THE EFFECTS OF THE RELINQUISHMENT OF CHOICE AND PERCEPTION OF CONTROL ON PAIRED ASSOCIATE LEARNING,

by

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Much of human behavior appears to be devoted to individuals' attempts to gain control over their environment. White (1959) has suggested that animals and man are intrinsically motivated to learn to interact effectively with their environment. He has termed this motivation effectance and has postulated that it is responsible for the instigation of exploratory behaviors (e.g. grasping, walking) and also influences higher processes such as attention and perception, language and thinking.

deCharms' (1968) investigations have led him to conclude that people place greater value on the outcome of an event when they feel that they have personally caused the event. He has also demonstrated that the perception of one's self as an "origin" (i.e. as the major cause of an event) has motivational properties (deCharms, 1976). deCharms trained a group of teachers from an inner-city school in specific techniques for enhancing their students' perceptions of themselves as "origins." The students of these specially trained teachers demonstrated movement back towards normal grade placement while a group of matched controls taught by teachers who had not received "origin training" fell behind at a rate of nearly two months per year.

Recently, the concept of perceived control has been applied to broad areas of clinical psychology. Wilson (1979) has suggested that one of the curative factors associated with successful behavior therapy is the development of a feeling of personal control over
previously uncontrollable symptoms. Arnkoff and Mahoney (1979) have presented a model of psychopathology based on three aspects of control: deviant beliefs about control, deficits in control skills and inappropriate assertion of control.

The result of reducing or eliminating an organism's actual or perceived control has been the focus of several theoretical statements and a great deal of experimental work. Seligman and his associates (e.g. Seligman & Maier, 1967; Seligman, 1975) have demonstrated that animals exposed to inescapable shock later fail to learn to escape or avoid signaled shock in a shuttle box situation. This pattern of behavior, called "learned helplessness," does not appear in animals who are trained to control aversive stimulation (i.e. trained to escape or avoid shock in a shuttle box situation) before they are exposed to inescapable shock.

Brehm (1966) has proposed that individuals who experience a reduction in perceived control as a result of the elimination or threatened elimination of a specific freedom will be motivationally aroused to recover that freedom. He has termed this motivational state psychological reactance. A large body of literature exists attesting to the utility of this construct (Wicklund, 1974).

Empirical investigations of perceived control have tended to focus on two issues: the factors associated with the development of perceived control and the effects of perceived control on the behavioral and physical state of the individual. Langer (1975) has identified a number of conditions in which subjects experience an "illusion of
control" over events whose outcomes are clearly determined by chance (e.g. throwing dice, picking a lottery ticket). Subjects reported greater confidence of success on such tasks when they "competed" against someone who appeared to be incompetent at the task; when the subject rather than the experimenter performed the task that produced the chance outcome (e.g. flipping a coin); when the subject thought about the outcome and tried to devise strategies to produce it; when the subject was exposed to familiar rather than unfamiliar stimuli (e.g. familiar versus unfamiliar lottery tickets) or experienced several chance-determined successes in a row. Wortman (1975) has reported similar findings.

Having control over an event implies that one is free to make choices about the event. For instance, the availability of a button which will terminate an aversive noise allows one to control the noise (e.g. Glass & Singer, 1972). It also establishes a situation in which the individual is free to choose whether or not to terminate the noise. This intimate association between choice and control suggests that situations which enhance one's perception of choice will also enhance a perception of control regardless of whether one can actually exert control over the situation. From their empirical investigations of Mill's theoretical analysis of perceived choice (cf. Harvey & Johnston, 1973) Harvey (1976) and his associates have identified several factors which influence the perception of choice. Greater freedom of choice was reported when subjects were exposed to alternatives which were
similar, (Harvey & Johnston, 1973; Jellison & Harvey, 1973) but not equal (Harvey, et al., 1974) in attractiveness.

Harvey and Harris (1975) have also demonstrated that subjects perceive greater freedom when choosing between alternatives which are both considered attractive than when choosing between unattractive alternatives. Harvey and Jellison (1974) have reported that perceived choice is affected by subjects' perceptions of how long it takes them to make choices. Subjects who were exposed to a large number of options reported greater perceived choice when they were informed that they had taken a relatively short time to make their decisions. Subjects exposed to a moderate number of options reported greater perceived choice when they were informed that they had taken a relatively long time to make their decisions.

In a study conducted by Kehoe (1979), no systematic relationship between perceived choice and the actual time spent by subjects making their choices was observed. He suggested that the choices subjects were required to make during the experiment involved such familiar options (movies, meals and occupations) and were presented so rapidly that decision time, a measure of the mental processing required to make the choices, became a minimally salient characteristic of the choice situation for the subjects. Consequently, longer or shorter decision times had minimal affect on subjects' reported perception of choice.

The behavioral consequences of perceived control have also been the subject of investigation. Langer and Rodin (1976) found that
institutionalized, elderly subjects who were encouraged to assume responsibility for their own welfare demonstrated significant increases in frequency of participation in available activities and improvement on measures of alertness and well-being relative to control subjects who were told that the staff was responsible for their welfare. At an eighteen month follow up, the experimental subjects were found to have maintained their higher levels of activity and better physical health (Rodin & Langer, 1977). Schulz (1976) reported that elderly, institutionalized subjects demonstrated significant gains on a variety of health and psychological status indicators and in activity level if they were allowed to control, or could predict, the frequency and duration of visits they received by college undergraduates. These gains were not maintained following termination of the study (Schulz & Hanusa, 1979).

A number of studies have indicated that perceived control reduces the perceived aversiveness of noxious stimulation. For example, Staub, Tursky and Schwartz (1971) reported that subjects allowed to control the intensity of self-administered shocks endured stronger shocks and reported higher levels of shock to be less uncomfortable than yoked subjects who had no control over the intensity of the shocks. During a second series of shocks in which no subjects was given control over shock intensity, the subjects who had previously experienced control demonstrated a decline in shock tolerance and an increase in reported discomfort. No change in either measure was demonstrated by the yoked controls.
Stotland and Blumenthal (1964) found that subjects who were allowed to take a series of tests in an order of their own choosing demonstrated greater reductions in anxiety as measured by decreases in palmar sweating than did subjects assigned an order in which to take the tests.

Glass and Singer (1972) have demonstrated that exposure to unpredictable noise during one task results in less tolerance for frustration and poorer performance on subsequent tasks. In their first experiment, subjects were exposed to loud (110 db.) or soft (56 db.) noise which occurred at fixed or random intervals while they were completing simple addition or letter-finding tasks. Following exposure to the noise the subjects were asked to complete two additional tasks: a series of puzzles (two of which were insolvable) and a proof-reading task. Subjects previously exposed to the unpredictable noise made fewer attempts at solving the puzzles and more mistakes during the proof-reading task than did the subjects previously exposed to the predictable noise. In the second study, all subjects were exposed to the unpredictable noise but half were provided with a button they could use to terminate the noise if it became intolerable. Even though the subjects with access to the button never used it they performed significantly better on the subsequent proof-reading task and attempted significantly more puzzle solutions than did subjects without access to the button.

