Journal of Industrial Psychology, 1987, 13(1), 15-18
Tydskrif vir Bedryfsielkunde, 1987 13(1), 15-18

THE EFFECT OF COLOUR IN TELEVISION COMMERCIALS ON THE COMPREHENSION AND MEMORY OF THE CHILD

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ABSTRACT

From a perceptual point of view it is not clear whether, and under what conditions, the presence of colour in television commercials aids the processing of information. In this study it was argued that the way in which colour is used, would have an effect on the comprehension and memory of children regarding television commercials. It was found that colour, when used in a "concrete" fashion, aids the comprehension process. The results of the study also show that the "concrete" as well as the "symbolic" use of colour have a positive effect on the memory of children for the content of television commercials.

OPSOMMING

Vanuit 'n perseptuele benadering is dit nie duidelik of, en onder watter omstandighede, die teenwoordigheid van kleur in televisie advertensies die prosessering van inligting positief beïnvloed nie. In hierdie studie is daar van die standpunt uitgegaan dat die wyse van kleurgebruik 'n effek sal hê op die begrip en geheue van kinders ten aansien van televisie advertensies. Daar is gevind dat kleur, wat op 'n "konkrete" manier gebruik word, die begripsproses bevorder. Die resultate van die studie toon ook dat sowel die "konkrete" as "simboliese" gebruik van kleur 'n positiewe effek op die geheue van kinders ten opsigte van televisie advertensie-inhoud het.

The presentation of unexpected information within approximately 30 seconds to an uninvolved audience, such that the information is perceived and processed, is a challenge to the creator of a television commercial (Hefzallah and Maloney, 1979). In essence the challenge involves the way in which the elements of television: sound, sight, motion and colour are used in the presentation of the intended message.

As far as the element of colour is concerned, Engel, Blackwell and Kollat (1978) found that television commercials in colour were 50 per cent more effective than the same commercials in black-and-white. Van der Meer (cited in Booth and Miller, 1975) found that colour did not significantly contribute to learning, but that it enchanced retention and reduced rate of forgetting. Chute (1978) on the other hand demonstrated that the amount of learning, in terms of incidental information, significantly increased when a colour rather than a black-and-white version of the same instructional film was used.

In discussing colour in television, Dumont (1972), suggests that a distinction be made between the non-functional and functional way in which colour can be used. The former refers to incidental colour-usage where no specific purpose is sought to be achieved. In the latter case colour is used to convey additional or "redundant" information; to structure the environment in such a way that attention is paid to certain features, and to create atmosphere (Dumont, 1973; Weber, 1980: Zettl, 1973). According to Dunn (1969) this can be achieved by relying on the concrete (literal) and symbolic dimensions associated with the functional use of colour. As far as the concrete dimension is concerned, it is argued that colour, as an attribute of an object and of its environment, conveys concrete and realistic information. However, colour often stimulates feelings and impressions related to aspects such as temperature, space, mass and size, which could be exploited so as to transmit intrinsic product information. The symbolic use of colour relies primarily on colour associations and symbols. In this regard it communicates non-perceptible product-attributes such as quality, prestige, freshness and wholesomeness or creates feelings such as peacefulness, activity and gaiety.

Weber (1980), however is of the opinion that colour has no unique function in television commercials. This would imply that concrete as well as symbolic information could also be conveyed through black-and-white television commercials. According to Weber, however, more information is transmitted when colour is used. It thus appears as though the amount of information could account for the differences in effectiveness between colour and black-and-white presentations referred to earlier.

From the information processing based model of consumer behaviour, suggested by Engel, Blackwell and Kollat (1978), comprehension and memory can be regarded as particularly relevant in assessing the effects of colour versus black-and-white in television commercials as well as the effects of using colour incidentally, concretely or symbolicly. Furthermore, comprehension and memory can be regarded as important to advertisers who increasingly recognise the influence which children could have on prepurchase and purchasing decisions. The television commercial is probably the advertising source to which children are most often exposed. From the literature on developmental psychology, it is evident that children are predominantly concrete in their perceptions throughout childhood and that abstract thought processes develop gradually towards adolescence (Flavell, 1977; Piaget and Inhelder, 1969; Ward, 1975; Wartella, 1979).

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The purpose of this study then was to determine: firstly, whether chromatic colour in television commercials had a greater positive effect on the comprehension and memory of the child than commercials in achromatic colour (black-and-white), and secondly, whether the incidental, concrete and symbolic ways in which colour can be used, differ in their effects on the comprehension and memory of the child.

METHOD

Test material

The test material consisted of three television commercials. These were selected from 94 unscreened commercials by a panel of judges (using a five point rating scale) as representative of concrete, symbolic and incidental colour usage. Three series of the commercials were recorded, such that each serial presented a different sequence so as to prevent primacy or recency effects (Britt, 1966). The black-and-white (achromatic) versions were obtained by manipulating the colour controls of the television set.

Measures of comprehension and memory

A questionnaire was designed to measure the comprehension and memory of the subjects of the test material. Questions of a multiple choice nature were generated with the assistance of a panel of experts (Pretorius, 1984). A pilot study was conducted with 20 grade seven pupils from schools other than those involved in the main study. As a result of the pilot study, a few questions were eliminated. The memory questions were based on what was seen. The comprehension questions were based on what was understood, that is, an interpretation of what was seen. No distinction was made between relevant and non-relevant product information. No questions referred directly to colour.

Subjects

Two hundred and twenty three (223) Grade 7 pupils from two schools acted as subjects in the study. For the purpose of this study, the subjects were divided into two groups. The first group viewed the commercials in colour, whilst the second group was exposed to the black-and-white version of the commercials. Subjects were assigned to the two treatments in class context. Classes were assigned to treatments at random.

