seems to be preferable to the labile and unreliable GSR.

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NOTES

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2. Jenkins, J. J. Personal communication, 1966.

Development and persistence of acquired meaning in retarded and normal children[1]

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Retarded and normal children were given a task that consisted of acquisition of a favorable impression to a fictitious person and an unfavorable impression to another fictitious person, the reversal of these impressions, and, finally, rating the two persons on a 5-point scale indicating how much S liked or disliked the two persons. Retardates were as good as MA-matched normals in trials to learn and reverse and as fast in their verbal response latencies. In their ratings, retardates did not show a preference for either the acquisition or the reversal experience, whereas the normals were influenced by the reversal experience. Persistence of meaning was hypothesized to follow an ontogenetic pattern of no differentiation through a preference for recency in preadolescents to a primacy preference in young adults.

Since meaning can be conditioned (Staats & Staats, 1958), it should be possible to reverse it. But what would be a S's net impression regarding a set of stimuli for which he develops a favorable connotation and then is made to reverse it through experimental manipulation? Would his first favorable impression persist, or would his more recent unfavorable impression persist? Logically, the impression should revert to neutral, since S should regard the stimuli as neither favorable nor unfavorable. However, in four separate experiments on college students, the acquisition meaning was found to persist (Das & Mitra, 1965; Das, 1969). That is, if Stimulus X is associated with "good" and Y with "bad" in the acquisition period, and then reversed in the reversal period, college students appear to retain their first impressions.

Das (1969) has given a mediational explanation for the primacy effect. It is assumed that, during reversal, S uses his acquisition experience as his frame of reference, and for reversal, switches his responses by using a mediating code such as "now the opposite." Frequent use of the code can strengthen the persistence of the acquisition effect. In fact, one of the four previous experiments tested this by employing a paradigm of multiple acquisition (A) and reversal (R): Ss were given 10 trials for each A or R period in sequences of ARAR, ARRA, or AARR. Persistence of acquired meaning was noticed under all three sequences.

A mediating code should be less efficiently used by children and, specially, by retarded children (Kendler, 1963). If so, the persistence of reversal rather than acquisition meaning will be found with children. The present study examines this by taking normal children from three chronological age groups and a retarded group that finds its chronological and mental age matches in the normal groups. The samples are also compared on proficiency in semantic conditioning and reversal.

SUBJECTS

Three groups of normal Ss and one of retardates were taken from the public schools of the city. The retardates were in special classes, had a mean IQ of 70.64 (±8.99), a mean MA of 84.25 (±12.77) months, and a mean CA of 119.5 (±12.15) months. They were compared with Grade 1 children on MA (80.79 ± 7.05) and Grade 5 children on CA (121.46 ± 6.76) for their task performance. An additional group of normals from Grade 3 was included to provide a continuum of variation in normal MA and CA. The means and SDs for this group were 107.14 ± 9.46 (MA) and 100.18 ± 3.99 (CA).

PROCEDURE

The Ss anticipated whether the word "good" or the word "bad" would follow when one of the two stimulus words, "Tes" or "Tig," was presented. Tes and Tig were two nonsense syllables of comparable association values taken from Underwood & Schulz (1960). But the Ss were told that these represented the names of two persons, and their task was to guess which one was good and which one was bad.

The syllables were presented on cards by a Hunter Card Master. Each of the 40 Tes and 40 Tig cards was exposed for 10 sec at intervals of 5 sec. With the help of a timer and voice key, each exposure started the timer, and S's anticipation of "good" or "bad" spoken into a microphone shut off the timer, permitting us to record response latency. The cards were arranged in the same random order for each S and could be presented in an endless cycle without interruption.

The task had three phases: acquisition, reversal, and rating the stimuli as likeable or otherwise. The acquisition phase continued until S had made 10 consecutively errorless guesses; then the reversal phase began without interruption. During this phase, E reinforced the previously wrong response as right, and the previously right as wrong, until the criterion of 10 consecutively correct responses was met. A maximum number of 40 trials was given for each phase. If S failed to reach the criterion, he was told which syllable preceded good and which one preceded bad. After instruction, he was given 20 trials to reach the criterion. If instruction occurred during acqusition, the reversal phase followed the 10 criterion trials as usual.