A number of studies have demonstrated that children's performance on academic task can be enhanced by providing them with the opportunity to control some aspect of the learning situation (e.g. deCharms, 1976).
Brigham (1979) has summarized a number of studies in which he and his colleagues had investigated the effects of allowing school children to select their own reinforcement for the successful completion of math assignments. They found an increase in performance when the student rather than the teacher selected the reinforcer.

White (1974) examined the performance of fifth graders on a standardized reading comprehension test. Some of the subjects were given the opportunity to select from a list of titles the four stories that they would read. Some subjects were allowed to select only one of the four stories and the control subjects were assigned all four stories. Subjects who chose one or more of their stories performed better on the comprehension test than did subjects assigned all of their stories.

The effects of choice and perceived control on paired associate (PA) learning has been extensively investigated by Perlmuter and Monty (1977). In a series of investigations, they have demonstrated that subjects given the opportunity to choose their own response words from an experimenter-provided list of alternatives perform better than yoked control subjects who are assigned the response words they are to learn (Perlmuter, Monty & Kimble, 1971; Monty & Perlmuter, 1972; Monty, Rosenberger & Perlmuter, 1973; Monty & Perlmuter, 1975). The same "choice effect" has been reported when subjects chose their own stimulus rather than response words (Perlmuter & Monty, 1973).

The procedure used to study the effects of perceived choice and control on PA learning employed a modification of the standard PA
paradigm (Perlmuter & Monty, 1977). In various experiments, subjects were initially exposed to a list of paired associates containing ten to fourteen stimulus words each of which was associated with a list of potential response words. Choice subjects were given the opportunity to choose from among the available alternatives the words they wished to constitute the response side of their PA list. Force subjects were exposed to all of the potential response words but were not given the opportunity to choose. Instead, they were yoked to the choice subjects and were assigned the response words chosen by their master. Following the selection of response words, subjects were given six to ten learning trials which followed the standard anticipation format (e.g. Perlmuter, Monty & Kimble, 1971) or, when test booklets were employed, time-limited recall trials alternated with study periods (e.g. Savage, Perlmuter & Monty, 1979). The dependent measure used to access PA performance was total number (or percent) of response words correctly recalled per trial.

One possible explanation of the choice effect described above is that the opportunity to choose allows subjects to take advantage of idiosyncratic associations that may exist between a stimulus word and one of the potential response words (Perlmuter, Monty & Kimble, 1971). Such idiosyncratic associations may not be available to the yoked control subjects thereby making their learning task more difficult than that of the choice subjects. The results of several studies, however, show this hypothesis to be untenable. Monty and Perlmuter (1972) found that allowing subjects to choose response words for only five of ten
S-R pairs elevated performance on the forced pairs as well as the chosen pairs.

Monty, Rosenberger & Perlmuter (1973) reported that subjects allowed to choose response words for only the first three of the twelve pairs performed as well as subjects allowed to choose all of their response words. Monty and Perlmuter (1975) allowed subjects to choose either response words or stimulus words in the absence of the other member of the pair. Subjects returned twenty four hours later for the learning trials. They found that choice of either stimulus or response words resulted in better PA performance than the no choice control condition.

Bailey, Perlmuter, Karsh & Monty (1978) asked subjects if they would be willing to choose response words for another person to learn. The subjects who chose for a hypothetical other demonstrated a significantly higher level of learning on a completely experimenter-assigned PA list than did subjects not allowed to choose.

The results summarized above strongly suggest that the beneficial effects of the opportunity to choose are the result of some form of motivational enhancement. Evidence suggesting that, under some conditions, choice can produce non-optimal levels of motivation and disrupt PA learning has also been reported. Perlmuter, Monty & Cross (1974) found that subjects given the opportunity to choose their own response words on an A-B list but who were tested on an experimenter assigned A-C list performed significantly more poorly than subjects initially assigned responses on the A-B list. Learning trials on the
A-B list followed those of the interposed A-C list. The experimenters concluded that the depressed performance of the choice subjects could be accounted for by postulating the existence of a nonoptimal increase in motivation resulting from the frustration produced by the interposition of the A-C list. No enhancement of performance on the A-B list was evident for those subjects who had previously chosen their responses.

Savage, Perlmuter and Monty (1979) have reported that subjects forced to learn a PA list containing response words low on the meaningfulness dimension performed more poorly if they were assigned these words in the presence of high meaningfulness alternatives rather than in the presence of other low meaningfulness alternatives. It was conjectured that being forced to learn the obviously less desirable alternative further deprives the subject of his perception of control.

The findings of Harvey and his associates (e.g. Harvey, 1976) concerning the determinants of perceived choice suggest that the choice effect observed by Monty and Perlmuter should be affected by the characteristics of the alternative response words presented to the subject. Specifically, potential response words that are similar in attractiveness should induce a perception of control in the choice subjects and result in reliably superior PA performance for the choice subjects relative to the force subjects. Potential response words dissimilar in attractiveness should fail to induce a perception of control and therefore result in equivalent performance among choice and force subjects.
Monty, Geller, Savage and Perlmuter (in press) tested this hypothesis by providing some subjects with potential paired associate response words both of which were high on the meaningfulness (m) dimension (small difference condition) and some subjects with pairs of response words composed of one high and one low m response alternative (large difference condition). As expected, subjects in the small difference condition who were allowed to choose their own response words performed significantly better than their yoked controls while choice subjects who selected all the high m alternatives in the large difference condition did not out perform their controls. An unexpected finding was that approximately one third of the choice subjects exposed to the large difference condition chose one or more of the low m response alternatives. The performance of these subjects was intermediate between that of the choice subjects in the small difference condition and the subjects who had chosen all the high m alternatives in the large difference condition. Their performance was also significantly superior to that of their yoked controls.

The results reported by Monty et al (in press can be understood in terms of Steiner's (1970) theoretical analysis of perceived freedom. Steiner delineated two types of freedom. Outcome freedom is said to exist when an individual perceives himself as having the opportunity and capability to affect the outcome of an event. The opportunity to choose response words would be expected to provide outcome freedom. Decision freedom refers to the degree to which an individual attributes the basis of a decision to himself rather than factors external to himself.
Subjects who chose all the high m response words in the large difference condition may not have perceived themselves as having decision freedom since one alternative in each pair was "obviously" the easiest to learn. Subjects who chose one or more of the low m words, however, were not constrained by the large differences in meaningfulness between the response alternatives and may therefore have experienced a greater degree of decision freedom. It would be expected that high levels of decision freedom would be associated with high levels of perceived control and therefore result in enhanced PA performance.

