

SOME EMPIRICAL TESTS OF THE USE OF COLOUR THEORY IN ADVERTISEMENTS OF CARS

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This article attempts a detailed test of some aspects for colour theory as used in advertising. The hypotheses under scrutiny are the following :

There will be increase use of colour advertisements compared to black and white.

Colour advertisements will be larger in size than black and white ones.

Colour will enable advertiser to associate the product illustrated with other things/meanings/images more than black and white.

Different themes will be used in colour than in black and white advertisements.

Photographic techniques will be different in colour and black and white advertisements.

There will be a seasonal variation in colour advertisements.

There will be an association between specific colour choices and prestige of product.

There will be an association of advertising colour with national colour stereotypes.

The study is concentrating on a particular product category ; the motor vehicle. The motor vehicle has been chosen because it combines characteristics of both shopping and speciality goods. It has also the advantage that colour is a prominent characteristic of the commodity and because it is anticipated that there would be fewer arguments about colour naming.

Before proceeding to the presentation of any of the tests performed it has to be admitted that it is exceedingly difficult to specify tests of colour theory.

METHODOLOGY

Advertisements to be analysed were taken from three selected magazines : the Observer colour magazine, the T.V. Times and Autocar. These magazines were chosen because of their popularity in their particular area. The Observer represents the weekend colour magazines ; T.V. Times a general weekly and Autocar, the most widely read specialised magazine in its field.

The advertisements studied consisted of all those published in the three magazines, during the period 1977 - 80. There were thus 52 issues of each for four years. They furnish 1498 advertisements of cars in total (including duplications) the smallest size of which was one page. Advertisements smaller than one page were excluded since the analysis developed is intended to deal with large display advertisements.

The data collected for each magazine are the following (i) date, (ii) car make, (iii) car colour, (iv) material other car shown (yes/no), (v) photography (straight/angle), (vi) type of advertisement (colour B. & W.), (vii) size (one page, two page, other,) (viii) theme used (urban, rural, studio), and (ix) position in relation to size of the magazine (page).

For example, two advertisements from Autocar (Jan. 1979) are presented as follows :

(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)
8-1-79	Toyota-Cressida	Gold	Yes	Angle	Colour	2 pages	studio	54-55/82
20-1-79	Audi-100	Grey	Yes	Angle	B. & W.	1 page	studio	2/78

In each case a personal subjective evaluation was made of the advertisement. Due to the nature of the product chosen it is hoped that there is less likelihood of disagreement about the subjective categorisation followed. If greater resources had been available it would, of course, have been able to use some Kind of jury decision.

In each of the following subsections the heading is stated as an hypothesis.

- (i) There will be increase use of colour advertisements compared to black and white.

The use of colour in advertising has increased considerably in the last three of four decades and there is no reason to believe that this trend will not continue. This position, is supported by the following factors :

- (i) colour possesses certain important natural qualities of communication that are being increasingly recognised ;
- (ii) colour fidelity has improved considerably ;
- (iii) the audiences of media have expanded ;
- (iv) markets have expanded greatly :
- (v) manufacturers are using colour increasingly in their products ;
- (vi) colour is becoming increasingly a fashion item, and
- (vii) due to consumer expectations the manufacturer of certain product categories has to make use of colour, if quality perceptions are to be preserved.

The sample of car advertisements are broken down by type (colour as opposed to black and white) and by colour used to illustrate the product. The following are derived :

- (i) In 1977 colour advertisements constituted 50.8 percent of the advertisements ; in 1980 this figure is 69.8 percent. It is clear that there was a dramatic rise in 1979 since when there has been a slight fall.
- (ii) The order of colour preference used to illustrate the car advertised is the following (highest to lowest) : red, blue, blue metallic, silver, yellow, green, gold, brown metallic, green metallic, white, brown, red metallic, black and grey.
- (iii) In the period 1977-1980 the use of red, blue, red metallic, green metallic and silver has increased while the use of brown metallic, gold, green and yellow has decreased.
- (iv) In black and white car advertisements the use of white and black has decrea-

sed and the use of grey has increased. This can be explained by the fact that more colour cars are being photographed in black and white.

- (v) Metallic colours, as a whole, are used less than non-metallic ones in the period 1977-1980.

The hypothesis that the type of the advertisement (colour of black and white) and time are statistically associated can be tested by making use of the chi-square test (X^2). The same statistical test is to be used for all the other hypotheses to be tested.

