.62, .66	.05 (2)
Familiarity-Intentional learning	−.20, .51	.00 (1)	−.32	−.73, .50	.00 (0)
Ease of remembering-Incidental learning	−.16, .32	.00 (1)	.25	−.61, .55	.17 (0)
Ease of remembering-Intentional learning	−.09, .33	.03 (1)	−.27	−.63, .65	.07 (1)
Acceptability-Familiarity	.34, .84	.49 (12)	.80***	−.38, .94	.59 (23)
Acceptability-Ease of remembering	−.02, .50	.26 (5)	.62**	−.40, .86	.31 (12)
Familiarity-Ease of remembering	.18, .61	.49 (10)	.86***	−.39, .97	.61 (26)
Incidental learning-Intentional learning	.19, .55	.35 (7)	.48*	−.28, .84	.37 (9)

[a] The three different analyses are described in the text.
[b] The number in parentheses is the number of positive correlations significant at the .05 level (12 possible).
[c] The number in parentheses is the number of positive correlations significant at the .05 level (43 possible).
* $p < .10$.
** $p < .05$.
*** $p < .01$.

membering, or acceptability) and a measure of learning was obtained. In the present experiment, this was true both for the measures of incidental learning (first recall test) and intentional learning (sum of subsequent recall tests).

Data from the second analysis, in which the statements' means on the experimental variables were intercorrelated, are also presented in Table 1. The pattern of relationships noted in the first analysis was again obtained. The three predictor variables were significantly and positively intercorrelated, but were not related to the measures of learning.

A third analysis was conducted in order to provide every possible chance for correlations with the learning scores to emerge. This analysis involved correlating scores on pairs of variables within subjects, across statements. Sets of intercorrelations were thus obtained for each of 43 subjects (2 subjects with incomplete data were excluded), with an n of 12 (statements) for each r. This analysis is also summarized in Table 1. The results closely paralleled those for the first and second analyses; that is, familiarity, acceptability, and ease of remembering were positively correlated with each other, but not with either of the measures of learning.

Due to the fact that subjects had been selected on the basis of preexisting attitudes on one or the other side of the Vietnam-involvement issue, it was possible to do an analysis of variance on the learning data as an alternative test for possible selective learning effects. The subjects were classified as pro or anti according to their self-description obtained at the beginning of the experiment. Of the 45 subjects, 11 classified themselves as anti, 33 as pro, and one as undecided; the undecided subject was omitted from the analysis of variance.

The learning data for the pro and anti subjects are presented separately for pro and anti statements in Figure 1. The analysis of variance of the intentional learning data (last three recall trials) is given in Table 2. For the present experiment, this is the analysis corresponding directly to that used in previous experiments in which selective (intentional) learning has been demonstrated (e.g., Jones & Kohler, 1958; Levine & Murphy, 1943).

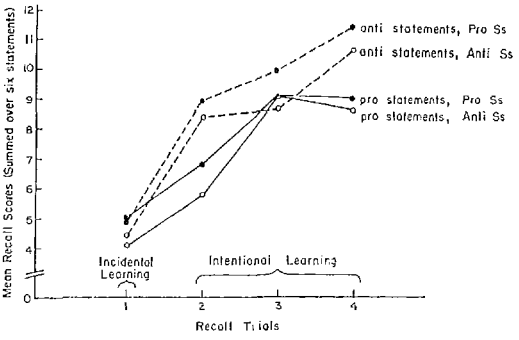

FIG. 1. Learning curves. (For pro subjects, n = 33; for anti subjects, $n = 11$. Each point represents the mean sum of recall scores—scoring method described in text—for six statements for the number of subjects indicated.)