The present study was conducted in order to examine the effects of manipulating a subject's outcome freedom in a manner analogous to that in which Monty et al (1979) and Savage, Perlmutter and Monty (1979) manipulated decision freedom. Specifically, subjects in the present study were offered the opportunity to choose their own response words (i.e. they were given outcome freedom) but were also requested to give up this opportunity (and therefore their outcome freedom) and learn a set of response words selected by the experimenter. In addition, subjects were exposed to PA lists in which the pairs of alternative response words contained two high m words in meaningfulness (HH list), low m words (LL list), or contained one high m and one low m word (HL and LH lists).

It was expected that subjects exposed to the HH or LL paired associate list would perceive themselves as having decision freedom since the available response alternatives were similar in meaningfulness. Noncompliers (i.e. subjects who failed to comply with the
experimenter's request to choose only the response alternatives that he had selected), who have also retained their outcome freedom, were also predicted to demonstrate better PA performance than their force subjects. The compliers (i.e. subjects who complied with the experimenter's request to choose only the response alternatives that he had selected) "chose not to choose," an action which would presumably provide them with greater perceived control than their yoked forced subjects, who were never offered the opportunity to choose their own response words.

In contrast, it was hypothesized that compliers exposed to the HL list (i.e. the list in which the experimenter selected response words were the high m words from each pair of alternatives would not perform significantly better on the PA task than their yoked subjects. Although compliers exposed to the HL list would also have "chosen not to choose" it was expected that the dissimilarity of the response alternatives to which they were exposed (one high m and one low m word per pair) would result in their experiencing little decision freedom and therefore perceiving themselves as having been "forced" to give up their outcome freedom because the "best" response words were those pre-selected by the experimenter. Noncompliers exposed to the HL list, however, would have both retained their outcome freedom and demonstrated that low m words were perceived as viable choice alternatives, thereby implying that they perceived a greater degree of decision freedom than did the compliers exposed to the HL list. It was predicted, therefore, that among subjects exposed to
the HL list noncompliers would outperform both their force subjects and the compliers.

Hypotheses concerning the performance of subjects exposed to the LH list (i.e. the list in which the experimenter selected low m response words were difficult to derive. It was assumed that subjects who complied with the experimenter's request and chose all the low m response words would do so only because they were strongly motivated to comply. The potential effects of such a strong compliance motive on PA performance were unknown. Consequently, no specific predictions concerning the PA performance of compliers were made. Noncompliers exposed to the LH list would have preserved their outcome freedom but might not have perceived themselves as having had decision freedom. Such noncompliers would be expected to choose all the high m response words and demonstrate PA performance equivalent to that of their force subjects. They would be in a position analogous to that of the choice subjects in the large difference condition of the Monty et al (1979) study who picked all high m response words. However, noncompliers who chose one or more of the pre-selected, low m response words would be expected to perceive themselves as having decision freedom. Their position would be similar to that of subjects in the large difference condition of the Monty et al (1979) study who chose one or more low m response words. Consequently, LH noncompliers who chose one or more low m words were expected to demonstrate better PA performance than their force subjects.
An additional measure of perceived choice and perceived control was included in the present study. Following their completion of the PA task, the subjects were given a second 12 item PA list which contained one high m and one low m response alternative for each stimulus word. They were asked to choose response words for a subject in another experiment. If they wished, they could choose those response words that the experimenter had endorsed (six low m and six high m words). No attempt was made to encourage the subjects to choose the experimenter-selected response words, as had been done in the PA task. This Choice-for-Other task, then, provided the subjects with a second, less constrained, opportunity to exercise choice.

According to reactance theory (Brehm, 1966) subjects who finish the PA task feeling that their freedom to choose has been reduced or eliminated should experience a state of psychological reactance. This experience of reactance should motivate the subjects to attempt to regain their perception of control which, in turn, would be expected to result in their selecting fewer experimenter endorsed words on the Choice-for-Other task than subjects who did not feel that their freedom to choose had been reduced or eliminated. Assuming that the presence of reactance following the PA task will be inversely related to the presence of perceived control during the PA task, a group which demonstrates PA performance superior to that of a second group (i.e. demonstrates greater perceived control) should also choose significantly more experimenter endorsed words on the Choice-for-Other task (i.e. demonstrate less reactance).
METHOD

Subjects

Two hundred and twenty-three students enrolled in the introductory psychology class at Virginia Polytechnic Institute and State University participated in the study. Subjects were given credit towards their course grade for their participation. The data from 27 subjects were discarded due either to their failure to complete each portion of the experimental task within the time limit or to mistakes they made prior to the recall trials (e.g. miscopying a response word while completing the study sheet). Analysable data was collected from 196 subjects.

Apparatus

Four paired associate word lists were constructed from the list of words compiled by Locascio & Ley (1972). Each list contained the same 14 stimulus words taken from the middle of Locascio & Ley's list and were considered to be moderate on the meaningfulness (m) dimension. Twenty-eight high meaningfulness words were taken from the end of the list to form the response side of the HH list. Twenty-eight low meaningfulness words were taken from the beginning of the list to form the response side of the LL list. The response side of the HL and LH lists were identical. They were constructed by pairing one half of the previously selected high meaningfulness response words with one half of the low meaningfulness words.
The paired associate materials were presented to the subjects in booklet form. Words were typed in capital letters with the stimulus word on the left and two possible response words listed one below the other on the right. Each set of three words (i.e. a stimulus word and two response words) were boxed in and the 14 boxes were arranged vertically on the page. One response word in each box was preceded by an asterisk. In the HH and LL lists, the assignment of the asterisks was randomly determined with the exception that half of the asterisked words be the top response word in the column. In the HL list, the asterisks always preceded the high m response alternative. The low m response alternative was always asterisked in the LH list. In both the HL and LH lists half of the asterisked words were the top response words listed in the box and half were the bottom words listed in the box.

The pages used during the recall trials and the Study Sheet consisted of 14 boxes arranged vertically on the page. Each box contained a stimulus word on the left and a blank on the right. The stimulus words were presented in a different random order on each page.

Each booklet consisted of a cover sheet, two pages of practice material, two pages containing one of the four experimental lists, six pages to be used during the recall trials, and a Study Sheet. These pages were separated from each other by blank pages.

A second booklet (Choice-for-Other booklet) consisting of a cover sheet of instructions and one page containing 12 sets of paired associates was constructed. The paired associate list was constructed...
from a list of words compiled by Andreas (1972). Twelve high meaning (mean $m = 10.17$) and 12 low meaning (mean $m = 6.71$) words were selected to form the response side of the list. Twelve words of moderate meaningfulness (mean $m = 8.02$) were selected to form the stimulus side of the list. One response alternative was preceded by an asterisk. The assignment of the asterisks was randomly determined with the exception that one half of the asterisked words be high $m$ response words and one half be low $m$ words. None of the words contained in the Choice-for-Other booklet had been used in the initial PA task.

