

AUDITORY DISCRIMINATION LEARNING AND TRANSFER IN IMBECILES

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Studies of discrimination learning and transfer in imbeciles have been mainly restricted to visual perception and motortasks (Kaufman and Prehm, 1966), and research in the auditory area is rather scarce. Nevertheless this seems to be very important because auditory stimuli are frequently used in the education and training of the mentally retarded.

The aim of this investigation was to determine whether the most salient conclusions of the discrimination and transfer studies could also be found in an experiment using an auditory perception task.

These conclusions—very briefly stated—are:

The deficit in discrimination learning in retardates is caused by a failure to attend to the relevant stimulus dimension (Zeaman and House, 1963).

Discrimination learning in retardates stays for a number of trials on a chance performance level, whereafter improvement occurs relatively fast. (Zeaman and House, 1963).

Transfer in retardate discrimination learning is rather impressive and caused by the creation of "learning set" and increased conceptual and perceptual abilities (Clarke and Clarke, 1965).

Design of Experiment:

Twenty subjects were matched in two groups of 10 Ss each on the basis of a one trial performance on the transfer task T_2 . The arbitrarily chosen experimental group (E) received 23 successive trials on the learning task T_1 , one trial a day, followed by a number of daily trials on T_2 . T_1 was not given to the other group (control). This group received for 23 days comparable social stimulation and a substitution task in the experimental room. After this, T_2 was also administered for the same number of trials.

Tasks

Task 1 involved the correct recognition of music produced by the following 5 instruments: mouth-organ, flute, street-organ, xylophone and tambourine. The music was presented on a tape in such a way that in every trial the music of each instrument could be heard 5 times for 5 seconds per trial. Intervals of 10 seconds were placed between the periods of music. The sequence was at random. To prevent rote learning 5 tapes of different combinations were used.

Task 2 was similar to Task 1, but different instruments were used; piano, drums, trumpet, accordion and guitar. The substitution task was listening to popular music.

Subjects

The twenty subjects in this experiment were severely retarded adolescents. It appeared that four subjects in the experimental group and five subjects in the control group did not make any noticeable progress after 23 trials. Their scores are omitted in this study. The MA (Terman) and CA levels of the subjects are given in Table I.

TABLE I
M.A. and C.A. levels of the subjects

Total group				Learners			
	Mean		Range		Mean		Range
<i>Exp.</i>	M.A.	48,6 m	39-55	<i>Exp.</i>	M.A.	50,2 m	42-55
N=10	C.A.	22,6 yrs.	17-27	N= 6	C.A.	20,4 yrs.	17-27
<i>Contr.</i>	M.A.	47,4 m	39-54	<i>Contr.</i>	M.A.	49,8 m	40-54
N=10	C.A.	21,2 yrs.	16-26	N= 5	C.A.	20,8 yrs.	16-26

Procedure

The subjects were seated in front of a panel holding 5 cards with clear pictures of the instruments. Above each card a red lightbulb was fixed and beneath it a push-button.

The instruction consisted of naming and indicating the various instruments by saying "Here you see pictures of five musical instruments. Soon you will hear the music of those instruments. If you hear the music you must push the button beneath the picture of the instrument you have heard. If you push the right button, then that little bulb will light up."

This instruction was repeated several times and explained in different terms of similar meaning. When a correct choice was made, the lightbulb went on and the experimenter said "very good" and the sequence was continued. When the opposite occurred, no light was seen, the tape replayed the same music and the hand of the subject was taken and put on the button, and the sequence was continued. To avoid position learning the pictures were randomly changed after each trial. The music was presented by earphones. The score was the number of correct choices.

Results

Figure I shows the group-learning curves of both groups. The same results are presented in a different way in Figure II, where backward curves (Hayes, 1953) have been drawn. The difference between the scores of the E group on T_1 and T_2 are highly significant, and also between the scores of both groups on T_2 . The difference between the scores of the E group on T_1 and the scores of the C group on T_2 are well below significance (Mann-Whitney U test, one tailed, respectively $U=0$, $p<.001$, $U=5$, $p<.02$ and $U=11$, $p<.42$).