In the Table 2 analysis, a selective-learning effect would take the form of a significant interaction between attitude and statement type. No evidence of such an interaction was obtained; this is consistent with the lack of finding of any selective-learning effect in the present correlational analyses. The finding of a significant main effect of trials indicates that learning did indeed occur over the course of the last three recall trials. The significant main effect of statement type was a surprising one. In general, the anti statements were learned better than the pro ones by both pro

TABLE 2

ANALYSIS OF VARIANCE OF INTENTIONAL LEARNING DATA[a]: (EXPERIMENT III)

Source of variation	*df*	*MS*	*F*
Between *S*	43		
Attitude (pro or anti) (A)	1	25.41	<1
Ss within groups	42	30.03	
Within *Ss*	220		
Statement type (pro or anti) (B)	1	198.64	13.21****
A × B	1	2.25	<1
B × *Ss* within groups	42	15.04	
Recall trials (C)	2	127.95	52.22****
A × C	2	.19	<1
C × *Ss* within groups	84	2.45	
B × C	2	21.94	3.72**
A × B × C	2	3.39	<1
B × C × *Ss* within groups	84	5.90	

[a] In order to make this analysis comparable with those reported in previous selective learning studies, the incidental learning data (first recall trial) have been omitted. Of the 45 subjects in Experiment III, 1 who classified himself as "undecided" on the Vietnam-involvement issue was omitted from this analysis. Of those remaining, 33 were proinvolvement, 11 anti-involvement. The analysis employed a least-squares solution (Winer, 1962, p. 375) for unequal group sizes.

** $p < .05$.

**** $p < .001$.

and anti subjects; this finding will be considered further below. Finally, a Statement Type × Trials interaction was obtained, shown in Figure 1 as a convergence of learning curves at the second intentional learning trial. This finding defies interpretation, so none will be attempted.

Reliability of Measures

In order to determine the extent to which subjects were sensitive to differences among the 12 statements, reliabilities of the mean judgments on each statement for each of the five measures used in Experiment III were calculated (Winer, 1962, p. 130). The reliabilities were as follows: familiarity, .918; ease of remembering, .915; acceptability, .808; incidental learning (first recall trial), .689; intentional learning (sum of last three recall trials), .974. It should be emphasized that these figures estimate the reliability of the *mean* of 43 judgments—two subjects who gave incomplete data were omitted—and are expected to be quite near unity if (*a*) the quantity being measured is constant across judges (subjects), and (*b*) measurement error is relatively small. The figures for familiarity, ease of remembering, and (especially) acceptability are sufficiently low to indicate that, as expected, what was being judged was not a constant attribute of each statement but, rather, a quantity that varied from subject to subject. More important, in the case of the intentional learning measure, the reliability figure was sufficiently high to indicate both that there were substantial differences in extent of learning the statements, and that these differences were due to attributes of the statements rather than of the subjects. This finding is extremely important since it suggests that no subject variable, attitudinal or other, had more than a very minor effect on intentional learning of the statements. In other words, the likelihood of recall of the various statements seemed to be a function of properties of the statements and not a function of any attributes of the subjects.

Discussion

The data of Experiment III add to the picture given by the first two experiments in several ways. First, the finding of no selective learning was extended from an incidental learning situation to one of intentional learning. Second, informing subjects that they were selected on the basis of their opinions and that the study was concerned with learning was not sufficient to produce the selective learning effect. Third, the finding of no relationship between ease of remembering judgments and measures of learning indicated that subjects were not aware of or not sensitive to characteristics of the statements that made them differentially learnable. Fourth—one of the few significant findings in the series of experiments—statements opposing United States involvement in Vietnam were better learned than those favoring involvement.

The last of the above findings was unexpected and warrants further discussion.[7] The superior learning of anti-involvement statements was a definite differential learning effect that could not possibly be explained in terms of preexisting attitudes. Neither could it be explained, in any simple way, in terms of familiarity or estimated ease of remembering. The basis for these remarks is given in Table 3, in which familiarity, acceptability, and ease of remembering ratings are summarized separately for pro and anti subjects. It is clear from Table 3 that any direct relation between either familiarity or ease of remembering and recall would result in superior recall of proinvolvement statements since these were, in general, rated higher on both of these dimensions. In other words, the only significant finding involving the recall data of Experiment III took the form of superior learning of a class of statements that were judged relatively *low* on familiarity and ease of remembering. This paradoxical result will

[7] When this result was discovered in the analysis of variance of the Experiment III data, the data for pro- and anti-involvement statements in Experiments I and II were checked for similar effects, which were found. In Experiment I, the superior learning of anti statements was significant beyond the .05 level ($t = 2.29$, $df = 38$), while in Experiment II, the same result was significant exactly at the .05 level ($t = 1.99$, $df = 36$). It should be noted that these data indicate superior *incidental* learning of the anti statements, whereas the Experiment III data show superior *intentional* learning of the anti statements.