**Design**

Subjects were exposed to one of the four experimental PA lists: HH, HL, LH, LL. Half the subjects were allowed to choose their own response words (choice subjects); half were forced to learn the response words chosen by a previous subject (force subjects). Choice subjects were encouraged by the instructions to give up their opportunity to choose their own response words. They were urged to learn those words that had been asterisked by the experimenter. Those subjects who chose to learn all the asterisked response words were classified as "compliers;" those who chose one or more nonasterisked words were classified as "noncompliers." The present design, therefore, was a 2 (choice/force) X 4 (PA list) X 2 (compliance/noncompliance) factorial in which choice and list were experimenter assigned conditions and compliance was a subject selected condition (for choice subjects).
**Procedure**

Subjects were run in groups ranging in size from two to twelve. They were given a practice trial to insure that they understood both the choice (or force) procedure as well as the test procedure. Choice subjects were given the opportunity to choose their own response words during the practice trial but were not encouraged by the experimenter to relinquish that opportunity to choose until later in the experiment. Force subjects were assigned response words during the practice trial. None of the potential response words presented during the practice trial were asterisked. They were then presented the 14 paired associates and instructed to read all the stimulus words and their associated response words during a 45 second period. The subjects were then presented with the same paired associate list in a different random order which contained, for the first time, response alternatives preceeded by an asterisk. Choice subjects were informed that "the asterisked words were words that we have used in a previous experiment. You are free to choose either response word that appears in a box as the one you wish to learn. However, we would prefer that you choose all the asterisked words, since that would make this experiment consistent with those that we have done previously." Force subjects were told that "the asterisked words are words that we have used in a previous experiment. They are also the words that you are to learn in this experiment." For force subjects, the asterisked words were those chosen by a previous choice subject. Choice subjects were instructed to circle the words they had chosen to learn and force subjects
were instructed to circle the asterisked words. One minute was allowed for this.

Subjects were then given their first 45 second recall trial and following this they were instructed to turn to the page on which they had circled their response words and copy those response words on to the Study Sheet. Subjects were given ninety seconds in which to complete their copying. The second recall trial followed. Before the remaining four recall trials, subjects were allowed to examine their Study Sheets for 35 seconds. A 20 second interval followed each study period during which subjects sat quietly at their desks.

Following the last recall trial, the subjects were given the Choice-for-Other booklet and asked to help the experimenter set up a new experiment by choosing response words for future subjects to learn. The instructions on the cover sheet of the Choice-for-Other booklet stated "One response word in each box has an asterisk next to it. These are the words which we [the experimenters] have chosen. However, you may select either word for the subject to learn."

Following their completion of the Choice-for-Other booklet the subjects were thanked for their participation and were told how they could obtain information concerning the purpose of the experiment.
RESULTS AND DISCUSSION

Distribution of subjects across groups

The number of subjects in each experimental group is presented in Table 1. Only five of twenty-five subjects exposed to the LH list complied with the experimenter's request to choose all the low m response words. Only one of 21 subjects exposed to the HL list failed to comply with the experimenter's request to choose all the high m response words. Because of the low n's in the HL-noncomplier condition and the LH-complier condition these conditions were omitted from all statistical analyses.

Perceived control and paired associate performance

Based on the work of Perlmuter and Monty (1977), it was assumed that group differences in perceived control would be reflected by significant group differences in paired associate (PA) performance. Specifically, it was hypothesized that subjects who did not comply with the experimenter's request to choose only pre-selected (i.e. asterisked) response words would demonstrate significantly higher levels of PA performance than their yoked control subjects who were never offered the opportunity to choose their own response words. Similarly, it was predicted that subjects who complied with the experimenter's request and were exposed to pairs of high m response alternatives (i.e. the HH paired associate list) or pairs of low m
Table 1
Number of Subjects in Each Experimental Condition

<table>
<thead>
<tr>
<th>List Condition</th>
<th>Choice</th>
<th>Force</th>
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<tr>
<td>HH Noncomplier</td>
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<td>8</td>
</tr>
<tr>
<td>HL Complier</td>
<td>20</td>
<td>20</td>
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<tr>
<td>HL Noncomplier</td>
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<tr>
<td>LL Noncomplier</td>
<td>12</td>
<td>12</td>
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response alternatives (i.e. the LL paired associate list) would also out perform their yoked controls on the PA task.

Analysis of subjects' performance on the paired associate task was complicated not only by the unbalanced nature of the final factorial design but also by the differing number of low m words that subjects in the various experimental conditions attempted to learn. Low m words are demonstrably more difficult to learn than high m words and their inclusion in a subject's response list would be expected to depress the level of PA performance relative to that of subjects learning only high m response words. To minimize this bias, the PA performance of subjects whose response list included 50% or more low m words was evaluated only on the basis of the mean percentage of low m words correctly recalled per trial. Eight choice subjects and their yoked controls who were exposed to the LH paired associate list fell into this category. They were designated as the LH-noncompliance-(low m) groups. The PA performance of all subjects exposed to the LL list was expressed as the mean percentage of low m words correctly recalled per trial.

The PA performance of subjects whose response list included eight or more high m words was evaluated only on the basis of the mean percentage of high m words correctly recalled per trial. This included all the subjects exposed to the HH and HL lists and twelve choice subjects and their yoked controls who were exposed to the LH list. This latter group of subjects comprised the LH-noncompliance (high m) condition. Table 2 presents the mean PA performance of each group.
Table 2
Mean Percentage of Correct Responses on Trials 1-3

<table>
<thead>
<tr>
<th>List Condition</th>
<th>Choice</th>
<th>Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Complier HH</td>
<td>52.1</td>
<td>44.8</td>
</tr>
<tr>
<td>Noncomplier HH</td>
<td>53.0</td>
<td>50.0</td>
</tr>
<tr>
<td>Complier HL</td>
<td>47.4</td>
<td>48.7</td>
</tr>
<tr>
<td>Noncomplier (low m)* LH</td>
<td>23.2</td>
<td>7.9</td>
</tr>
<tr>
<td>Noncomplier (high m)** LH</td>
<td>47.2</td>
<td>57.8</td>
</tr>
<tr>
<td>Complier LL</td>
<td>10.9</td>
<td>10.7</td>
</tr>
<tr>
<td>Noncomplier LL</td>
<td>10.7</td>
<td>14.2</td>
</tr>
</tbody>
</table>

* n = 8

** n = 12
To avoid confounding the effects of the experimental manipulations on subjects' PA performance with the potential effects of the differences in number of low m words included in subjects' response lists, separate statistical comparisons were performed on groups whose PA performance was expressed as the mean percentage of high m words correctly recalled per trial and on groups whose PA performance was expressed as the mean number of low m words correctly recalled per trial. A separate analysis of variance was therefore performed on each of the following subgroups of subjects:

-- subjects exposed to the HH paired associate list;
-- subjects exposed to the LL paired associate list;
-- subjects in the HH-compliance condition and their yoked controls and subjects in the LH-compliance condition and their yoked controls;
-- LH-noncompliers-(low m) and their yoked controls and LL noncompliers and their yoked controls.
-- HH-noncompliers and their yoked controls and LH-noncompliers-(high m) and their yoked controls.