Three techniques were used in rating: (1) A five-step ladder representing the labels of a 5-point scale from "I like him very much" to "I do not like him at all." S was asked to pick up a Tes and a Tig card (Mr. Tes and Mr. Tig for the S) and place these on the steps of the ladder. (2) A sorting task in which five Tes and five Tig cards were set before the S in a random order, and S was asked to pick up all the cards that were good. (3) A modified sorting task during which S was successively presented the five Tes and five Tig cards in a random sequence and allowed to indicate if the card he was

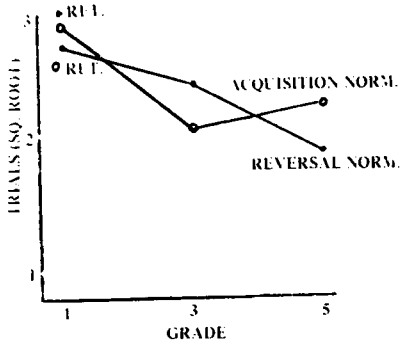

Fig. 1. Mean number of trials (transformed scores $\sqrt{X+1}$) for acquisition and reversal required by retardates and the three normal groups.

looking at named a good or a bad person.

RESULTS AND DISCUSSION

Each S had a trial and a latency score besides the scores on rating scales. Trials were simply the number of card presentations required before S met the criterion of 10 consecutively correct responses. Latencies were based on these 10 correct trials and were averaged for the "good" and "bad" syllables for each S. Thus, each S had one trial and two latency scores for the acquisition part and the same for the reversal part of the task.

Trials

A square-root transformation of the trial scores was undertaken, and an analysis of variance was performed on the transformed scores. It showed the main effect for the three normal groups to be significant [$F(2,78) = 5.08$, $p < .01$], implying that trials to criterion decreased from Grade 1 to Grade 5. But, as Fig. 1 shows, the decrement was more consistent for reversal than for acquisition trials.

The retardates were compared with their CA and MA controls in two separate analyses of variance. The only significant effect was obtained between retardates and CA-matched normals: $F(1,52) = 6.63$, $p < .025$. Thus, the retardates were slower in semantic conditioning than were CA-matched normals but were at least as good as MA-matched Grade 1 children. Figure 1 shows the relative positions of these groups.

Latencies

The overall latencies for reversal appeared to be longer than those for acquisition, and a decrease in latencies is observed from Grade 1 to Grade 5. An analysis of variance of the latencies for normal groups (3 groups by 2 orders by 2 good/bad by 2 acq/rev), with the last two factors repeated, confirmed these trends. Main effects for groups [$F(2,78) = 4.756$, $p < .025$] and acquisition/reversal [$F(1,78) = 13.649$, $p < .01$] were significant.

Comparison between retardates and their CA- and MA-matched controls were made in two analyses of variance. There was no difference in response latency between the retardates and CA controls, but the former appeared to be very slightly faster than their MA controls [$F(1,52) = 3.578$, $p < .10$].

Rating

Since the two sorting methods yielded the same results as those of ladder rating, only the latter will be discussed here. The ladder rating technique gave us mean positions for Tes and Tig on a 5-point scale for each group. These are presented in Table 1. "Good word" and "Bad word" indicate the reinforcement contingency during the acquisition phase of the task. Since the data have been combined for the two counterbalanced groups (order was not significant either as a main effect or in any of the interactions), both categories contain Tes and Tig. Scores closer to 5 indicate positive evaluation, and those closer to 1 indicate negative evaluation. If the acquisition experience guided S's rating, the good word will have a higher score than the bad word; its opposite will happen if the reversal experience is the dominant one. In Table 1, the bad word has a generally higher score than does the good. However, individual t tests between

Table 1
Means and SDs for the Groups on Rating for Likeableness

	Ladder Test			
	Good Word		Bad Word	
Groups	Mean	SD	Mean	SD
Retardates	2.96	1.67	3.57	1.52
Grade 1	2.39	1.82	3.96	1.48
Grade 3	2.61	1.38	4.07	1.33
Grade 5	2.75	1.27	3.86	1.13

the scale positions of good and bad words were performed in order to infer if the two ratings were significantly different. The results showed that the three t values for normals were significant below .01, but t for the retardates did not reach the 5% level of significance. Thus, we find no persistence of meaning in the retardates. But the persistence of reversal meaning in the normals reveals a recency effect. It may be inferred that persistence shows a developmental trend, starting from no differentiation, through a preference for recency to a primacy preference. Most probably, the change from recency to primacy will occur around age 15, when, according to Vygotsky (1962), speech and thought begin to overlap substantially, and concepts become comprehensive.

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NOTE

1. An extended report may be obtained from J. P. Das, Centre for the Study of Mental Retardation, University of Alberta, Edmonton, Canada.