TABLE 3

FAMILIARITY, EASE OF REMEMBERING, AND ACCEPTABILITY DATA FOR EXPERIMENT III[a]

Dimension	Pro *Ss* (n = 33)			Anti *Ss* (n = 11)		
	Statements		Difference (A)	Statements		Difference (B)
	Pro	Anti		Pro	Anti	
Familiarity[b]	1.89	1.63	.26	1.94	1.67	.27
Ease of remembering	3.91	3.44	.47****	3.83	3.30	.53*
Acceptability[c]	+.73	−.14	.86****	−.03	+.41	−.44

[a] Each entry under Statements is based on the means of judgments for six statements for each subject. One subject, who classified himself as "undecided" on the Vietnam-involvement issue, was omitted from this analysis.

[b] For pro and anti subjects combined, the difference in familiarity between pro and anti statements was significant (t = 2.00, df = 43, $p \cong .05$).

[c] The difference between Columns A and B is significant only for the acceptability dimension (t = 3.07, $p < .01$).

* $p < .02$.

**** $p < .001$.

be considered further under the General Discussion heading.

Two additional aspects of the data in Table 3 should be noted. First, there was a significant difference between pro and anti subjects on the acceptability dimension. This difference indicated that subjects' self-classifications as pro or anti were, by and large, accurate; that is, pro subjects agreed more with pro than with anti statements, and the reverse was true for anti subjects. Second, it was found that both pro and anti subjects (combined) gave higher familiarity ratings to pro statements than to anti ones. It will be recalled that the statements used in the present experiment were selected so as to match the sets of pro and anti statements as much as possible in terms of prior familiarity on the basis of familiarity ratings given by subjects in the previous two experiments. This procedure involved selecting six of the *least* familiar pro statements and six of the *most* familiar anti statements from the previous experiments. The Table 3 data indicate that, nonetheless, the pro statements used were judged to be significantly more familiar.

GENERAL DISCUSSION

Role of Attitude

It is difficult to identify any potentially significant aspect of the procedure of previous studies demonstrating selective learning (referred to hereafter as "positive" studies) that was not incorporated in either the Waly-Cook experiments or the present ones (the "negative" studies). For example, the Waly-Cook experiments deviated from the positive studies by disguising the purpose of the experiment and keeping subjects ignorant of the fact that they had been selected on the basis of their attitudes; however, Experiment III described above corresponded to the positive studies in acquainting subjects with the basis of their selection. Similarly, while the present three studies employed an attitude issue (United States involvement in Vietnam) not previously used, the Waly-Cook studies did employ the segregation issue used in two of the positive studies.

It may be noted that Jones and Aneshansel (1956) demonstrated a reversal of the selective-learning finding when their subjects anticipated using unacceptable ("contravaluant") information for the purpose of a debate subsequent to the learning task. This finding cannot, however, be used to explain away any of the negative results since subjects in the negative studies were not led in any way to expect subsequent usefulness of unacceptable information. Similarly, the Jones and Kohler (1958) finding of a reversal of the selective learning effect when *implausible* statements were learned cannot explain away the negative findings; in the Waly and Cook experiments, plausibility was one of the manipulated dimensions, while *all* statements used in the present studies can be classified as plausible.

It remains possible that either (*a*) the positive or negative studies suffer from as yet unrecognized methodological defects or (*b*) the differences in results are due to peculiar combinations of subject sample, materials, and experimental procedures operative during some, but not all, of the selective-learning studies.