Only data from the first three recall trials were included in the analysis since the performance of subjects exposed to the HH and HL paired associate list suggested the presence of a ceiling effect. These subjects correctly recalled an average of 80% of their response words by trial four.

PA data from subjects exposed to the HH list and data from subjects exposed to the LL list were subjected to separate two between- and
one within-analyses of variance. Subjects' choice condition (choice/force) and compliance condition (compliance/noncompliance) served as the two between groups variables and trials served as the within groups variable.

A two between- and one within-analysis of variance in which subjects' choice condition (choice/force) and type of PA list (HH, HL, LH, LL) served as the between groups variables and trials served as the within groups variable was performed on each of the following sets of data: HH-compliers, HL-compliers and their respective yoked controls; LH-noncompliers-(low m) and LL-noncompliers and their respective yoked controls; and HH noncompliers and LH-noncompliers-(high m) and their respective yoked controls.

The trials main effect was the only significant effect in each of the analyses indicating that subjects performance improved across trials but did not differ as a function of the opportunity to choose or their degree of compliance with the experimenter's request to choose the pre-selected response words.

On the basis of the paired associate data, it would appear that no group of subjects given the opportunity to choose their own response words experienced greater perceived control than did subjects never offered the opportunity to choose. Of particular importance was the failure of the HH-noncompliers to demonstrate significantly higher levels of PA performance than their force subjects. These noncompliers had presumably retained their outcome freedom as a result of choosing nonasterisked response words and were expected to perceive themselves
as having decision freedom, since the potential response words to which they were exposed were all high in meaningfulness. The experience of both outcome freedom and decision freedom should have enhanced their perception of control.

Before presenting one possible explanation for the failure of the HH-noncompliers to demonstrate greater perceived control than their force subjects, the analyses of subjects' performance on the Choice-for-Other task will be presented.

**Perceived control and performance on the Choice-for-Other task**

On the basis of Brehm's theory of psychological reactance, it was hypothesized that experimental conditions which enhanced subjects' perceived control on the PA task would arouse little, if any, reactance. Specifically, if subjects in one group demonstrated PA performance superior to that of subjects in a second group (i.e. group one demonstrated greater perceived control than group two) they should also choose more experimenter endorsed response words on the Choice-for-Other task (i.e. group one should demonstrate less reactance than group two). The failure to find significant performance effects on the PA task thus eliminated a potential source of support for the hypothesized inverse relationship between the experience of perceived control and arousal of psychological reactance during the PA task. It is acknowledged, therefore, that the following interpretations of the Choice-for-Other data in terms of subjects' perceived control on the PA task are, at best, tenuous.
Two dependent measures were available on the Choice-for-Other task: the number of experimenter endorsed low m response words chosen by the subject ("low m choices," range = 0-6) and the number of experimenter endorsed high m response words chosen by the subject ("high m choices," range = 0-6). Tables 3 and 4 present the mean low m and high m choices for each group.

The unbalanced nature of the factorial design precluded an overall analysis of the Choice-for-Other data. To test for effects of the compliance factor, the high m and low m choices of subjects exposed to the HH and LL paired associate lists were subjected to separate $2(Choice/Force) \times 2(Compliance/Noncompliance) \times 2(List)$ analysis of variance for unequal n's utilizing the classical regression approach (Nie et al., 1975, p. 407). No significant effects were found for the high m choices variable. In general, subjects tended to choose a majority of the experimenter endorsed high m response words (mean number of high m choices across all groups = 5.02 words out of a possible 6 words), possibly because it seemed unreasonable to reject a high m word simply because it had been endorsed by the experimenter. A significant Choice x List interaction was observed for the low m choices variable, $F(1,96) = 13.83, p < .001, MS_e = 3.26$.

A simple main effects analysis of the Choice x List interaction revealed that choice compliance subjects chose fewer experimenter endorsed, low m response words in the LL condition (mean = 1.4) than in the HH condition (mean = 3.0), $t(1,50) = 3.07, p < .003$. Assuming that the high m response alternatives contained in the HH list were
Table 3

Mean Number of Experimenter Endorsed, Low m Response Words Selected on the Choice-for-Other Task

<table>
<thead>
<tr>
<th>List Condition</th>
<th>Choice</th>
<th>Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH Complier</td>
<td>3.0</td>
<td>2.4</td>
</tr>
<tr>
<td>HH Noncomplier</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>HL Complier</td>
<td>1.1</td>
<td>1.2</td>
</tr>
<tr>
<td>LH Noncomplier</td>
<td>2.5</td>
<td>2.2</td>
</tr>
<tr>
<td>LL Complier</td>
<td>1.0</td>
<td>2.7</td>
</tr>
<tr>
<td>LL Noncomplier</td>
<td>1.7</td>
<td>3.1</td>
</tr>
</tbody>
</table>
Table 4

Mean Number of Experimenter Endorsed High m Response Words
Selected on the Choice-for-Other Task

<table>
<thead>
<tr>
<th>List Condition</th>
<th>Choice</th>
<th>Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>HH Complier</td>
<td>5.2</td>
<td>4.6</td>
</tr>
<tr>
<td>HH Noncomplier</td>
<td>4.9</td>
<td>5.5</td>
</tr>
<tr>
<td>HL Complier</td>
<td>5.3</td>
<td>5.2</td>
</tr>
<tr>
<td>LH Noncomplier</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>LL Complier</td>
<td>5.1</td>
<td>4.7</td>
</tr>
<tr>
<td>LL Noncomplier</td>
<td>5.5</td>
<td>4.3</td>
</tr>
</tbody>
</table>
more attractive choice options than the low m response alternatives contained in the LL list, the above finding is consistent with the results of a study by Harvey and Harris (1975) on the effects of option attractiveness on perceived control. They found that choosing from pairs of attractive alternatives resulted in reports of greater perceived control than choosing from pairs of unattractive alternatives.

