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| 20. ABSTRACT (Continue on reverse side if necessary and identify by block number)<br>The research was predicated on three assumptions: first individuals prefer situations which are predictable and controllable; second, the exercise of choice may enhance the individual's perception of control; third, the sense of control has motivational consequences which may enhance performance on a variety of tasks. Most researchers in this field recognize that the possibility for real control is illusory but nevertheless a belief in its existence by the individual contributes to an enhanced feeling of well being and self regard. |                                                                               |                                             |

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20. ABSTRACT CONTINUED

To study the development of perceived control, attempts were made to determine how the opportunity to make choices may contribute to the perception of control. This report provides the results of this study.

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The research in this project was predicated on three assumptions: first individuals prefer situations which are predictable and controllable; second, the exercise of choice may enhance the individual's perception of control; third, the sense of control has motivational consequences which may enhance performance on a variety of tasks. Most researchers in this field recognize that the possibility for real control is illusory but nevertheless a belief in its existence by the individual contributes to an enhanced feeling of well being and self regard.

Given the validity of these assumptions we sought to investigate: how the sense of control can be established and or lost; the degree to which individuals of various personality types, age, education, etc. are affected by control; and the degree to which control in one situation generalizes to other tasks over which no control is permitted.

To study the development of perceived control, we sought to determine how the opportunity to make choices may contribute to the perception of control. This relationship was examined by studying those conditions which reinforce the subject's belief that their choices were made freely and in the apparent absence of constraint.

#### Freedom of Choice and Control

Our research has shown that the act of choosing is not a sufficient condition for the development of perceived control. That is, choosing between alternatives which are quantitatively dissimilar does not enhance a person's sense of control. For example, if an individual is required to remember a set of verbal materials, the opportunity to choose between

words which differ in meaningfulness (e.g. a common word and a nonsense word) does not enhance the subject's performance relative to that of a subject who is assigned the identical materials. In fact, if the individual chooses to learn all of the common words (and, thus implicitly rejects all of the uncommon words) performance is poorer than it is for someone who was directly assigned the identical (common) words in the absence of choice. On the other hand, if choice was between pairs of common high meaningfulness words, the person who does the choosing learns significantly better than another individual who was assigned these identical words. Thus, choosing is not a sufficient condition for the development of perceived control. Rather, the choice must be performed freely and without constraint.

#### Control Over Others

Second, if it is correct to assume that individual's prefer situations over which some control is possible - it should follow that the possibility of exerting control over another person should also be motivating. An experiment was conducted to test this prediction. Subjects were required to memorize some materials over which they had no choice. However, immediately prior to performing this task they were enabled to choose materials for a non-present other person to learn. The opportunity to choose for another, significantly benefitted the learning of the chooser.

#### Hypothetical Choice

A related question examined the effect of hypothetical choice. In this case, immediately prior to performing a learning task, a subject

was asked to indicate which materials they would have selected had choice been permitted. Here too the opportunity for hypothetical choice benefited the learning of the chooser.

The results of these two experiments show that choosing is beneficial even when the individual making the choices is not the beneficiary of that which has been selected. Control over a non-existent other or hypothetical choice for self both serve to motivate the individual. The beneficial effects of hypothetical choice may be derived from the sense of control which comes from knowing that somebody is concerned about "my choices" even though I cannot profit from these directly. Analogously, a card, commonly found in hotel rooms, which asks patrons to rate the quality of service is likely to provide the individual with the sense of control -- knowing how and to whom to write, provides a sense of control whether or not this privilege is exercised.

#### Rejection as a Component of Choice

The next problem in this research project focused upon the sequences involved in the making of a choice. As indicated above, a choice between two options which differ markedly in similarity does not provide a free choice nor does it result in a sense of control. Further, a choice between two identical options (e.g. two identical mint condition coins) should likewise be ineffective. In examining the effects of option similarity, we recognized that the selected option may be less important than the option which is rejected. Illustrating this point symbolically, choosing A when the options are A and A' provides a free choice. On the other hand, choosing A when the options are comprised of A and X leads to

an ineffectual motivational outcome. These findings led us to conclude that where selection and choice are involved the more important aspect may not be that which is chosen but rather that which is rejected. In choosing between A vs. A' the subject evaluates both alternatives and rejects A' there by "choosing" A. Conversely, with dissimilar options the subject may, on an a priori basis, evaluate and eliminate X as an alternative and thereby "choose" A. In this latter case, the rejection process may be short circuited or only minimally exercised and the consequences of such a choice do not result in the sense of control. Thus, the process of rejection is likely to be the most important component contained in the operations which comprise a choice. A series of experiments were performed to test this idea. In these experiments some subjects were asked to overtly reject the option(s) which they did not desire while other subjects overtly chose the desired option. Overtly rejecting non-desired options should increase the salience of the rejection process thereby enhancing the sense of control especially where the (two) options are dissimilar. The results, although not significant, were in the predicted direction. That is, with two dissimilar options, rejection resulted in slightly better performance than did choosing. When the two options were similar, the consequences of, choice and rejection were indistinguishable. With three similar options, rejection was significantly more effective than was choosing in terms of the putative motivational consequences. Thus, these data support the idea that rejecting non desired alternatives may in some situations lead to a greater sense of perceived control than does selection of the desired alternative.

