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order on each trial), then asked to recall them in any order. In PAL, half the Ss were permitted unlimited time to respond, and half were given 2 sec to respond on each pair. A study-test procedure was used in PAL.

RESULTS

Each experiment was designed to permit two orthogonal comparisons in PAL: effect of relevant (RP) vs irrelevant pretraining (IP) at 2-sec anticipation interval, and RP vs IP at unlimited time for response. Table 1 summarizes the data. In Experiment 1, at 2-sec anticipation rate during PAL, the RP condition made significantly fewer errors during PAL than the IP [$F(1,74) = 5.36$]. Under unlimited time for response, the RP vs IP difference shrank markedly and was no longer significant [$F(1,74) = 1.49$]. In Experiment 2, no significant effects were found at either time interval. For the 2-sec condition, $F(1,68) = 1.14$; for unlimited time for response, $F(1,68) = 1.00$.

CONCLUSIONS

When adjectives are used as R terms, the effects of prior R pretraining on subsequent PAL largely dissipate if Ss are permitted unlimited time for response during PAL. This is true if PAL involves forced availability or if Ss attempt unaided recall of the correct R term for each stimulus. Thus, the evidence is contrary to the Runquist and English hypothesis. The disappearance of R-pretraining effects on PAL, under conditions of forced availability and unlimited time for response, cannot readily be interpreted as support for a R-availability theory. Perhaps the task becomes so easy, under unlimited time for response, that differences between experimental conditions cannot be displayed. Or, perhaps increased time for response reduces the effect of intralist interference and so makes R pretraining unnecessary.

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NOTE

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Effect of R-pretraining on PAL with unlimited time for response¹

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Runquist & English (1964), using adjectives as R terms, found that the effects of R pretraining on PAL disappeared when PAL involved (1) unlimited time for response and (2) forced availability of the R terms during PAL. They attributed the disappearance of the R-pretraining effect to the use of the forced-availability technique and drew theoretical conclusions accordingly. The present two experiments indicate that, for the type of R terms used by Runquist and English, R-pretraining effects disappear under unlimited time for response even in the absence of forced availability.

Underwood, Runquist, & Schulz (1959) found that having Ss learn a set of adjectives in free recall facilitated subsequent paired-associates learning (PAL) involving these adjectives as the R terms. They interpreted the data as showing that the R pretraining increased R availability. Saltz (1961) interpreted the data as indicating that R pretraining increased R differentiation and tested this by use of a forced-availability technique, in which the R terms were present on cards during PAL for both pretrained and nonpretrained Ss. The Ss were forced to find the correct R on the card to be scored as correct in PAL. Facilitation of PAL occurred, as predicted by the R-differentiation theory, despite the forced availability for all Ss. However, Runquist & English (1964) argued that, in the Saltz (1961) study, Ss were permitted only 4 sec per response in PAL; facilitation could be due to more rapid scanning of the R cards by the pretrained Ss. They tested this by using the Saltz forced-availability technique during PAL, with adjectives as Rs and unlimited time to respond. Under

these conditions, pretraining no longer facilitated PAL. Saltz & Felton (1968) obtained the same results as did Runquist and English using adjectives as Rs, though PAL facilitation occurred when nonsense syllables were used as Rs.

None of these studies controlled for the possibility that, with adjectives as the R terms, R-pretraining effects disappear with unlimited time for response even in the absence of forced availability. The present study institutes such control conditions for the dissimilar PAL adjectives used by Saltz & Felton (1968).

Points of difference between the Saltz (1961) theory of response (R) differentiation and the Underwood, Runquist, & Schultz (1959) R-availability theory were tested in studies by Runquist & English (1964) and Saltz & Felton (1968). However, a crucial control group was omitted from both these studies. The present paper reports the results for this control condition.

METHOD

The Ss were 150 students in introductory psychology at Wayne State University, 78 in Experiment 1 and 72 in Experiment 2. Experiment 1 used 10 dissimilar adjectives as R terms; Experiment 2 used 5 dissimilar adjectives. These were taken from Saltz & Felton (1968), Experiments 1 and 2, respectively.

In each experiment, one group received relevant pretraining and one group received irrelevant, as in Saltz and Felton. Pretraining paralleled that of the other studies cited above: On each of five trials, Ss were shown the adjectives (in a different

Table 1
Mean Errors in PAL as a Function of Relevant Pretraining (RP) Versus Irrelevant Pretraining (IP) at 2-Sec and Unlimited Time for Response During PAL

	Experiment 1		Experiment 2	
	RP	IP	RP	IP
2-Sec	14.62	19.20	7.94	8.94
Unlimited	8.17	9.87	7.66	6.33