The development of the concept of artistic style: A free classification study[1]

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Ss, ranging in age from 5 years to adult, were asked to sort a set of oil paintings into groups of their own choice. The results indicated that (1) subject matter was the strongest determiner of children's sorting behavior, (2) only the adults showed a high frequency of groupings by artistic style, and (3) color was seldom used as a basis for sorting by any age group. These findings were interpreted in terms of their implications for teaching the artistic style concept to children.

Walk (1967) has shown that adults can acquire the concept of artistic style through exposure to positive instances. Evidence suggests, however, that this concept is very difficult for the 4- to 8-year-old child to acquire (Walk & Karusaitis[2]). This finding cannot be attributed to the child's inability to find similarities among multidimensional stimuli. Kofsky & Osler (1967) reported that even 5-year-olds can consistently sort sets of cards varying in color, form, number, and size. Alternatively, a child's poor performance with the style concept may stem from the interfering influence of other stimulus variables. Artistic style can be characterized as a relational concept, a particular combination of the more concrete features of a painting, such as subject matter, color, or form. The young child may be unable to perceive such relations and may attend only to the concrete features themselves.

Studies of artistic preferences in children seem to support this hypothesis. Machotka (1963, 1966) and Subes (1958) found that the young child prefers paintings for such concrete features as subject matter and color. It is only after the development of concrete operations is complete (cf. Inhelder & Piaget, 1955) that an interest in such more complex variables as style begins to appear. These data suggest that if the child is faced with the task of finding similarities among works of art, his sytem of classification may, indeed, be based upon concrete features. Such a tendency may have to be overcome before the concept of style can be learned. This argument might explain Walk and Karusaitis's[2] finding that exposure to positive instances of style alone led to far less consistent concept acquisition in young children than in adults.

The present research reports developmental changes in judgment of similarity among paintings, assessed by means of a free classification task (cf. Kofsky & Osler, 1967). We think two critical questions about the development of the artistic style concept can be answered best with this paradigm: First, on what basis do children of different ages judge paintings as similar? Second, at what point in development does the child begin to respond to features of style?

SUBJECTS

Fifty Ss from five age groups (5-, 6-, 7-, 12-year-olds, and adults) participated in the experiment. Each group consisted of 10 Ss. The children were selected from Washington, D.C., area private schools. The adults were graduate students in psychology at The George Washington University.

STIMULI

Sixteen 4 x 5 in. color prints of oil paintings were selected from a collection of commercial art books representing different style periods (Albert Skira Series, World Publishing Company). The paintings were chosen to permit three alternative dimensions for classification: artistic style, subject matter, and color. The three dimensions were divided into the following categories:

Artistic Style

Four paintings were chosen from each of the following style periods: (1) romanticism, (2) early impressionism, (3) late impressionism, and (4) surrealism.

Subject Matter

At least one painting in each style period represented the following subject-matter categories: (1) boats or water scenes with boats, (2) landscapes not depicting boats or water, (3) clothed human figures, and (4) abstract themes.

Color

Cutting across both style and subject-matter dimensions were three color categories: (1) light tones, (2) dark tones, and (3) green-yellow tones.

The 16 paintings and their artists, classified by style period, are listed in Table 1.

PROCEDURE

A free classification procedure was followed. The 16 prints were placed simultaneously before S in a random arrangement. Each S was asked to "group together the paintings you think belong together." The Ss were instructed to use a "doesn't belong" category for those prints they thought could not otherwise be classified. Each S sorted the paintings only once. No reinforcement for choices was provided by Es.

RESPONSE EVALUATION

Each grouping made by S was scored as either a style, a subject-matter, or a color response. If a grouping failed to fit any of the response categories defined by the rules, it was scored as "unclassifiable." Paintings placed by Ss in the "doesn't belong" category were not included in this scoring procedure. The following rules defined each response category.

Style

All paintings in the grouping must have come from the same style period.

Subject Matter

All paintings in the grouping must have shared the same theme. The original number of subject-matter categories was increased somewhat on the basis of the actual responses we observed. We found, for example, that the "clothed human figures" category was frequently subdivided by Ss into "male" and "female" figures.

There were a few cases when a grouping could be scored as based on either style or subject matter. In such cases, the S's use of these two dimensions in his other groupings determined the score for the ambiguous grouping. For example, two romantic paintings that often comprised a

Table 1
Stimulus Paintings and Their Artists

Painting	Artist	Date	Style
"The raft of the 'Medusa'"	Gericault	1818	Romantic
"Man and woman gazing at the moon"	Friedrich	1819	Romantic
"The slave ship"	Turner	1839	Romantic
"Portrait of an artist in his studio"	Gericault	?	Romantic
"Boats moored alongside the quay"	Van Gogh	1888	Impressionist
"Le jardin de l'infante"	Monet	1866	Impressionist
"Still life with books"	Van Gogh	1886	Impressionist
"Camille"	Monet	1866	Impressionist
"Reflections on the water"	Derain	1905	Fauvist-Pointillist
"Disk"	Delaunay	1912	Fauvist-Cubist
"Woman with a hat"	Matisse	1905	Fauvist
"Le lavandou"	Cross	1904	Fauvist-Pointillist
"Turin, spring"	de Chirico	1914	Surrealist
no title	Tanguy	1927	Surrealist
"Smile of my blonde"	Miro	1926	Surrealist
"In the land of night"	Magritte	1928	Surrealist

separate grouping depicted boats in motion (Gericault's "The Raft of the 'Medusa'" and Turner's "The Slave Ship"). The two other paintings in the "boats or water scenes with boats" subject-matter category (Van Gogh's "Boats Moored Alongside the Quay" and Derain's "Reflections on the Water") depicted moored boats. If Ss put the Van Gogh and the Derain together as a separate grouping, that response was scored as "subject matter," since each painting comes from a different style period. In addition, we concluded that some Ss were subdividing the "boats, etc." subject-matter category into "boats in motion" and "moored boats." Therefore, when Ss grouped the Gericault with the Turner, and also placed the Van Gogh with the Derain, we scored the Gericault-Turner grouping as a subject-matter response. On the other hand, this grouping was scored as a style response for Ss who grouped the Van Gogh with other early impressionistic prints, and the Derain with other late impressionistic prints.