Simple main effects analyses also revealed that choice subjects in the LL condition chose fewer experimenter endorsed low m words (mean = 1.4) than did force subjects (mean = 2.9), \( t(1,46) = 3.11, p < .003 \). Such a finding suggests that subjects given an opportunity to choose response words from pairs of low m words experienced greater reactance than did subjects forced to learn the same low m words. It may be that the LL condition constituted a situation in which subjects who were given the opportunity to exercise choice perceived no way of benefitting from that opportunity because the available choice alternatives were all unattractive. Having the opportunity to exercise choice but not perceiving any way of benefitting from that opportunity may result in a greater potentiality for the development of reactance than never being offered the opportunity to choose (of Perlmuter, Monty & Cross, 1974).

The lack of a significant main effect for the compliance variable and the failure of all the interactions which included the compliance factor to reach significance indicated that no information would be lost by collapsing across the compliance factor. Therefore, separate 2(Choice/Force) x 4(List - HH, HL, LH, LL) analyses of variance for unequal n's were performed on both the high m choices and low m
choices of all subjects. Again, no significant effects were found for the high \( m \) choices variable. However, both the main effect of Choice, \( F(1,176) = 5.07, p < .002, MS_e = 15.88 \), and the Choice \( \times \) List interaction, \( F(3,176) = 4.36, p < .005, MS_e = 13.65 \), were significant for the low \( m \) choices variable. A simple main effects analysis revealed a significant effect for type of list for both choice subjects, \( F(3,88) = 5.79, p < .001, MS_e = 19.74 \), and force subjects, \( F(3,88) = 3.43, p < .02, MS_e = 9.78 \). The Scheffé procedure revealed that choice subjects exposed to the HH list chose more experimenter endorsed low \( m \) words (mean = 3.0) than did choice subjects exposed to the HL or LL lists (mean number of low \( m \) choices = 1.1 and 1.4 respectively). The mean number of experimenter endorsed low \( m \) words selected by choice subjects exposed to the LH list (mean = 2.5) was not significantly different from the mean number chosen by the other three groups.

One interpretation of these results is that choice subjects exposed to the HH list perceived greater control during the PA choice procedure than did choice subjects exposed to the HL or LL lists. Such an interpretation is qualified by the failure to obtain corresponding differences in paired associate performance. However, the observed differences in performance on the Choice-for-Other task were consistent with the finding of previous research which suggested that perceived control would be greater for subjects exposed to alternatives which were all highly attractive (e.g. the HH list) than for subjects exposed to alternatives which were all relatively unattractive (e.g.
the LL list) (Harvey & Harris, 1975). The present results were also consistent with previous findings which suggested that perceived control would be greater for subjects exposed to potential response words which were similar in attractiveness (e.g., the HH list) than for subjects exposed to response words which were dissimilar in attractiveness (e.g. the HL list) (Harvey & Johnston, 1973; Jellison & Harvey, 1973).

The Scheffé procedure also revealed that force subjects exposed to the LL list chose more experimenter endorsed, low m response words (mean = 2.9) than did force subjects exposed to the HL list (mean = 1.2). It is important to note that the force subjects exposed to the HL list were all yoked to compliers and, consequently, were assigned all high m words. Savage, Perlmuter & Monty (1979) compared the PA performance of force subjects exposed to an HL paired associate list with that of force subjects exposed to an LL paired associate list. In contrast to the present experiment, all subjects were forced to learn low m response words. It was found that subjects exposed to the HL list performed significantly more poorly than subjects exposed to the LL list. It was suggested that being assigned unattractive response words in the presence of a more attractive alternative resulted in less perceived control than being assigned the same unattractive response words in the presence of equally unattractive alternatives.
The present finding suggests that even being assigned the most attractive response alternatives from each pair of alternatives results in less perceived control than being assigned an unattractive response word in the presence of similarly unattractive alternatives. Unfortunately, support for the above explanation could not be obtained from the PA data because differences in PA performance between the HL force group and the LL force group were confounded by the large difference in the meaningfulness of the response words these two groups were assigned.

Also of interest was the general lack of significant differences in the number of experimenter endorsed low m words chosen on the Choice-for-Other task between subjects given the opportunity to choose their own response words on the PA task and the control subjects who were not given such an opportunity to choose. As discussed above for paired associate performance, the lack of group differences on the PA task between noncompliers (particularly the HH noncompliers) and their controls was of particular importance. The following discussion offers one possible explanation for the failure of noncompliers (particularly those exposed to the HH list) to demonstrate greater perceived control than their force subjects. Because the HH noncompliers were assumed to perceive themselves as having both decision freedom and outcome freedom and should therefore have experienced perceived control, the following explanation focusses on their failure to demonstrate greater perceived control than their force subjects.
Evidence for a reduction in perceived control

Findings from a recent study by Savage, Perlmutter and Monty (1979) suggested that the subjects in the present experiment, particularly those exposed to the HH list, may have experienced a reduction in their perception of control which subsequently depressed their paired associate performance. In the Savage et al study, all subjects were exposed to two lists of paired associates each of which provided two potential response words for each stimulus word. During the practice trial, the experimental subjects were led to expect an opportunity to choose between the two PA lists as well as to choose their own response words. All the experimental subjects were subsequently allowed to choose the response words they wished to learn but some of the subjects were assigned one of the two PA lists. This latter group of subjects performed significantly more poorly than subjects who were given a choice of PA lists as well as response words. The experimenters concluded that perceived control develops from the subject's anticipation that he will be offered an opportunity to exercise choice and once this anticipation develops the subject becomes vulnerable to the negative effects associated with a reduction of choice.

In the present study, no subject offered the opportunity to choose their own response words had the actual amount of choice reduced by the experimenter. However, the nature of the choice situation was unintentionally altered between the practice trial and the actual choice trial during which subjects selected the response words they
attempted to learn. Specifically, HH noncompliers were given the opportunity to choose their own response words during the practice trial but were not encouraged by the experimenter to relinquish that opportunity to choose until later in the experiment. Therefore, these subjects would expect that they would be choosing response words for their test list from pairs of alternatives that were similarly desireable since the potential response words to which they were exposed during the practice trial were all high m words. Instead, they were confronted with pairs of alternatives in which the potential response words differed in terms of experimenter endorsement. That is, one word in each pair of alternatives had been pre-selected (i.e. asterisked) and labeled the "experimenter endorsed" word as a result of the experimenter's request that subjects choose the asterisked words as the ones they would attempt to learn. Such experimenter endorsement of the asterisked words may have decreased the perceived similarity between the pairs of potential response words by encouraging subjects to consider the asterisked words as more appropriate choices than the nonasterisked words.

Support for this assumption was provided by an examination of the number of experimenter endorsed words HH-noncompliers chose to learn in the PA task. They selected approximately 82% of the experimenter endorsed response words (11.5 words out of a possible 14 words), a substantially greater proportion than would be expected if the experimenter endorsed and nonendorsed words has been perceived as equally appropriate alternatives. It would seem reasonable to conclude, then,
that HH-noncompliers perceived less similarity between the response alternatives from which they chose the words they would learn in the PA task than they did between the response alternatives presented during the practice trial. This decrease in the perceived similarity of the response alternatives from the practice trial to the later choice trial would be expected to produce a similar reduction in perceived control. The results of the Savage, Perlmuter & Monty (1979) study suggest that such a reduction in perceived control could account for the failure of the HH-noncompliers to outperform their force subjects on the PA task.

