DOCUMENT RESUME

ED 066 213 24 PS 005 776

AUTHOR	Hale, Gordon A.; Taweel, Suzanne S.
TITLE	Children's Component Selection with Varying Degrees of Training.
INSTITUTION	Educational Testing Service, Princeton, N.J.
REPORT NO	RB-72-21
BUREAU NO	BR-9-0443
PUB DATE	May 72
GRANT	OEG-2-9-400443-1060(010)
NOTE	24p.
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Attention; *Discrimination Learning; *Grade 3; *Grade 7; Measurement Instruments; Models; *Preschool Children; Training; Visual Perception; *Visual Stimuli

ABSTRACT

A component selection measure developed by Hale and Morgan (1971) was used to determine children's tendency to exercise selective attention. This tendency was assessed at six different levels of training, ranging from undertraining to overtraining, and was examined at each of three ages--4 (N=116), 8 (N=216), and 12 (N=104). In the learning phase, subjects learned the spatial position of each of several stimuli differing in shape and color; the posttest phase determined the degree of importance each subject gave to the two stimulus components during learning. The results indicated that as the subjects learned the task, they maintained a relatively wide focus of attention, acquiring information about both components. This finding is contrary to the James and Greeno (1967) model which indicated that children's attention did not become more selective as learning proceeded to criterion, and, also contrary to the model, overtraining did not generally tend to "broaden" attention as the subjects acquired little stimulus information beyond the point at which criterion had been reached. (For related document, see ED 058 603) (Author/JS)

RESEARCH BULLETIN

PA-24
BR-9-0443

RB-72-21

CHILDREN'S COMPONENT SELECTION WITH VARYING DEGREES OF TRAINING

Gordon A. Hale

and

Suzanne S. Taweel

Educational Testing Service

Princeton, New Jersey

May 1972

CHILDREN'S COMPONENT SELECTION WITH VARYING DEGREES OF TRAINING

Gordon A. Hale and Suzanne S. Taweel

Educational Testing Service

Abstract

With the component selection measure developed by Hale and Morgan (1971), children's tendency to exercise selective attention was assessed at six different levels of training, ranging from under-training to overtraining, and this function was examined at each of ages 4, 8, and 12. It was observed that, as the children learned the task, they maintained a relatively wide focus of attention, acquiring information about a secondary component of the stimuli, color, as well as the more salient dimension, shape. Thus, contrary to the model presented by James and Greeno (1967), the children's attention did not appear to become more selective as learning proceeded to criterion. Also contrary to the model, overtraining did not generally tend to "broaden" attention, as the children acquired little stimulus information beyond the point at which criterion had been reached.

CHILDREN'S COMPONENT SELECTION WITH VARYING DEGREES OF TRAINING[1]

Gordon A. Hale and Suzanne S. Taweel

Educational Testing Service

A recent study by Hale and Morgan (1971) has pointed to developmental changes in children's tendency to exercise component selection--i.e., the disposition to attend selectively to a single component of stimuli in a learning task. The developmental comparisons in that study were based on a single measure indicating the degree of component selection manifested by subjects through the entire course of learning. It has been suggested, however, that a subject's disposition to attend selectively may actually vary during the course of learning, and thus an even more useful basis for developmental comparison would be the degree of component selection exhibited at various stages of learning. James and Greeno (1967), for example, have posited that a subject will attend to several stimulus components in the early phases of learning, then begin to attend more selectively as learning progresses toward criterion, and finally relax the selective mechanism and "attend more broadly" with overtraining. The authors present data which tentatively support this position for adults, but it remains to be determined whether such a pattern is characteristic of children, and whether there are developmental changes in the manner in which children deploy attention throughout learning. For this purpose, the present study assessed component selection at six different levels of learning, ranging from undertraining to overtraining, and the pattern of results was examined in children at each of ages 4, 8, and 12.

