A free-association test of the differential unlearning hypothesis of pseudomediation¹

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Three predictions, generated from the Mandler and Earhard postulates of pseudomediation, were considered in a three stage PA transfer situation designed to facilitate a mediated-chaining effect. Predictions of superior control condition performance in the second stage, and superior experimental condition performance in the third stage were supported. Free-association data failed to support a prediction of differential unlearning of A-B associations during the second stage. The Earhard and Mandler evidence for differential unlearning is questioned in terms of relevance to experimental conditions used to show the pseudomediation effect.

Mandler & Earhard (1964) suggested that the mediation effect evident in a three stage PA transfer situation may be explained in terms of bi-directional association and unlearning phenomena without need to postulate mediated associations. They restrict their analysis to mediation studies with simple associative relations, suggesting that the analysis is not appropriate in situations where conceptual rules may be formed; e.g., meaningful material. In these excluded situations, they argue that mediation effects as opposed to "pseudomediation" effects become apparent in performance. This latter suggestion does not discount the possibility that interference and forgetting effects are still functioning in such situations, but are secondary to the mediated-chaining effect.

The purpose of the present experiment was to determine if interference effects could be detected in a situation clearly excluded from Mandler and Earhard's analysis of the pseudomediation effect. Specifically, three predictions were considered: (1) Stage II learning by the control pairs would be superior to that of the experimental pairs; (2) Stage III learning of the experimental pairs would be superior to that of the control pairs; and (3) Fewer B responses would be available to the Stage III stimuli of the experimental pairs than to the Stage III stimuli of the control pairs, as measured by a free-association task after the learning of Stage II.

Method

The Ss were 32 school children (mean CA=7.04 yr.; mean MA=7.22 yr.; mean IQ=101.66) divided into two groups matched for MA and CA. The Mediation Group (M) learned successively three lists of four paired associates. The Free-Association Group (FA) learned successively two lists, and then they gave free-association responses to the A stimuli of the third list. For both groups, each S served as his own control with two pairs of each list following the three-stage, A-B, B-C, A-C facilitation paradigm, and the other two pairs an

A-B, D-C, A-C control paradigm. Two forms (Form I and II) of the three lists were used to control for the possible differential difficulty of the different pairs of List II.

Stimuli consisted of black-and-white line-drawn pictures of common objects. The pictures were selected, randomly paired, and photographed from the first 10 plates of the Peabody Picture Vocabulary Test.

The paired associates were presented by the anticipation method using a Kodak Carousel projector, automatic interval timers, and a backward projection screen. A 6:5 rate with 3 sec. interpair interval was used. An interstage interval of 2 min. was given for all Ss. Standard paired-associate instructions were administered with Ss encouraged to verbalize correct responses when a wrong or no response was given during the anticipation period. All Ss learned the lists in all stages to a criterion of two consecutive correct trials except for List III for the FA Group. For List III, the FA Group was shown the A stimuli and instructed to "Guess what might go with this." Two free-association responses were elicited for each of the four A stimuli.

Results

Five dependent variables from the three learning stages were analyzed separately by appropriate analyses of variance: (1) number of trials to one correct trial (C1), (2) number of trials to two correct trials (C2), (3) number of trials to two successive correct trials (C2s), (4) number of correct anticipations during the first three trials (NC3), (5) number of correct anticipations during the first six trials (NC6).

The above analyses of Stage I data revealed no significant differences for the five dependent variables between pairs to be designated as experimental pairs and control pairs in Stage II. In Stage II, performance as measured by two (C2s & NC6) of the five dependent variables, differed significantly for the experimental and control pairs. This difference in performance was in the direction predicted by the Mandler and Earhard postulates. Control pairs at Stage II were learned significantly faster; by C2s measure ($F=6.70$, $df=1/28$, $p<.05$) by NC6 measure ($F=4.33$, $df=1/28$, $p<.05$).

Performance of Group M in Stage III is shown in Fig. 1 and indicates an initial superiority for experimental pairs during the first three trials. By the fourth trial, performance on control pairs has reached the level of experimental pairs. In subsequent trials, the performance of both pair-types improves at approximately the same rate. Thus, the initial three trials appear most sensitive to any differences in performance. The analy-

Fig. 1. Total number of correct responses over the first 12 trials of Stage 3 learning by Group M for the experimental (B-C) and control (D-C) condition pairs.

sis of variance of the number of correct responses over these first three trials (NC3) revealed superior performance for the experimental pairs ($F=7.34$, $df=1/14$, $p<.05$). None of the other four dependent measures differed significantly for the experimental and control pair performance.

The number of B responses (i.e., B associated with A in Stage I) elicited during the free-association task for Group FA at the end of Stage II were tabulated. An analysis of variance showed no significant difference between the number of B responses given to stimuli of Stage III of experimental and control pairs ($F=.22$, $df=1/14$). Any response (other than B) which was a member of other pairs learned during Stages I or II was considered an intrusion error. An analysis of variance of such errors indicated no significant difference in the number made to experimental and control stimuli ($F=.96$, $df=1/14$).

Discussion

Significant backward interference effects were evident in the experimental condition during the second stage. This evidence clearly supports the Mandler and Earhard prediction of superior second stage performance under the control condition.

The main finding does not support the differential unlearning assumption. If the A-B associations were weakened during the second stage, fewer B responses to A stimuli would be expected in a free-association task at the end of this stage when the experimental con-

dition is compared with the control condition. Results of the free-association task agree with those obtained by others using different measures. Wismer & Lipsitt (1964), in a study of verbal mediation in PA learning, analyzed Stage III, first trial responses, and reported no difference in the percentage of B responses given between the experimental and control conditions. Similarly, Jenkins & Foss (1965) found no difference using a recall task of first stage responses after second stage learning.

The Earhard & Mandler (1965) evidence for differential unlearning was obtained from a situation which differed in one crucial aspect from the conditions of those studies which reported a pseudomediation effect. In the latter studies, Ss learned lists in the first and second stages to a minimum criterion of two correct trials. In the Earhard and Mandler study, lists in both stages were learned only to a criterion of one correct trial. It may well be the case that the additional learning trials would remove the differential effect in the situations where the pseudomediation effect has been reported.

From this collective evidence, it may be concluded that the strength of A-B associations does not appear to be differentially weakened in situations beyond the boundaries specified by Mandler and Earhard. Since the same backward interference effect is observed in second stage learning as in the simple situation specified by Mandler and Earhard, one would expect the same unlearning effect to appear. By this argument, since the above evidence fails to support a differential unlearning postulate, it is suggested that this phenomenon does not occur in the simple situation defined by Mandler and Earhard.

References

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Notes

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