### Motivational Consequences of Choice

The next problem examined the idea that the opportunity to choose has directly measurable motivational consequences. It is known that if an individual is required to press a button as quickly as possible whenever a tone sounds the more motivated person will respond quicker than the less motivated person. That is, motivation energizes and facilitates a variety of behaviors including reaction time. In the present experiments, half of the subjects were permitted to make choices over the verbal materials to be learned. A second group, designated as the force group, was assigned the identical materials to be learned. In addition to learning the verbal materials both groups were required to press a button as quickly as possible whenever a tone sounded. The group which chose the materials to be learned on the verbal task responded to the tone significantly faster than did the force group. These data provide strong and unequivocal support for the hypothesis that choosing has motivational effects. More importantly, the results also show that the motivational effects of choosing on one task generalize to a second task over which no choice is permitted. The practical significance of these results to training and educational programs is yet to be realized.

### Individual Differences and the Effectiveness of Control

The next topic to be discussed is related to the question of individual difference factors as a moderater variable on the effects

of choice. Assuming that people do have a need for predictability and control over events which affect their lives it is however not reasonable to assume that all individuals will expend the same amount of effort for the satisfaction of this need. As is true for other kinds of psychological needs, these exist in different degrees for different individuals. Furthermore, common sense dictates that there are many situations where control is possible but individuals are prone to allow external factors to decide. Or people may delay making a choice in the hope that the situation will change, thus precluding the necessity for a decision. In this experiment subjects were assigned at random to either a condition where choice was permitted or where the verbal materials to be learned were simply assigned. Results showed that, as anticipated, the opportunity to exercise choice enhanced performance relative to the no-choice group. In a separate task, a series of reaction time trials were presented in which subjects pressed a key whenever a tone sounded. Basically, we subdivided these subjects into three subgroups based on the average speed of their reactions -- fast, medium, slow. Utilizing speed of reaction as a moderator variable we then reexamined performance on the verbal task. The experimental design consisted of six groups - fast, medium and slow reaction time subjects in the choice condition and fast, medium and slow reaction time subjects in the force condition. The results showed that the fast subjects in the choice condition performed very well on the verbal task while the fast subjects in the force condition performed very poorly. The medium

speed subjects tended to be indistinguishable with respect to their performance on the verbal task irrespective of their assignment to the choice or force conditions. Finally, examination of the slow reaction time subjects in the force condition revealed that they performed much better than the slow reaction time subjects in the choice condition. In these analyses the overall interaction of conditions was significant. The interpretation of these data is as follows: the subjects who responded quickly to the presentations of the tone may be considered to be more highly motivated than are the slow responders, admittedly a post hoc interpretation. Nevertheless, it seems intuitively reasonable to suggest that highly motivated individuals would benefit more from the opportunity for control than would those individuals who are less motivated. Conversely, providing a less motivated (slow responder) individual with an opportunity for control may be viewed as an additional burden and thus performance can be expected to decline. With respect to the force condition, a highly motivated individual should find such a situation less than optimal and the resulting performance will be poor. On the other hand, a lowly motivated individual should find a situation which is free of the requirement to choose a relatively compatible situation and thus performance may be enhanced. Results from other laboratories offer support for the idea that performance will be enhanced if the situational requirements are compatible with the general style or needs of the subject. In summary, from both a practical as well as a theoretical perspective, these data are important in showing that it is

possible to differentiate between individuals who value the opportunity to exercise control and thus to potentiate the contribution of this need to the enhancement of performance.

#### The Motivational Consequences of Environmental Control

The next investigation sought to determine whether control over the physical environment would enhance motivation in a similar manner to that which results from the opportunity to choose. Basically, some subjects were permitted to select verbal materials to be learned on a paired associate task similar to that used in previous studies. The materials to be learned were presented by means of video display. When the subjects in the control condition announced their selection of a particular item the screen immediately grew blank while for other subjects the materials remained on the screen for a fixed duration (10 sec.). In still a third condition the subjects were informed prior to the start of the task that when they announced their selections the screen would grow blank. As predicted, the decisions times were fastest in the condition where the screen grew blank following the announced choice - but only when the subjects were not previously informed of this contingency. Further, the subjects who were informed of the relation between the announced decisions and the blanking of the screen responded similarly to those who had no control. Presumably the unearned award of control attenuates its effectiveness. An individual who is arbitrarily given control may also have it removed. On the other hand, when control is established by means of the individual's own behavior this relationship may be viewed as more tenable.