The score of the groups on T_2 are only given for 5 trials, because the E group reached very soon the criterion. As may be noted this group did not attain exactly to the same high level on T_2 as on T_1 . It appeared that it was hard to discriminate between guitar and piano music, not only for the subjects but for a respectable number of "normal" nurses too.

Discussion

The findings confirm the above mentioned conclusions and provide evidence that results found in visual discrimination studies may be generalized to the auditory field.

It is interesting to report that 4 subjects came from a ward where a piano was frequently played. None the less it took 12-15 trials before they recognized the piano music. Obviously they had not picked up the sound of the piano among the many other auditory stimuli on the ward. This strongly suggests that stimulus reduction and opportunity to acquire clear S-R connections seem to be of important educative value.

FIGURE I
Group learning curves of the experimental group and the control group

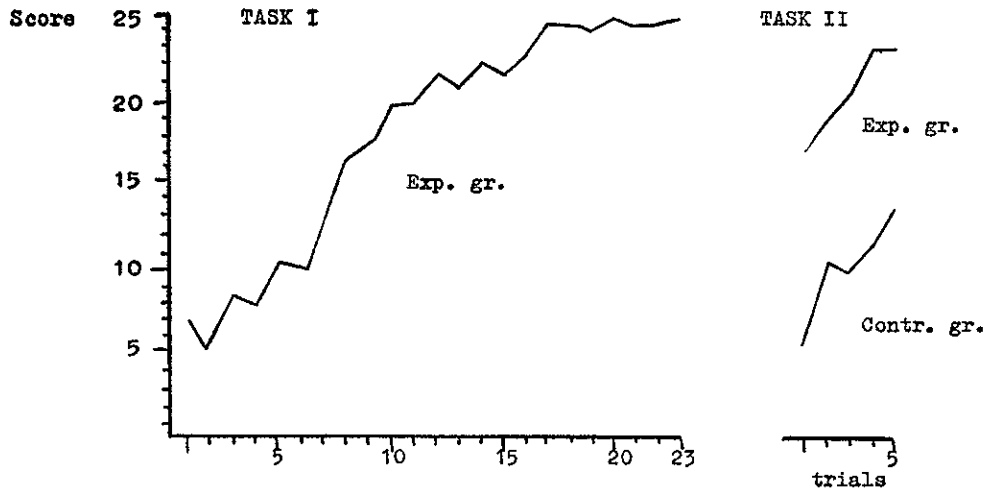
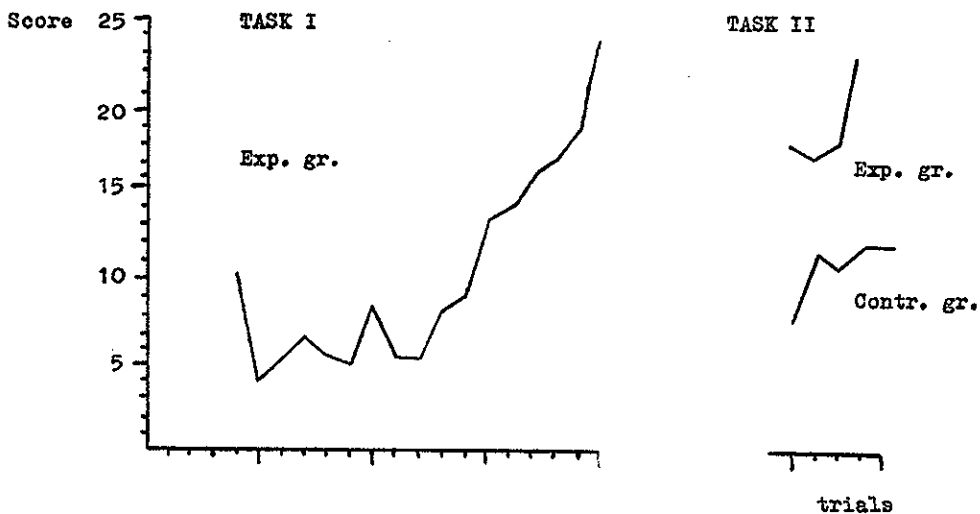


FIGURE II
Backward learning curves of the experimental group and the control group



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