Method

Subjects

The main study included a total sample of 116 children at age 4, 216 at age 8, and 104 at age 12 (mean ages = 4.6, 8.8, and 12.9 years, respectively). The two oldest groups were drawn from third- and seventh-grade classes in a middle-class area of Somerset County, N.J., while the youngest group was drawn from six nursery schools in the same general vicinity. An "overlapping-age-levels" design was used (see Hale & Morgan, 1971), such that 4- and 8-year-olds were compared on a task of one level of difficulty, while a slightly more difficult task was used in the comparison of 8- and 12-year-olds; different but equivalent subsets of 8-year-olds were used in the two comparisons. A replication of selected subgroups from the main study included 66 children at age 12, drawn from seventh-grade classes in a middle-class area of Bucks County, Pa. (mean age = 12.8 years).

Materials

The primary stimuli were colored shapes approximately 7-1/2 cm. square on black cards, 9 cm. wide x 13 cm. high. The shapes were cross, square, star, triangle, circle, and heart (for the five-stimulus task, each of the last two shapes was excluded for half the subjects); the colors were blue, green, orange, pink, yellow, and brown (the color brown was excluded in the five-stimulus problem). Also used in the task were white shapes on black cards, and colored cards. The task was administered with the use of a Plexiglas screen (11 cm. high and 67 cm. long) against which the cards were rested.

Component Selection Task

General format. The basic format of the component selection measure can be outlined briefly. The task was comprised of two parts, a learning phase and a posttest. The initial phase required the subject to learn the spatial position associated with each of several stimuli that differed on two components, shape and color. These components were redundant, in that a given shape was the same color throughout the task, so that a child was essentially free to discriminate among the stimuli on the basis of (a) shape, (b) color, or (c) both components in combination. The posttest then determined the degree to which the subject had attended to each of the two stimulus components during learning, by assessing his recall for the position that had been associated with each shape and color separately.

Learning phase. The subject was seated at a table across from the experimenter with the Plexiglas screen before him. Five (or six) "display cards" were rested against the screen in a row, each card containing a different colored shape, and the subject could see only the backs of the cards through the screen. These display cards were then turned and the entire row was exposed for five seconds, as the subject was told to remember where each card was located. The cards were then turned back around, and "cue cards" identical to the display stimuli were presented one by one above the center of the screen; for each of these cues, the subject was required to point to the card against the screen that was just like that being shown. After the subject had made his choice each time, the correct display card was turned and shown briefly above its place on the screen to indicate the correct position. The cues were arranged by trials, a trial containing each of the five (six) stimuli, with a different random order of stimuli in each successive trial. The task continued through as many trials as were necessary to meet one of the criteria defined below under "Levels of training," followed by administration of the posttest.

Posttest. For this phase the display cards remained in place against the screen, facing away from the subject, and no feedback was given regarding the correct answers. Several test stimuli were presented, one by one, each of which contained a colored card or a white shape on a black card; for each test stimulus the subject was required to point to the display card that contained a shape or a color like that being shown. Every shape and color was presented, and these two components were systematically intermixed across test trials. For each subject, the number of correct responses was determined for each component separately, yielding a "shape score" and a "color score."

These two scores form the basis for inferring component selection, according to a rationale that can be summarized as follows. It is assumed that the amount of information retained about each of the two stimulus components separately reflects the degree to which attention has been directed to each of these components during learning. Thus, if a subject performs perfectly on the test trials for one component but at a chance level for the other, he has presumably exercised component selection in learning the task--that is, attended selectively to the first component. However, to the extent that his test scores indicate recall for information about both dimensions, his attention has been less selective, as he has apparently attended to both components in discriminating among the stimuli.

Experimental Design

Because of the overlapping-age-levels design, the study consisted of four "subsamples": 4- and 8-year-olds given the five-stimulus problem, and 8- and 12-year-olds given the six-stimulus problem. Each subsample was divided into six training groups, given different levels of training on the component selection measure, as well as two groups given the "Shape Task" and "Color Task" to be described.

Levels of training. Subjects in each "subsample" were randomly assigned to one of six training groups, with a final sample of 12 in each group (after exclusion of subjects for failure to reach the appropriate criterion). The first four groups differed in the stringency of the criterion to be reached before the learning phase was terminated and the posttest begun; these criteria were chosen to represent clearly differentiated levels of learning, according to data from earlier research. For the Undertraining 1 group, a trial with three or fewer errors was required for termination of the learning phase (for both the five- and six-stimulus tasks), while for Undertraining 2, a trial with one error or less was needed. For Criterion 1, subjects were required to attain one errorless trial, while subjects in Criterion 2 had to achieve one perfect trial followed by two trials containing no more than one error. Subjects in Overtraining 1 and Overtraining 2 were trained to the latter criterion, followed by three and six additional trials, respectively, prior to receiving the test phase.