Thus, these data demonstrate that environmental control does have a motivational effect on performance similar to that resulting from choice. In addition, these data suggest that for control to be effective it must be acquired by means of the individual's own behavior.

#### The Relinquishment of Choice

Although much of this sponsored research has advanced the understanding of the relation between perceived control, motivation, and performance, we have not succeeded in gaining answers to two other relevant questions. One of these relates to the relinquishment of control and the second to the possibility of conditioning the affective state which results from the establishment of perceived control.

With respect to the relinquishment of control, we performed a number of experiments in which subjects were required to learn a set of materials, however, they were also informed that they might reject the experimenter-selected material and substitute these with materials of their own choosing. We reasoned that the potential for choice would enhance the perception of control. Such was not the case. In fact, whether the subject learned the preselected materials (complete compliance) or learned a portion of the preselected materials along with their self selected items (partial compliance) performance was indistinguishable from that which resulted when no option for choice was permitted. The explanation for this result is somewhat puzzling and will require further study.

### Conditioning the Affective Consequences of Perceived Control

The second question related to the conditionability of the putative affective state which results from the sense of control. In these experiments, while choosing materials to be learned, subjects also received some background music. The purpose of this procedure was to determine whether the affective consequences of choice would become associated with the incidental background music. Following the choice procedure, subjects were required to learn some materials which they did not select. This was done in order to frustrate their sense of control. We reasoned that the music (the song of freedom) would moderate the frustration resulting from the abrogation of control. The results, although in the predicted direction failed to support this prediction statistically.

### Other Grant Related Activities

In addition to the research and theses (undergraduate honors as well as masters) supported by this grant - a major conference was held at Virginia Polytechnic Institute and State University in the Winter of 1978. This conference assembled the leading researchers from the U.S. and Canada whose work is in the area of choice and control. In addition to the psychologists (ranging from clinicians to educational psychologists) philosophers and political scientists were also present. The conference resulted in the publication of an edited book (Perlmutter & Monty, 1979) which has been quite well received by researchers in a variety of disciplines. And finally, based on this research, I was

invited by the Veterans Administration to establish a model clinical/ research program designed to evaluate and remediate memory problems in aging veterans employing some of the research findings which have evolved from the present grant.

#### Publications

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Fisher, D.F., Monty, R.A., & Perlmutter, L.C. Visual recognition memory for binary pictures: another look. Journal of Experimental Psychology: Human Learning and Memory, 1978, 4, 158-164.

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Perlmutter, L.C., Tenney, Y.J. & Smith, R.A. The evaluation and remediation of memory problems in the aged. V.A. Outpatient Clinic Technical Report, 80-02, September, 1980.

#### Publications: Chapters

Savage, R.E., Perlmutter, L.C., & Monty, R.A. Reductions in the amount of choice and the perception of control. In L.C. Perlmutter & R.A. Monty (Eds.), Choice and perceived control. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.

#### Publications: Book

Perlmutter, L.C. & Monty, R.A. (Eds.), Choice and perceived control. Hillsdale, N.J.: Lawrence Erlbaum Associates, 1979.

#### Papers Presented

Savage, R.E. & Perlmutter, L.C. Choice and control: perceptual determiners. Presented at Southeastern Psychological Association Meeting, March 1976.

Woods, L.N., Grant, R.C., & Perlmutter, L.C. Motivational consequences of choice and rejection on paired-associate learning. Presented at Southeastern Psychological Association Meeting, May, 1977.

Perlmutter, L.C. & Poon, L.W. The evaluation of an individual-difference predictor on paired-associate learning with the aged. Presented at New England Psychological Association Meeting, October, 1979.

Perlmutter, L.C. & Smith, P. The effects of choice and control on paired associate learning in the aged. Presented at New England Psychological Association Meeting, October, 1979.

Perlmutter, L.C. Implications of perceived control. Presented at Southern Society for Philosophy and Psychology Meeting, April, 1980.

Perlmutter, L.C. The effect of choice and context on memory. Presented at Symposium on Cognition in Human Motivation and Learning: Leuven, Belgium, July, 1980.

Perlmutter, L.C. Enhanced cognitive functioning through the perception of control. Presented at the Gerontological Society Meeting, San Diego, California, November 23, 1980.

#### Theses Directed

R. E. Cordes. *Intraserial repetition effects upon levels of cognitive processing*. M.S. 1977.

S. B. Lovett. *The effects of the relinquishment of choice and perception of control on paired-associate learning*. M.S. 1978.

M. Revesman. *The effects of choice and control on decision time and paired-associate learning*. M.S. 1979.

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