Although the above explanation has focussed on the HH-noncompliers, it is applicable to all the groups which were expected to demonstrate greater perceived control than their force subjects.

Supplementary analyses: Performance on the Choice-for-Other task as a predictor of paired associate performance

As noted previously, the assumption that performance on the Choice-for-Other task would reflect subjects' perceived control on the PA task was not supported by the foregoing analyses. Groups which differed significantly in performance on the Choice-for-Other task failed to demonstrate differences in PA performance. However, a correlational analysis of the relationship between subjects' performance on the Choice-for-Other task and their PA performance could also provide support for the above assumption. A significant positive correlation between the number of experimenter endorsed, low m words selected by subjects during the Choice-for-Other task and the number of
response words correctly recalled on the PA task should exist if the
former measure truly reflected subjects' perceived control on the PA
task.

To determine whether the hypothesized relationship between PA
performance and performance on the Choice-for-Other task existed, a
standard multiple regression analysis was applied to the data from
HH-compliers and their force subjects. PA performance (the total
number of words correctly recalled on the first three recall trials)
served as the dependent variable and choice condition (choice/force),
performance on the Choice-for-Other task (the number of experimenter
endorsed, low m response words selected during the task) and a vector
representing the interaction of choice condition and Choice-for-Other
performance served as predictors. The analysis produced a significant
overall $R = .398$, $F(3,36) = 2.26$, $p < .05$. Neither choice condition
nor, more importantly, performance on the Choice-for-Other task
accounted for a significant proportion of the explained variance in PA
performance. The failure to find a significant positive relationship
between performance on the Choice-for-Other task and PA performance
again failed to support the assumption that performance on the Choice-
for-Other task reflected subjects' perceived control on the PA task.

The interaction vector, however did account for a significant
proportion of the explained variance in PA scores, $\beta = .579$,
$F(1,36) = 4.59$, $p < .05$. Further analysis of this interaction by
means of the Johnson-Neyman technique (Kerlinger & Pedhauser, 1973,
p. 256) revealed that the PA performance of choice subjects who chose
four or more experimenter endorsed low m response words on the Choice-for-Other task was superior to that of force subjects who had also chosen four or more experimenter endorsed, low m response words.

A multiple regression analysis identical to the one described above was performed on data collected from HL-compliers and their controls. No significant effects were found.

These interesting but unpredicted findings have several implications. Firstly, they provided partial support for the hypothesis that subjects can comply with the experimenter's request to choose to learn only pre-selected response words from pairs of high m alternatives and still experience greater perceived control on the PA task than their controls, who were never offered the opportunity to choose their own response words.

Secondly, the failure to obtain a significant Choice condition Choice-for-Other Performance interaction from the multiple regression analysis of the data collected from the HL-compliers and their force subjects suggested that, as predicted, "choosing not to choose" can result in enhanced perceived control only if subjects perceive the available response alternatives as providing them with a "real" choice. Based on the work of Harvey and his colleagues (e.g. Harvey, 1976), exposure to the HH paired associate list was expected to promote a greater perception of control than the HL list because the response alternatives presented in the HH list were more similar in meaningfulness and, presumably, average perceived attractiveness, than were the response alternatives presented in the HL list.
The results of the supplementary analyses provided partial support for the hypothesized relationship between PA performance and performance on the Choice-for-Other task. Contrary to expectation, performance on the Choice-for-Other task did not account for a significant proportion of the explained variance in the PA scores of the HH compliers and their force subjects. However, only choice subjects who selected a majority of the experimenter endorsed, low m response words on the Choice-for-Other task (presumably reflecting a low level of reactance) demonstrated significantly higher levels of PA performance than the force subjects. Such a finding was consistent with the prediction that low levels of reactance would be associated with high levels of perceived control. In summary, the results of the supplementary analyses failed to clearly demonstrate a relationship between perceived control on the PA task and performance on the Choice-for-Other task, although some evidence for the hypothesized relationship was observed.
SUMMARY AND CONCLUSIONS

It was initially hypothesized that subjects who failed to comply with the experimenter's request to choose only preselected response words on the PA task would experience greater perceived control than their yoked force subjects. This hypothesis was not supported by the paired associate data or data from the Choice-for-Other task.

Similarly it was hypothesized that subjects exposed to the HH or LL paired associate list who complied with the experimenter's request to choose only preselected response words on the PA task would experience greater perceived control than their force subjects. Again, analyses of the PA data and the data from the Choice-for-Other task failed to provide support for the hypotheses. However, a multiple regression analysis of the PA performance of HH-compliers and their force subjects revealed that HH-compliers who chose four or more experimenter endorsed response words on the Choice-for-Other task demonstrated significantly better PA performance than force subjects who had chosen a similar number of experimenter endorsed response words on the Choice-for-Other task. This result suggested that some of the subjects exposed to the HH list who complied with the experimenter's request did, as predicted, experience greater perceived control than the force subjects.

A third hypothesis of the present experiment was that performance on the Choice-for-Other task would reflect subjects' perceived control
on the paired associate task. Specifically, subjects who demonstrated high levels of PA performance were expected to choose the greatest number of experimenter endorsed response words on the Choice-for-Other task. The failure to obtain performance effects on the PA task made it difficult to assess the validity of the assumption that group differences on the Choice-for-Other measure were reflecting differences in perceived control on the PA task.

One possible explanation for the failure of the experimental manipulations to produce the expected differences in perceived control on the PA task was derived from previous research on the detrimental effects associated with a reduction in perceived control (Savage et al, 1979). In the present experiment, a potential for subjects experiencing a reduction in perceived control during the PA task resulted from the introduction of the experimenter's request that subjects choose only preselected response words after subjects had already had the opportunity to exercise choice. Specifically, subjects chose response words for their test list from pairs of alternatives that differed as a function of experimenter endorsement or nonendorsement. During the practice trial subjects chose response words from pairs of alternatives that did not differ as a function of experimenter endorsement or nonendorsement. Examination of the number of experimenter endorsed versus nonendorsed response words chosen by subjects indicated that experimenter endorsement enhanced the probability of a word being chosen.

It seemed reasonable to conclude, then, that there was less similarity between the response pairs comprising the PA list than
there was between the response alternatives presented during the practice trial. Consequently, the anticipation of control developed from experience with the practice trial could have been reduced when the subjects chose the response words for the PA trials. It is this reduction in perceived control which is assumed to be responsible for the failure to obtain the predicted differences in PA performance between Choice and Force subjects. One method of testing the above explanation would be to introduce the experimenter's request to choose only preselected response words during the practice trial, thereby reducing the possibility of subjects experiencing a reduction in perceived control later in the experiment.
REFERENCES


Stotland, E. & Blumenthal, A. The reduction of anxiety as a result of the expectation of making a choice. *Canadian Journal of Psychology*, 1964, 18, 139-145.