Each of the six training groups contained an equal representation of (a) the two sexes, (b) two stimulus sets, differing in the color associated with each shape, (c) two arrays of display cards, (d) two orders in which the cue cards were presented, and (e) two orders in which the test stimuli were presented (in each test).

Shape and color learning tasks. To determine the relative difficulty of shape and color as independent learning cues, two additional groups were included within each of the four "subsamples" defined above, each containing 16 subjects (10 boys and 6 girls). For one of these groups, Shape Task, the stimuli consisted of white shapes on a black background, while for the Color Task the stimuli were colored cards. The subjects in these groups performed a task analogous to the learning phase of the component selection measure, in that they were required to learn spatial positions associated with the shapes or with the colors. The criterion of learning in each case was the same as that described for the Criterion 2 group.

Results and Discussion

Initial Considerations

Relative salience of shape and color. The number of correct responses on the shape and color trials of the posttest was determined for subjects in each of the six training groups. The shape component proved to be generally more salient than color, in that the shape score was equal to, or higher than, the color score for 91% of the subjects. Thus it appears that children in all training groups directed their attention to the shapes of these materials, and color was a "secondary" component, in a sense. The mean shape and color scores for each training group are plotted in Figure 1, and differences in these scores across groups will be discussed below under "Effects of Training on Component Selection."

Insert Figures 1a and 1b about here

Richardson (1971) has pointed out that the relative salience of two components, as reflected in a measure such as that used here, can be largely a function of the relative difficulty of the two components as cues for learning. The shape and color learning tasks were included in the study to test this possibility, and the learning data for these groups are presented in Table 1. Analyses of variance on these trials-to-criterion scores were performed separately for the five- and six-stimulus

Insert Table 1 about here

problems, with Age and Tasks (Shape vs. Color) as the two independent variables. These analyses yielded no significant main effect of either variable nor any interactions, and only for the four-year-olds, in fact, did the scores suggest the expected superiority of shape over color. Although the simple effect of Tasks at age four was not significant, the difference at this age level appears great enough to warrant further investigation, and a study is currently in progress to establish the reliability of this effect. In general, however, the relative difficulty of shape and color as learning cues apparently cannot be regarded as the major factor underlying the subjects' greater attention to shape on the component selection measure.

Learning data for training groups. The average number of trials received by each training group is listed at the bottom of Figure 1 to indicate the overall amount of exposure to the stimuli given to subjects in each group (the mean numbers of trials prior to beginning a criterion run in each case are listed in parentheses). Inspection of these scores indicates that all successive pairs of training groups differed by at least one trial except the two undertraining groups, which in some cases received nearly identical amounts of training. Thus, only the levels from Undertraining 2 to Overtraining 2 apparently represent clearly differentiated amounts of training for subjects at all age levels, and discussion of the component selection data will focus primarily on changes occurring through these five training levels.

It was critical in this study to employ tasks that were reasonably difficult, in order that different stages of learning could be identified; however, this necessitated that some subjects fail to reach the criterion appropriate for their group and additional subjects be tested in order to arrive at a final sample of 12 children per group. The number of "nonlearners" for the six training levels, in order beginning with Undertraining 1, were: for the 4-year-olds, 0, 0, 1, 5, 5, 1; for the 8-year-olds given the five-stimulus task, 0, 0, 0, 0, 0, and 1; for the 8-year-olds given the six-stimulus task, 0, 0, 1, 1, 2, and 3; and for the 12-year-olds, none. While these figures are generally reasonable for most subgroups, the numbers for the 4-year-olds were greater than expected from the data of earlier experiments. Therefore, some degree of sample selection may have been involved in the comparison between undertraining and criterion groups at age 4, in that the children in the latter groups may have been better learners on the average, and analyses to be presented will attempt to piece out the influence of this factor. Examination of the effects of overtraining for these young children, however, and comparisons involving other age groups do not appear to be affected by gross sample restriction.