Color

All paintings in the grouping must have shown the same color characteristics (e.g., light tones, dark tones, or green-yellow tones).

The groupings made by each S were scored by a rater trained by Es in the use of the rules. The rater did not otherwise participate in the experiment and scored the data without knowledge of Ss' ages.

RESULTS

The mean usage of stimulus dimensions by each age group is shown in Fig. 1. Four major findings are indicated by these data. First, subject matter was a strong determiner of groupings at all age levels. The 6-, 7-, and 12-year-olds sorted the prints almost exclusively on the basis of this dimension. Second, style emerged as a significant basis for classification only in the adult groupings. Third, color was the least used dimension when compared with style and subject matter. Finally, the 5-year-olds were the only group to give a large number of unclassifiable responses.

The data were analyzed with a two-way (age by stimulus dimension) analysis of variance, with repeated measures on the stimulus dimension variable. This statistic indicated a significant Age by Stimulus Dimension interaction ($F = 2.312$, $df = 12/135$, $p < 0.05$). A subsequent analysis of the simple effects, followed by Newman-Keuls posttests, indicated these significant relationships:

Style

The adults showed more style groupings than did the 5-year-olds ($p < 0.05$). In addition, the adults' style responses were more frequent than either their color

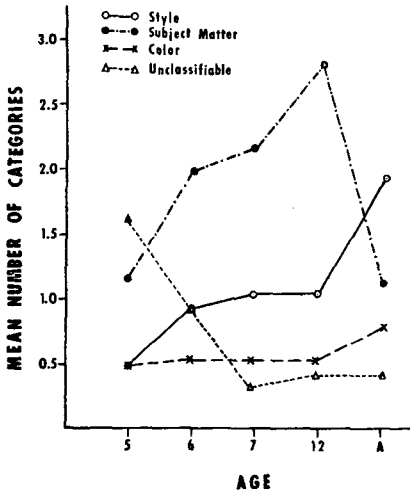

Fig. 1. Mean usage of stimulus dimensions in classification of oil paintings as a function of age.

($p < 0.05$) or unclassifiable ($p < 0.01$) groupings.

Subject Matter

The 12-year-olds grouped more often by subject matter than did either the 5-year-olds ($p < 0.01$) or the adults ($p < 0.01$). The 6-, 7-, and 12-year-olds all showed more subject-matter responses than style, color, or unclassifiable groupings ($p < 0.05$ for all comparisons).

Color and Unclassifiable

Color was seldom used by any age group as a basis for sorting, and there were no significant developmental differences in color usage.

More unclassifiable responses were given by the 5-year-olds than by any other group ($p < 0.05$), and these Ss used the unclassifiable category more often than either style ($p < 0.05$) or color ($p < 0.05$).

The Ss averaged approximately 4.3 groupings per sort with about 3.2 prints per grouping. One-way analyses of variance on mean number of groupings and mean grouping size data indicated no developmental differences for either variable. Further, each S made an average of approximately 0.5 groupings of prints that "didn't belong," with about 4.0 prints per grouping. An inspection of the particular paintings classified as not belonging revealed no consistent patterns either between age groups or between Ss.

DISCUSSION

This study used a free classification paradigm to extend the investigation of aesthetic appreciation begun with preference experiments (Machotka, 1963, 1966; Subes, 1958). Our results generally agree with the findings of these experiments. Subject matter provided the most frequent basis for classification of paintings in children, and increased in importance with age. Further, children seldom based their sorting on artistic style.

We report one discrepant finding, however. Machotka (1963) found that his youngest Ss (about 5 years old) preferred paintings for their color more often than for either style or subject matter. Our 5-year-olds not only did not sort on the basis of color, but showed an inability to classify the prints on any obvious basis. The most reasonable account of this discrepancy seems to us to lie in the nonavailability of color as a distinct dimension in oil paintings. Most often, paintings can be characterized by their pattern of colors rather than by a single, solid color. It is possible that young children may prefer various individual paintings for the colors they display (cf. Machotka, 1963) but are unable to perceive similarities in color patterns across several paintings. Machotka's results may be divergent from ours only insofar as his preference task required no responding to relations among paintings. When such relational responding is required, such as in the free classification task, "color" may be as difficult a dimension as style for young children.

In general, both preferences and judgment of similarity in art work proceed developmentally from attention to concrete stimulus aspects toward an appreciation of more complex relational features. This evidence suggests that in order to teach a child to respond to artistic style, it may be necessary not only to expose Ss to positive instances of the concept (cf. Walk & Karusaitis[2]), but also to provide specific training to reduce attention to other, preferred, concrete attributes.

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NOTES

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2. Walk, R. D., & Karusaitis, K. Artistic style as concept formation for children and adults. Unpublished manuscript, The George Washington University, 1969.

Effect of R-pretraining on PAL with unlimited time for response[1]

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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 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.

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

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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