Procedure

The test material was shown to the subjects without sound. This was done in a class context, that is 25 to 35 pupils at a time were exposed to one of the series in which the commercials were recorded. The series of commercials were alternated between classes.

After viewing the test material, the subjects completed the questionnaire, and were subjected to a simple colour recognition test. Subjects with a deviation in colour vision were eilimi-nated from the study.

RESULTS

The consequence of using three different commercials, each representing a different way of colour utilization, rather than the same commercial in which colour was used in three different ways, is shown in Table 1. Table 1 reflects the average comprehension and memory scores of subjects when the effect of chromatic colour was removed from viewing.

TABLE 1
COMPARISON BETWEEN THE COMMERCIALS WHEN PRESENTED ACHROMATICALLY

		$\bar{X}$	s	df	T^2
Comprehension	Concrete	44,3	17,2	179,4	2,68*
	Incidental	37,3	18,3		
	Concrete	44,3	17,2	180,0	1,47
	Symbolic	30,5	17,4		
	Symbolic	40,5	17,4	179,6	−1,24
	Incidental	7,3	18,3		
Memory	Concrete	61,6	11,9	158,8	5,15*
	Incidental	50,2	17,4		
	Concrete	61,6	11,9	174,0	1,76
	Symbolic	58,2	14,3		
	Symbolic	68,2	11,9	173,5	−3,35*
	Incidental	50,2	17,4		

* $p < 0,05$

From the analysis of the scores (see Table 1) it was found that the achromatic presentation of the commercial where colour was used in a concrete way, resulted in significantly better comprehension and memory scores than the achromatic commercial where colour was used incidentally. Furthermore, the achromatic presentation of the commercial in which colour was used symbolicly, produced significantly better memory responses than the commercial where colour was used incidentally.

The results of the study pertaining to the effect of the presence or absence of chromatic colour on the comprehension and memory of the subjects, are shown in Table 2.

TABLE 2
THE EFFECT OF CHROMATIC VS. ACHROMATIC COMMERCIALS ON COMPREHENSION AND MEMORY

	COLOUR RANGE	PRESENTATION	$\bar{X}$	s	df	T^2
Comprehension	Concrete	Chromatic	48,9	17,6	196,4	1,94
		Achromatic	44,3	17,2		
	Symbolic	Chromatic	36,7	18,4	199,9	–1,55
		Achromatic	40,5	17,4		
	Incidental	Chromatic	30,9	18,1	103,2	–2,51
		Achromatic	37,3	18,3		
Memory	Concrete	Chromatic	65,9	12,6	199,7	2,54*
		Achromatic	61,1	11,9		
	Symbolic	Chromatic	60,2	13,3	185,7	1,05
		Achromatic	58,2	14,3		
	Incidental	Chromatic	57,6	17,5	194,9	3,05*
		Achromatic	50,2	17,4		

* $p < 0,05$

From the table, it can be seen that colour, when used incidentally and in a concrete way, had a significant and positive effect on memory. No other statistical significant differences between chromatic and achromatic presentations of the commercials were found.

The findings resulting from the comparisons between the different ways in which colour usage have effected comprehension and memory, are shown in Table 3.

It is evident from the table that comprehension as well as memory are differently effected depending on the way in which colour is used in commercials. As is indicated in Table 3, colour, when used in a concrete way, produces results in terms of comprehension and memory which are significantly better than symbolic or incidental colour usage. Although symbolic colour usage differed significantly from incidental colour usage with regard to comprehension, the difference in terms of memory scores was not statistically significant.

DISCUSSION AND CONCLUSIONS

Despite the care taken in the selection of the commercials as stimulus material, it appears from the results that the commercials were not quite equal in the cognitive demands which they made. The differences which were found between the commercials when presented in black-and-white, although not statistically significant in every case, could be attributed to content difficulty. However, it is also possible that the way in which colour was used, had an effect on achromatic presentations. Whatever the reason, the fact that different commercials were used, suggests that care should be taken in interpreting the results of the study.

The study suggests that colour as opposed to black-and-white does not necessarily improve the child's comprehension of television commercials. However, there appears to be sufficient evidence to conclude that comprehension is effected differently, depending on the way in which colour is used. Whereas the concrete use of colour, that is, exploiting the redundancy phenomenon in information, tends to facilitate comprehension, the symbolic use of colour maybe too demanding for the child's cognitive abilities.

As far as memory is concerned, the results of the study permit the tentative conclusion that colour in commercials appears to enhance memory more than would black-and-white commercials. Also, the purposeful use of colour (that is in a concrete or symbolic way) appears to determine the amount of information which is retained after viewing television commercials. In general then the study proposes that it is not a matter of whether colour is used or not, but how it is used that is of consequence.

TABLE 3
THE EFFECT OF TYPE COLOUR USAGE IN COMMERCIALS ON COMPREHENSION AND MEMORY

	COLOUR USAGE	$\bar{X}$	s	df	T^2
Comprehension	Concrete	43,9	17,6	241,8	7,88*
	Incidental	30,9	18,1		
	Concrete	48,9	17,6	241,9	2,47*
	Symbolic	36,7	18,5		
	Symbolic	36,7	18,5	241,5	5,31*
	Incidental	30,9	18,1		
Memory	Concrete	65,9	12,6	219,4	4,23*
	Incidental	57,6	17,5		
	Concrete	65,9	12,6	241,3	3,44*
	Symbolic	60,2	13,3		
	Symbolic	60,2	13,3	225,4	−1,28
	Incidental	57,6	17,5		

* $p < 0,05$

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