Effects of Training on Component Selection

Initial level of shape and color scores. While the data presented in Figure 1 are complex, some conclusions bearing on the effects of training may be derived by examining three general aspects of these data: the magnitude of the component scores at undertraining, changes in the scores from undertraining to strong criterion, and changes in the scores with overtraining. Regarding the first aspect, it will be noted that, at all ages, the mean shape score was higher than that for color even at the initial level of undertraining. Thus, the expected greater attention to shape than color was observed at the earliest stage of learning, as well as at criterion level and beyond. Apparently, the disposition to attend selectively (to the more salient of two components) is operating at the outset of learning.

<u>Changes prior to reaching criterion</u>. Of even greater importance for the present study, however, is variation in the component scores across levels of learning. The first changes of interest are those occurring as subjects are approaching the point of mastery of the task, during which time attention is hypothesized to become most selective, according to the James and Greeno (1967) analysis discussed above. While it is impossible to identify the precise juncture at which a learning problem has been mastered, the strong criterion of the present study (Criterion 2) represents a point at which it could be said with relative certainty that the task has been learned. (Evidence supporting this statement derives from the first three postcriterion trials for subjects in Overtraining 1 and Overtraining 2; all subsamples averaged less than one error during this period, the mean error scores ranging from .42 to .79.) Also, Undertraining 2 is felt to represent the point at which subjects have begun to approach mastery of the task. The present analysis therefore concentrates upon changes in the component scores occurring between Undertraining 2 and Criterion 2, the period during which subjects presumably approach and reach a hypothetical "point of mastery."

The most notable result in this regard (as seen in Figure 1) is that the color scores increased markedly during this period, a pattern that appears to be true of children at all age levels. (The shape scores increased as well, although more gradually, having reached a relatively high level for most subgroups at Undertraining 2.) These results tend to contradict the hypothesis that attention should be most selective during the period in which a subject is mastering the task. If such a hypothesis were correct, scores for the "secondary" component, color, should have remained relatively constant or increased only gradually during this period. However, the marked increase in color scores suggests that the subjects continued to attend to this component as well as to the primary component, shape, during this learning stage.

The reliability of these effects is indicated in analyses of variance performed on the component data. Two sets of analyses were conducted in this experiment; the first of these involved the three training levels from Undertraining 2 to Criterion 2, and the results of these analyses will be presented in this section. The other set involved the three levels from Criterion 2 to Overtraining 2, and the results of these analyses will be considered below under "Effects of Overtraining." It was deemed most useful to separate the data into two units in this fashion, since the two major foci of the study involved children's use of selective attention (a) during learning, and (b) after reaching criterion.

Analyses involving the color scores are the most pertinent to the hypotheses of the experiment and will be considered initially. Separate analyses were performed for the five- and six-stimulus tasks, and the independent variables in each case were Age and Training Level, the latter variable consisting of the three levels from Undertraining 2 to Criterion 2. The most critical result was a significant main effect of Training Level for both the five-stimulus task ($F(2,66) = 10.77$, $p < .001$) and the six-stimulus task ($F(2,66) = 4.05$, $p < .05$), corroborating the view that subjects attend to color and acquire a considerable amount of information about this component during the premastery stage of learning. The only other effect that proved significant in the analysis of color scores was a main effect of Age for the five-choice problem ($F(1,66) = 9.43$, $p < .01$); the 8-year-olds received generally higher color scores than the 4-year-olds, consistent with the results of Hale and Morgan (1971). Similar analyses performed for the shape scores indicated a main effect of Age for the five-stimulus problem ($F(1,66) = 5.38$, $p < .05$), and a main effect of Training Level for the six-choice task ($F(2,66) = 5.22$, $p < .01$). Thus, recall for the position associated with each shape was greater for the 8- than the 4-year-olds, and (for the six-choice task) greater at Criterion 2 than at Undertraining 2.