TABLE 1

	1977	1978	1979	1980	Total
Colour	165 (201)	209 (263.5)	367 (315.5)	339 (300)	1080
B. & W.	160 (124)	217 (162.5)	143 (194.5)	146 (185)	666
Total	325	426	510	485	1746

The test suggests that there is a statistically significant association between time and type of advertisement used (Degrees of freedom = 3, x^2 value calculated = 81.8 and $X^2_{0.01} = 11.34$ -table 1).

A further test suggests that there is an association between time and type of colour (non-metallic or metallic) used. Non metallic colours are used more than metallic ones (Degrees of freedom = 3, X^2 value calculated = 23.5 and $X^2_{0.01} = 11.34$ -table 2).

TABLE 2

	1977	1978	1979	1980	Total
non-metallic colours	115 (106)	145 (134.3)	202 (235.8)	232 (217.8)	694
Metallic colours	50 (59)	64 (73.7)	165 (131.2)	107 (121.2)	386
Total	165	209	367	339	1080

To summarise, it has been shown that the use of colour car advertisements has increased over the period 1977- 80 but that this increase has not been continuous. There was a sudden increase in 1979 for reasons which are not clear. It has also been shown that the car is most often presented in the most highly preferred colours (red and blue according to colour theory). The increased use of grey in black and white advertisements is justified by the increased possibilities of contrast offered by this colour. Finally, an association was found between time and type of colour used.

- (ii) Colour advertisements will be larger in size than black and white ones.

Colour theory stresses that one must expect full colour advertisements to use larger messages than black and white ones. This is explained by the fact that size increases colour's creative potentialities and thus better achieving the communication aims of advertising. The crucial point here is the question of cost. Do advertisers feel that the increased impact to colour justify the cost of larger sized advertisements? This question can be answered by observation of advertising-practice.

The sample of the car advertisements is broken down by size (one page, two pages, other) and by type of advertising (colour, black & white). The data collected show the following ;

- (i) 40% of the one page advertisements and 73.3% of the page advertisements are in colour.
- (ii) The use of two-page advertisements, both black and white and colour, has increased over the four year period.

TABLE 3

Type of Advertisement \ Size	One Page	Two Pages	Total
Full colour	330 (462.9)	477 (344.1)	807
Black	469 (363.1)	137 (269.9)	633
Total	826	614	1440

The test shows that there is an association between size and type of advertisement (Degrees of freedom = 1, X^2 value calculated = 203,5 and $X^2_{00.1} = 6.635$ - table 3).

It is also found that two pages advertisements are used more for colour advertising than black and white. This suggests that advertisers justify the increased cost for colour by the prospect of greater impact.

- (iii) Colour will enable the advertiser to associate the product illustrated with other things/meanings/images more than black and white

Advertising by definition aims to sell things to potential consumers by creating structures of meaning around them. As a result, advertisements must take into account not only the inherent qualities and attributes of the products they are trying to sell, but also the way in which they can make those properties mean something to the potential consumer. Thus, the association of the product with other meanings and images is of particular importance. For, as of an applied methodology used primarily in pictorial advertising to make correlations between a product and other things, meanings and images. While the use of colour is not significant in itself, therefore, the significance of the correlation it makes is important.

The sample of car advertisements is broken down by type (colour, black & white, mixed) and by whether or not other material than the car illustrated is shown. The following are shown :

- (i) In colour advertisements the use of material other than the car advertised has declined during the period 1977-80 (from 58 percent to 41 percent). In black and white it has also declined from 36 percent to 28 percent.
- (ii) In those advertisements with themes 60 percent were in colour in 1977 and this had risen to 76.4 percent in 1980. Whereas the comparable black and white figures were 38.4 and 23 percent.

TABLE 4

Type of advertisement \ Other material than car advertised	1977 - 1980		
	Yes	No	Total
Full colour	400 (360.6)	638 (677.4)	1038
B. & W.	192 (231.4)	474 (434.6)	666
Total	592	1112	1704

The test show that an association exists between the two variables tested (Degrees of freedom = 1, X^2 value calculated == 16.9 and $X^2_{0.01} = 6.635$ -table 4) This association according to the theory of colour is something that should be expected.

(iv) Different themes will be used in colour than in black and white advertisements.

Colour almost always has some value in making an advertising illustration more realistic. The realistic application of colour in advertising is not confined to depicting the product ; it is concerned with the entire illustration and background. As a result, car advertisements in colour are expected to make use of more rural and urban themes, while black and white ones make use of more studio themes. The sample of advertisements is broken down by type (colour, black and white and mixed advertisements) and by theme (urban, rural, studio). The following are shown :

- (i) Colour advertisements use urban and rural themes to a much higher extent than black and white advertisements.
- (ii) The use of urban themes has decreased over the period 1977- 1980 while the use of rural themes has increased.
- (iii) Black and white advertisements use studio themes heavily. Rural themes are used more than urban themes ; 1978 was the only year that this did not apply.
- (iv) Mixed advertisements use rural and studio themes to a much greater extent than urban themes,
- (v) For both, colour and black and white advertisements, studio themes are the most commonly used.

