The self-choice effect as a function of the locus of choice

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Verbal materials chosen by participants are better remembered than those assigned to be learned. Two explanations for the effect have been offered. One explanation argues that the opportunity to choose enhances motivation, which in turn not only improves the learning of chosen materials but also generalizes to assigned materials. The process explanation, on the other hand, argues that choice strengthens item specific learning only. The purpose of this study is to evaluate the adequacy of these two explanations. Sixty four female college students were asked to remember one to-be-remembered (TBR) word from each pair words. In the choice condition, TBR words were chosen by the participants. In the force condition, TBR words were selected randomly by the experimenter. In a within participants design with two sets of materials, one group initially learned chosen materials followed by the learning of force or assigned materials. The other group received the opposite sequence. The beneficial effects of choice were limited to participant-chosen materials. These results are consistent with the process explanation for the self-choice effect.

Key words: self-choice effect, metamemory, motivation

The self-choice effect refers to the finding that verbal items chosen by the learner are remembered better than the identical set of verbal items assigned (forced) to be learned (Perlmuter, Monty, & Kimble, 1971). The effect has been demonstrated with paired-associate learning (Monty & Perlmuter, 1975; Monty, Geller, Savage, & Perlmuter, 1979; Perlmuter et al., 1971), free recall (Hirano & Ukita, in press Takahashi, 1991, 1992; Watanabe, 2001), and recognition (Monty, Perlmuter, Libon, & Bennet, 1982; Perlmuter & Monty, 1982; Takahashi, 1991; Watanabe, 2001). Two explanations for the self-choice effect have been offered.

One explanation implicates increased motivation generated by choosing. That is, the opportunity to choose is thought to satisfy the general need to exercise and perceive control (White, 1959). Thus, choice and control, in turn, enhance motivation. In a learning situation, the opportunity to choose some of the materials to be learned facilitates the acquisition of materials that are present in this context (Monty, Rosenberger, & Perlmuter, 1973). That is, when one group of individuals chose response words to be learned on a portion of paired associates task, assigned paired associates were also learned better relative to another group in which no choice had been offered. Thus, the beneficial effects of choice appear to generalize to the learning of assigned materials.

The other explanation for the benefits of choice derives from a metamemory focus (Takahashi, 1991, 1992). That is, based on idiosyncratic criteria, learners are presumed to choose easier-to-remember items. By comparison, when the to-be-remembered words are forced (assigned), idiosyncratic metamemory benefits are less likely to be realized. Thus, when available, metamemory processes may...
facilitate complex cognitions by enabling richer encoding relative to those developed when words are assigned or forced. Further, the metamemory or process explanation assumes that the act of choosing strengthens item-specific information (cf. Einstein & Hunt, 1980; Hunt & Einstein, 1981). In line with this idea, Jacoby, Craik, and Begg (1979) required participants to judge which one of two alternatives held the stronger associative relationship with a focus word. Decision difficulty was assumed to depend on the relative degree of association of the (two) words to the focus word. For example, when the focus word was “water”, the decision would be a difficult one if the alternatives were “lake” and “thirst”. In contrast, the decision would be relatively easy if the alternatives were “lake” and “chair”. Results showed that as decision difficulty increased, word retention was improved. Apparently, the requirement to decide which word to choose enhanced memory performance.

To differentiate between the motivational and metamemory explanations, a within participants design was used in which participants learned two sets of materials, one of which involved choice; the other force. Based on previous research (Monty et al., 1973) it was predicted that if the opportunity to choose preceded the requirement to learn assigned materials, performance on the second task would be beneficial by the immediately prior opportunity for choice. That is, the motivational benefits would be expected to generalize to the subsequently performed task. By comparison, the process explanation predicts that performance on the nonchosen task would be similar irrespective of whether it preceded or followed the choice task.

Method

Participants

Participants were 64 Japanese female college students enrolled in an educational psychology course at Kyoto Tachibana Women’s College who received course credit for participating in the experiment. Their ages ranged from 19 to 22. Half of the participants were randomly assigned to the choice-first group and the other half to the force-first group.

Design

The experimental design constituted a mixed $2 \times 2$ factorial ANOVA with Choice versus Force as a within-participant variable and the locus of choice in the sequence (choice-first versus force-first) as a between-participants variable.

Materials

A total of 40, five-letter Japanese common nouns (e.g., Festival, Hurry) were constructed from the norms of Fujita, Saito, and Takahashi (1991). These words were divided into two arbitrary sets of 10 word pairs, designated set A and B, with the restriction that no obviously strong relationship existed between any two word pairs in a set. For each list, a 20-page booklet was constructed, with one word pair printed on each page. Across participants, all words appeared in either the choice or force condition, and the serial position of word pairs in each condition was completely randomized.