In the case of the 4-year-olds, interpretation of the present results must take into account the possibility of sample restriction for the Criterion 2 group. That is, in an effort to secure 12 subjects for the final sample in this group, 5 (of 17) subjects had to be excluded for failure to reach this criterion. Since no subjects were excluded in the Undertraining 2 group, and only one subject in Criterion 1, it is possible that the final 12 subjects in the Criterion 2 group were better learners on the average than those in either Undertraining 2 or Criterion 1. As a means of controlling for the effects of sample restriction, the summary data for these last two groups (at age 4) were recomputed, excluding the four subjects in each case who required the greatest number of trials to reach the appropriate criterion. With the slower learners thus excluded, the reconstituted Undertraining 2 and Criterion 1 groups might be regarded as more comparable in general learning ability to the Criterion 2 group. The resultant mean shape and color scores were 63% and 23% for Undertraining 2 and 70% and 33% for Criterion 1; in contrast with the 88% and 77% scores for Criterion 2, these data again indicate a marked increase across training levels in amount of color (as well as shape) information acquired. The general conclusion remains, then, for these young children as well as the older subjects, that attention does not become more selective as learning proceeds to criterion but continues to be directed to secondary stimulus information such as color as well as toward a primary component such as shape.

Effects of overtraining. James and Greeno (1967) had also proposed that a subject should attend less selectively during a period of overtraining than during earlier stages in learning. That is, subjects should attend to a wide variety of stimulus features during post-criterion training and presumably should acquire an increasingly greater amount of information about stimulus components other than those which had served as the primary focus of attention in learning. Examination of the data beyond Criterion 2 in the present study, however, suggests that such a notion may not be valid for children of middle childhood and below. The 4- and 8-year-old subjects showed little additional acquisition of information about the secondary color component beyond this strong criterion; although some fluctuations occurred in the color scores, in general these scores were no higher at Overtraining 2 than at Criterion 2. This result is particularly noteworthy in that the scores remained markedly below the ceiling level of perfect performance, indicating that a reasonable amount of color information remained to be learned.

Analyses of variance were performed on the data for the three training levels from Criterion 2 to Overtraining 2. As before, the most important analyses were those involving the color scores, and separate analyses were performed for the five- and six-stimulus tasks, with Age and Training Level as factors in each case. The main effect of Age was found to be significant for the five-choice task ($F(1,66) = 6.49$, $p < .05$), which again corroborates Hale and Morgan's (1971) observation that 4- and 8-year-old children differ in general tendency to exercise component selection. However, neither the effect of Training Level nor the interaction between Age and Training Level reached significance in either analysis; thus overtraining failed to produce continued acquisition of color information, and this effect did not differ markedly across ages. There was, nevertheless, a tendency for overtraining to increase the color scores at age 12, and thus the effects of overtraining were further assessed at this age level in a partial replication to be discussed below.

For the shape scores, analyses of variance involving the training levels from Criterion 2 to Overtraining 2 yielded an interesting result. For the six-stimulus task, a significant main effect of Age was observed ($F(1,66) = 15.13$, $p < .001$), indicating that the 8-year-olds reached a lower asymptote in their shape scores than did the 12-year-olds (all other effects in these analyses proved nonsignificant). The lower asymptote for the 8-year-olds possibly reflects an incompleteness in these children's attention to shape, even though this component was consistently the primary target of attention, in comparison with the color component. It is also possible, however, that the younger subjects were simply affected by conditions associated with the posttest (e.g., the lack of feedback, possible anxiety over a test) such that they exhibited less recall for information about the shape component than they may have actually acquired. Research in preparation will attempt to identify the influence of this last factor.

Replication of criterion-overtraining comparison at age 12. Despite the nonsignificant interaction between Age and Training Level in the data presented above, there was nevertheless a tendency for overtraining to produce an increase in color scores at age 12. To determine the reliability of this effect, 66 additional subjects at age 12 were assigned to either Criterion 2 or Overtraining 2 to yield a new sample of 32 subjects in each group (two subjects failed to reach criterion on the learning phase). The six-stimulus problem was used here as before, and the groups were balanced for sex and all other factors listed under "Experimental Design." The resultant shape and color scores, respectively (expressed as percentages correct), were 91.1 and 75.0 for Criterion 2 and 96.4 and 81.8 for Overtraining 2; the difference between training groups proved to be nonsignificant for both the shape and color scores ($t(62) = 1.60$ and 1.08, respectively). Given the failure to find an effect of overtraining with this large sample, then, it is necessary to conclude thaι training beyond criterion produces little additional stimulus learning for children of age 12 as well as for younger children.