APPENDIX A
INSTRUCTIONS

(Instructions enclosed in parentheses were read to Choice subjects only; instructions enclosed in brackets were read to Force subjects only.)

The first thing we would like you to do is fill in the information on the left side of the booklet--your name, I.D. number, today's date and for "time" you can write in Time Session Started. When you are finished filling in this information, please do not open your booklets. I need to make a few comments before we begin the experiment.

It is necessary that I insure that everyone has the same amount of time to work on the tasks contained in the booklets, so I will announce when to start and stop working on a specific task and when to turn from one page to the next. Your cooperation in working on each task only during the specified times and not glancing ahead in your booklets will be greatly appreciated.

Before we begin this experiment I want to explain the nature of the task you will be doing. It will involve memorizing words. You will be shown a list containing 14 sets of words. Each set will be made up of a stimulus word, the left-hand member of the pair, and two response words, the right hand members of the pair. Your task will be to learn to associate one response word with each stimulus word. After studying this list of word pairs, you will be given a list which
contains the stimulus words only and asked to write in, next to each stimulus word, the correct response word.

Let's run through the task now with a practice trial. (You will be given an opportunity to choose your own response words.) In a moment, I will ask you to turn to page 2 of your booklets. There you will find 2 boxes which contain a stimulus word on the left and a column of 2 response words on the right. Please read the stimulus word and then each of the response words to yourself. Then circle (one of the response words in the box to indicate which word you have chosen to learn) [the response word that has the asterisk in front of it. This is the response word that you are to learn.] Follow this same procedure for the words in the second box. You will have about 20 seconds to read through the words and (circle your choices)[circle the asterisked words.]

Please turn to page 2 and begin.

----- 20 second pause -----

Please stop working. In a moment, I will ask you to turn to the next page where you will find two boxes containing a stimulus word on the left but no response word. You will have about 20 seconds to fill in the correct response words. Remember, the correct response words are the ones (you have chosen) [which you have just circled]. Please turn to the next page and begin.

----- 20 second pause -----
Please stop working. For this task, you will be asked to learn a list of word pairs, just as you did in the practice trial. Are there any questions?

In a moment, I will ask you to turn to the next page of your booklet. It contains 14 boxes, each of which contain a stimulus word and a column of 2 response words. Please turn to the next page and familiarize yourself with the words by simply reading through them.

----- 45 second pause -----

Please turn to the next page of your booklet which is a blank page. On the following page you will again see the 14 boxes containing the stimulus and response words. One of the response words has an asterisk in front of it. The asterisked words are ones that were used in a previous experiment. (You may choose either response word that appears in a box as the one you wish to learn. However, we would prefer that you choose all the asterisked words, since that would make this experiment consistent with our previous one.) They are also the words you are to learn for this experiment. When I say to begin, please turn to the next page and circle (your choices.) [each of the asterisked words.] You will have about 60 seconds in which to do this and it is important that you finish in this length of time. Please turn to the next page and begin.

----- 60 second pause -----

Please stop working and turn to the next page, which is a blank page. When I say to begin, please turn to the next page of your booklet and write down as many (of your chosen) [of the response] words
as you can remember, next to their appropriate stimulus word. You will have about 45 seconds in which to do this. If you are uncertain of the correct response word, try it anyway.

----- 45 second pause -----

Please stop working and turn to the next page of your booklet. Turn over one more page to the white page labeled the Study Sheet. Pull this page out of your booklet. In a moment, I will ask you to turn back to page 5 in your booklets. That is the page on which you circled (your chosen) [the asterisked] words. Please copy the words you circled on to the Study Sheet, next to their appropriate stimulus word. A word of warning--the words on the study sheet are not in the same order as the words on page 5, so please check to be sure that you have written the appropriate response word next to each stimulus word. You will have about 90 seconds to complete your copying so write quickly but legibly. Are there any questions? Please turn to page 5 and begin.

----- 60 second pause -----

You have about 30 seconds to finish copying your words.

----- 30 second pause -----

Please stop working and turn your study sheet face down on your desk. Please turn to page 7 in your booklet. Write down as many of your (chosen) [response words] as you can remember.

----- 45 second pause -----
Please stop working and turn to the next page of your booklet, which is a blank page. You may now have about 35 seconds to look over your study sheet. Please begin.

----- 35 second pause -----

Please turn your study sheet face down on your desk. The next test trial will begin in a few moments.

----- 20 second pause -----

Please turn to the next page of your booklet and write down as many of your response words as you can remember.

----- 45 second pause -----

----- Following completion of recall trial number 6 -----

Please stop working and turn to the last page of your booklet. This completes the paired associate learning task. We would like your help in setting up another experiment we are about to run. The cover of this booklet briefly describes the experiment and contains instructions about what we would like you to do. Please read through this information and, if you don't have any questions, follow the instructions.

----- After all subjects have finished -----

That is the end of this experiment. I thank you all for participating. At present, I can only describe in a general way the purpose of this experiment. If you are interested in details about this experiment, I would be happy to discuss it with you near the end of the quarter.
The two page vita has been removed from the scanned document. Page 1 of 2
The two page vita has been removed from the scanned document. Page 2 of 2
THE EFFECTS OF THE RELINQUISHMENT OF CHOICE AND PERCEPTION OF CONTROL ON PAIRED ASSOCIATE LEARNING

by

Steven B. Lovett

(ABSTRACT)

The present study investigated the conditions which would allow subjects to develop the perception of control while at the same time relinquishing the opportunity to choose. One half of the subjects were given the opportunity to choose their own response words from pairs of high meaningfulness (m) words (a condition assumed to induce a high level of perceived control), pairs of low m words, or pairs of alternatives containing one high m and one low m word (conditions assumed to induce a low level of perceived control). Subjects were requested to select the asterisked alternative in each pair but were permitted to reject this request. Compliance was indexed by the degree of selection of asterisked alternatives. Following the choice/force procedure all subjects learned the appropriate responses in a PA task. Upon completion of the PA task all subjects were asked to construct a PA list for other subjects to learn. Although all subjects performed similarly on the PA task finer analyses revealed that the PA performance of choice subjects who relinquished their opportunity to choose their own response words from pairs of high m
words and had also chosen asterisked alternatives on the Choice-for-
Other task was superior to the PA performance of their control
subjects who were forced to learn the same response words. It was
suggested that the failure to obtain the expected group differences
in PA performance resulted from an unintentional reduction in
subjects' perceived control during the PA task.