Role of Familiarity

The present intent was to investigate the possible role of familiarity, rather than attitude, as a determinant of previous selective-learning findings. It was, of course, impossible to assess directly the role of familiarity in the

selective-learning phenomenon because no selective-learning results were obtained. Two findings, however, were pertinent to a possible role of familiarity in previous selective-learning findings.

First, significant correlations were repeatedly obtained between judged familiarity and acceptability for statements on the issue of United States involvement in Vietnam. These suggest the possibility that a strong relationship between familiarity and acceptability may be a general characteristic of attitude-relevant information. If so, then the studies that have shown selective learning as a function of preexisting attitudes may be generally subject to an alternative explanation in terms of familiarity.

Second, repeatedly there was *no* relationship obtained between measures of prior familiarity and subsequent recall of propagandistic information. This was an unexpected development, even though Waly and Cook (1966) similarly found familiarity and recall to be unrelated; this result seriously questions the hypothesis that familiarity may have played an important role in previous findings of attitudinally determined selective learning.

It is intuitively unclear why prior familiarity with information did not facilitate recall, either in the present experiments or in those of Waly and Cook (1966). It is possible that the familiarity measure may have been invalid, although this is unlikely in light of the measure's reliability (see above) and the fact that subjects certainly understood the nature of the familiarity dimension they were asked to judge. Alternatively, it is possible that the present subjects had actually previously heard very few of the statements used in the experiment; their familiarity judgments may have expressed familiarity with a *type* of statement *like* the one being rated rather than with the content of the rated statement itself. Such general familiarity may not have been very helpful in facilitating recall.[8]

[8] The possibility that range restriction on the familiarity measure may account for the lack of relationship between familiarity and measures of learning can be ruled out readily. Subjects made use of the full 5-point range of the familiarity measure, and the substantial obtained correlations between familiarity and acceptability (cf. Table 1) obviously were not obscured by range restriction. Similar observations indicate that the lack of correlation between acceptability and the learning measures was not attributable to range restriction.

Role of Novelty

The statements used in the present experiments were found to be reliably different from each other in ease of recall (as indicated by the reliability of the intentional learning measure). The only hint as to what made some statements easier to recall than others is that, in all three experiments, statements opposing United States involvement in Vietnam (anti statements) were significantly easier to learn than those supporting United States involvement (pro statements). At the same time, the anti statements were judged *less* familiar and *less* easy to remember than pro statements. Thus, familiarity and ease of remembering judgments suggest that the pro statements should have been found to be *easier*, rather than more difficult, to learn.

The only interpretation that appeared to be consistent with these paradoxical findings is that *information novelty* may facilitate learning. If it is assumed that the anti statements were more novel than the pro statements, it would not be unreasonable to find them rated as less familiar and even less easy to remember than the pro statements. Further, it would not be unusual to find them better recalled than the pro statements, in light of a variety of findings showing that novel types of information are learned and recalled more easily than familiar types (Wallace, 1965).

In order to check on this novelty interpretation, an additional group of 49 male and female students from the subject population was asked to rate the 12 statements of Experiment III on both familiarity and novelty. Only a few weeks intervened between the data collection of Experiment III and collection of these supplementary data. As an indication of the stability of the subjects' perceptions of the statements over this time interval, mean familiarity ratings for the 12 statements were intercorrelated .97 (rho) for the two data collections.

The familiarity rating was identical to that used earlier in the present experiments. For novelty, subjects were asked to rate each

statement on a 5-point scale in terms of the extent to which it was "novel or unusual"; subjects were asked to use their own definitions of "novel" and "unusual." The finding of direct interest was that the mean novelty ratings for the 12 statements were significantly positively correlated with the statements' mean intentional learning scores from Experiment III ($\rho = .71$, $p \cong .01$). For mean novelty versus mean incidental learning scores of Experiment III, rho was .20 (*ns*).

While these data support the novelty interpretation rather nicely, the relationship between novelty and familiarity is unclear. Intuitively, it seems that these dimensions should be simply the reverse of each other. Empirically, however, this was not the case. Familiarity and novelty were rank-order correlated $-.73$ ($p < .01$) in the additional sample, indicating that subjects' ratings on one dimension predicted only about half the variance on the other. The rank-order correlation between familiarity (additional sample) and intentional learning (Experiment III) was negative, as would be expected from the positive correlation of the latter variable with novelty, but did not reach significance ($\rho = -.42$).