Interpretation of overtraining data. In accounting for the failure of overtraining to increase the color scores, it is necessary first to consider a possible artifactual interpretation that might be offered--namely, that the apparent limit reached by the color scores represents an asymptote in the degree to which color can serve as an effective cue. Although such a statement may seem plausible, other data from the study appear to rule it out as an explanation of the present results. First of all, a simple match-to-sample test administered to each subject following the component selection task indicated that all subjects could correctly identify all colors. That is, when a number of cards containing the colors of the experiment were placed on the table and the child was shown, one by one, cards corresponding to those on the table, all subjects correctly matched each card with its correspondent. It might also be argued that the data could have been affected by the presence of color-blind subjects in the sample. The possibility of excluding color-blind children from the study was considered but rejected; since procedures do not exist that are equally adequate for identifying color-blind children at age 4 as well as at ages 8 and 12, exclusion of these subjects in the older age groups would have invalidated the developmental comparisons. However, data from the matching test described above indicate that any color-blind children who may have been contained in the sample could apparently discriminate among these colors; thus color-blindness cannot have been a major factor contributing to the observed limit in the color scores.

It appears reasonable, therefore, to interpret the data as indicating a failure of overtraining to "broaden" attention. Training past criterion apparently does not cause children of these ages to expand their focus of attention beyond the stimulus information that is functional in learning the task. Rather, extended training for these subjects may simply produce a continued demonstration of whatever knowledge was acquired during learning, with little further acquisition of information about the stimuli.

Conclusions

James and Greeno (1967) hypothesized that subjects would attend to a variety of stimulus features at the outset of learning, then attend more selectively as learning proceeded to criterion and finally begin to attend more "broadly" again with overtraining. The present evidence failed to support this hypothesis, however. The children apparently did not become more selective as they learned the task but maintained attention to several features of the stimuli, as indicated by their continued acquisition of "secondary" (color) information. Also, overtraining did not have the expected effect of "broadening" attention, as these subjects showed little stimulus learning after they had reached criterion. The James and Greeno model thus appears inapplicable for children of the ages included in this study. The possibility remains, of course, that this model may be appropriate for more mature subjects, since it was originally formulated in connection with data from adults. Such a view would be purely speculative at this point, however, and would need to be tested by direct comparison of adults' and children's performance on the same measure. For the present, it must be concluded that the

James and Greeno hypothesis does not accurately describe the manner in which children deploy attention in learning, and there is little indication that the accuracy of the model increases developmentally during the years prior to adolescence.

References

Hale, G. A., & Morgan, J. S. Component selection in four-, eight- and twelve-year-old children. Research Bulletin 71-3. Princeton, N.J.: Educational Testing Service, 1971.

James, C. T., & Greeno, J. G. Stimulus selection at different stages of paired-associate learning. Journal of Experimental Psychology, 1967, 74, 75-83.

Richardson, J. Cue effectiveness and abstraction in paired-associate learning. Psychological Bulletin, 1971, 75, 73-91.

Footnote

[1]This research was supported in part by grant No. OEG-2-9-400443-1060(010) from the U.S. Office of Education. The authors are indebted to the Hillsborough school system in Somerset County, N.J. for their generous cooperation in this research. Thanks are also extended to the Klinger Junior High School in Southampton, Pa. and to the following nursery schools: Baab's Sunny Acres, Five Oaks, Jewish Community Center, Somerset County Day Care Center, and Temple Beth El (all in Somerset County, N.J.), and Riddering's (in Mercer County, N.J.). The authors express their appreciation to Miss Linda Kozelski for secretarial assistance, and to Dr. William C. Ward for helpful comments and suggestions.

Table 1

Mean Trials to Criterion* and Standard Deviation (in Parentheses)

for Shape and Color Tasks (N = 16 per group)

	Five-stimulus problem		Six-stimulus problem	
	Age 4	Age 8	Age 8	Age 12
Shape Task	5.38	5.38	5.94	4.31
	(4.08)	(4.50)	(3.87)	(4.63)
Color Task	7.63	4.31	4.50	4.88
	(4.11)	(4.09)	(4.10)	(4.59)

* Number of trials prior to beginning a criterion run.