Procedure

The participants were tested in one large group. They were instructed to remember one to-be-remembered (TBR) word from each word pair in the choice and force conditions. In the choice condition, participants circled the TBR word in each pair that they wished to learn. In the force condition, TBR words had been selected randomly by the experimenter, and participants retraced the previously circled word. In both tasks, participants were allowed 10 sec to examine each page. The choice-first group exercised choice on the first-ten words; the remainder of the words were forced. Similarly, in the force-first condition, participants found the first set of 10 words circled and they were to recircle them. Choice was permitted on the remainder of the words. Participants were instructed how to use the booklet and were informed that they were to proceed to the subsequent page every 10s when the experimenter said “next”. No information had been provided to this point, about the memory test to be administered.

During the test phase, participants were required, to write down as many TBR words as they could recall, irrespective of order. Three minutes were allowed to complete the recall test.
Table 1
Mean numbers of correctly recalled TBR-words and SDs for input conditions and locus of choice

<table>
<thead>
<tr>
<th>Locus of choice</th>
<th>Input condition</th>
<th>Force</th>
<th>Choice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choice-first</td>
<td>M</td>
<td>3.16</td>
<td>3.63</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>(1.54)</td>
<td>(1.67)</td>
</tr>
<tr>
<td>Force-first</td>
<td>M</td>
<td>3.25</td>
<td>4.50</td>
</tr>
<tr>
<td></td>
<td>SD</td>
<td>(1.60)</td>
<td>(1.44)</td>
</tr>
</tbody>
</table>

Results

Mean numbers of correctly recalled TBR words are presented in Table 1. All analyses were carried out on those numbers and were significant at the p=.05 level or better. For TBR words, a 2×2 mixed factorial ANOVA was conducted with (input condition: choice versus force) and (locus: first versus second) as main effects. The input condition was significant, $F(1,62)=10.11$, $MSE=2.34$, with more words recalled in the choice ($M=4.06$, $SD=1.63$) than in the force condition ($M=3.20$, $SD=1.59$). Neither locus, $F(1,62)=2.76$, $MSE=2.72$, nor the possible interaction with input condition, $F(1,62)=2.09$, $MSE=2.34$, reached significance.

Further, mean numbers of total errors (i.e., non-TBR words plus intrusions) were relatively rare and there was no significant differences between choice-first ($M=2.34$, $SD=1.34$) and force-first group ($M=1.88$, $SD=1.54$), $t(62)=1.30$.

Discussion

As predicted by both the motivational and process explanations, TBR words were generally better recalled in the choice than in the force condition. However, the absence of a significant interaction of Input Condition x Locus of Choice is contradictory to the motivational explanation (Monty et al., 1973). That is, performance in the force condition was similar irrespective of whether preceded or followed by choice. It will be recalled that Monty et al. (1973) reported that the opportunity to choose early in the task facilitated paired associate learning of assigned materials. Overall, the result along with previous research from our laboratory (Takahashi, 1991, 1992) provide a converging pattern of evidence supporting the conclusion that motivation is not the primary basis for the self-choice effect.

In reconciling the present findings with those reported by Monty et al. (1973), several procedural differences between studies should be recognized. First, Monty et al. provided five alternatives from which to choose. Perhaps the greater number of choices provided a stronger sense of choice than the two used in the present experiments. That is, the greater amount of choice more profoundly influenced motivation and thereby generalized to the learning of assigned materials. Second, a standard list learning paradigm was used in the present study, while Monty et al. (1973) used paired-associate learning in which individuals chose a response to be learned to a stimulus. The task measured associative learning, using cued recall.

Similar results to the self-choice effect have been reported in research with the generation effect (Slamecka & Graf, 1978). The generation effect refers to the retention advantage of materials that are self generated or partially prompted by the requirement to fill in a blank (e.g., r_ ver) relative to materials that are simply read (e.g., river). However, there is one remarkable difference in the explanation for the generation effect and for the self-choice effect. That is, the most convincing explanations of the generation effect thus far come from investigators who propose that the generation effect is attributable to multiple factors (Hirshman & Bjork, 1988; McDaniel, Riegler, & Waddill, 1990; McDaniel, Waddill, & Einstein, 1988). In contrast, the process explanation relies upon a single-factor explanation advanced by Begg, Snider, Foley, and Goddard (1989), which asserts that generation is a discriminative process that encodes items distinctively. If the process explanation is a complete account of the self-choice effect, the self-choice advantage should be eliminated, when forced items are processed in a discriminative way to the same extent. Future research should examine this possibility.

References

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