The possibility that novelty is a major determinant of learning of propagandistic information provides a suggestive point of departure for further research. It will be of particular interest to examine the relation between familiarity and learning with the effect of novelty removed. The present data, unfortunately, do not allow one to test this relationship with any degree of sensitivity.

Support for the novelty interpretation may be drawn additionally from recent findings showing preference for exposure to novel propagandistic information, even when such information is nonsupportive of preexisting attitudes (Albert, 1966; Sears & Freedman, 1965). Such findings implicate the possible operation of a selective perception mechanism in the present experiments; that is, subjects may have attended to highly novel statements more closely than to less novel ones. Superior learning of novel statements may then have been the product of some combination of perceptual and learning processes.

REFERENCES

ALBERT, S. M. The effects of novelty on self-exposure to dissonant information. Unpublished master's thesis, Ohio State University, 1966.

ALPER, T. G., & KORCHIN, S. J. Memory for socially relevant material. *Journal of Abnormal and Social Psychology,* 1952, 47, 25–37.

CLARK, K. B. Some factors influencing the remembering of prose material. *Archives of Psychology,* 1940, 36, No. 253.

EDWARDS, A. L. Political frames of reference as a factor influencing recognition. *Journal of Abnormal and Social Psychology,* 1941, 36, 34–50.

FITZGERALD, D., & AUSUBEL, D. P. Cognitive versus affective factors in the learning and retention of controversial material. *Journal of Educational Psychology,* 1963, 54, 73–84.

FREEDMAN, J. L., & SEARS, D. O. Selective exposure. In L. Berkowitz (Ed.), *Advances in experimental social psychology.* Vol. 2. New York: Academic Press, 1965. Pp. 57–97.

GREENWALD, A. G. An amended learning model of persuasion. Paper read at American Psychological Association, Washington, D. C., 1967.

JONES, E. E., & ANESHANSEL, J. The learning and utilization of contravaluant material. *Journal of Abnormal and Social Psychology,* 1956, 53, 27–33.

JONES, E. E., & KOHLER, R. The effects of plausibility on the learning of controversial statements. *Journal of Abnormal and Social Psychology,* 1958, 57, 315–320.

LEVINE, J. M., & MURPHY, G. The learning and forgetting of controversial material. *Journal of Abnormal and Social Psychology,* 1943, 38, 507–517.

POSTMAN, L., BRUNER, J. S., & MCGINNIES, E. Personal values as selective factors in perception. *Journal of Abnormal and Social Psychology,* 1948, 43, 148–153.

SEARS, D. O., & FREEDMAN, J. L. The effects of expected familiarity with arguments upon opinion change and selective exposure. *Journal of Personality and Social Psychology,* 1965, 2, 420–426.

SECORD, P. F., & BACKMAN, C. W. *Social psychology.* New York: McGraw-Hill, 1964.

SOLOMON, R. L., & HOWES, D. W. Word frequency, personal values, and visual duration thresholds. *Psychological Review,* 1951, 58, 256–270.

TAFT, R. Selective recall and memory distortion of favorable and unfavorable material. *Journal of Abnormal and Social Psychology,* 1954, 49, 23–28.

WALLACE, W. P. Review of the historical, empirical, and theoretical status of the von Restorff phenomenon. *Psychological Bulletin,* 1965, 63, 410–424.

WALY, P., & COOK, S. W. Attitude as a determinant of learning and memory: A failure to confirm. *Journal of Personality and Social Psychology,* 1966, 4, 280–288.

WATSON, W. S., & HARTMAN, G. W. The rigidity of a basic attitudinal frame. *Journal of Abnormal and Social Psychology,* 1939, 34, 314–335.

WINER, B. J. *Statistical principles in experimental design.* New York: McGraw-Hill, 1962.

(Received December 21, 1966)