Figure Captions

Fig. 1a. Mean percent correct on shape and color test trials of five-stimulus task, for each training level from Undertraining 1 (UT 1) to Overtraining 2 (OT 2). The mean number of trial blocks received by subjects at each training level, as well as the mean number of trial blocks prior to beginning criterion, are listed below the horizontal axis.

Fig. 1b. Mean percent correct on shape and color test trials of six-stimulus task, for each training level from Undertraining 1 (UT 1) to Overtraining 2 (OT 2). The mean number of trial blocks received by subjects at each training level, as well as the mean number of trial blocks prior to beginning criterion, are listed below the horizontal axis.

(a) FIVE-STIMULUS TASK

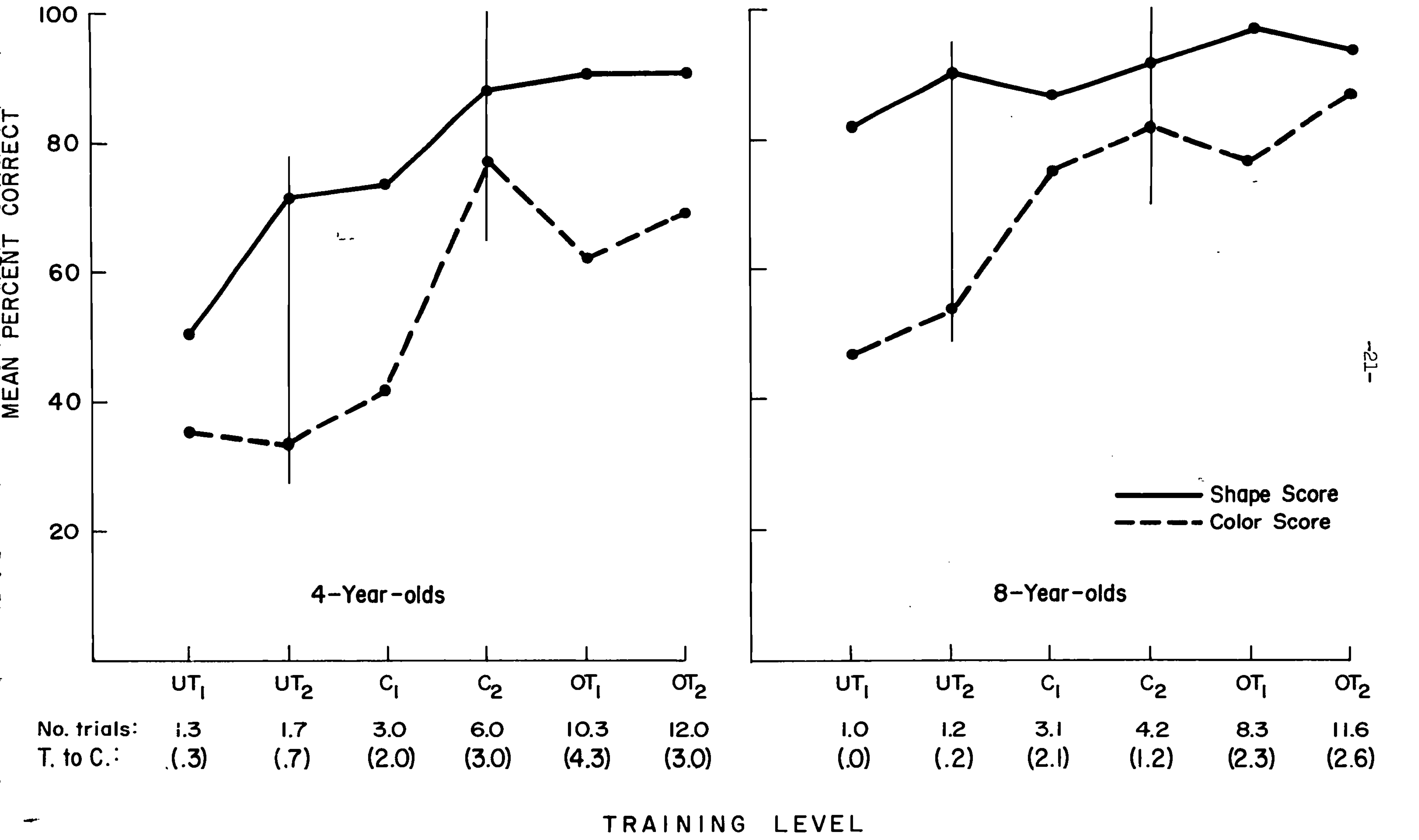

Figure 1a

(b) SIX—STIMULUS TASK

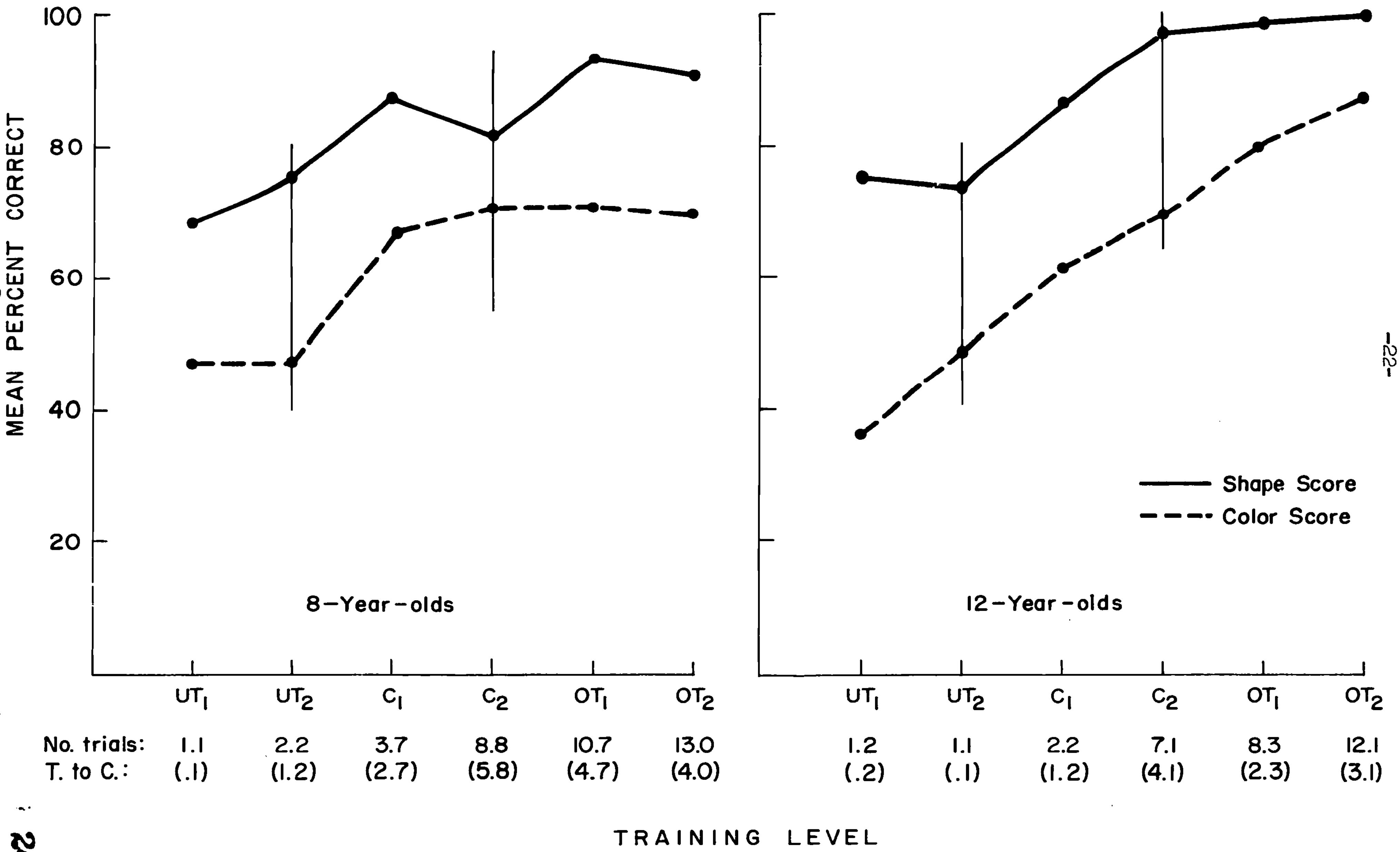

Figure 1b