The test shows that a relationship exists between theme used (urban, rural, studio) and type of advertisement (colour, black & white and mixed) (Degrees of freedom = 2, X^2 value calculated = 117.3 and $X^2_{0.01} = 9.210$ -table 5).

TABLE 5

Theme used Type of Advertisement	1977 - 1980			
	Urban	Rural	Other	Total
Colour	122 (99.7)	328 (248.4)	590 (691.9)	1040
Black and White	41 (63.3)	78 (157.7)	541 (439.1)	660
Total	163	406	1131	1700

(v) Photographic techniques will be different in colour and black and white advertisements.

Car advertisements in colour, due to the contrasting, realistic and reflecting qualities of colour, are expected to use angle shots when photographing the car to be advertised. Black and white advertisements are expected to straight shots.

The advertisements studied are broken down by type (colour or black and white) and by the way the photograph of the car is taken (straight or angled shot). The following are suggested :

- (i) Colour advertisements, in overall, use slightly more angle shots than black and white advertisements. This is not the case for the years 1977, 1978 and 1980 where the percentage of angle shots in black and white advertisements is greater than in colour ones.
- (ii) Only in 1977 do colour advertisements use more straight than angle shot (79 against 77).
- (iii) Half of the mixed advertisements use straight shots ; the other half uses straight ones.

The test suggest that the type of advertisements (colour or black and white) and the photography (straight or angle shots) are not associated (Degrees of freedom = 1, X^2 value calculated = 0.22, $X^2_{0.01} = 6.635$ -Table 6). This can be explained by the fact that in practice, car advertisers prefer angle shots to straight ones and to produce this effect they make use of special lighting techniques for black and white advertisements.

TABLE 6

Photography Type of Advertisement	1977 - 1980		
	Straight	Angle	Total
Colour	276 (280)	765 (760.6)	1041
Black and White	163 (179)	480 (484.4)	663
Total	459	1245	1704

- (vi) There will be a seasonal variation in colour advertisements.

Theoretically, colours tend to be associated with certain seasons. Table 7 breaks down the sample of advertisements by season and by colour.

TABLE 7

Season Type of colour	1977 - 1980				
	Spring	Summer	Autumn	Winter	Total
Non-metallic	220(280.9)	157(190.2)	115(111.8)	202(183.1)	694
Metallic	105(116.1)	139(105.8)	59(62.2)	82(101.9)	386
Total	325	296	174	285	1080

The test suggests that there is a seasonal variation in colour advertisements (Degrees of freedom = 3, X^2 value calculated = 23.9, $X^2_{0.01} = 11.345$ -table 7). The reason for this, part from colour's intrinsic qualities, can be explained by seasonal sales variations.

- (vii) There will be an association between specific colour choices and prestige of product.

Colour can also be used in an advertisement in such a way as to imply prestige. Due to this prestige suggestion, one would expect to find certain colours, metallic ones, in particular, used more frequently to advertise «large» cars (200 cc and more).

The sample of car advertisements by car colour, as shown in the advertisement, and by size F/N. Here, size includes four groups :

- (a) small cars (less than 1200 cc), (b) medium cars (between 1200 et 1600 cc)
- (c) large cars (between 1600 et 2000 cc), (d) super large cars (more than 2000 cc)

The following are concluded :

- (a) red is the most popular colour for small and medium cars, while, blue is the most popular colour for large cars and gold for the super-large.
- (b) Metallic colours are much more popular for super-large and large cars and non - metallic colours for small and medium cars.

TABLE 8

	Small cars up to 1200cc	Medium cars 1200-1600cc	Large cars 1600-2000cc	Super-large cars 2000cc and more	Overall
Other colours	73 (63.4)	90 (81.1)	79 (76.9)	54 (74.6)	296
Metallic colours	35 (44.6)	48 (56.9)	52 (54.1)	73 (52.9)	208
Total	108	138	131	127	504

The test shows that there exists an association between specific colour choices and car's size.*

(Degrees of freedom 3, X^2 value calculated = 19.84,
 $X^2_{0.01} = 11.345$ -Table 8).

- (viii) There will be an association of advertising colour with national colours stereotypes.

The question to be answered here is whether or not national stereotypes influence the way in which different national makes are advertised.

* Footnote : Size is used here to suggest prestige. However, it is understood that prestige and size, in the case of cars, are not always strictly related. For instance, there are some cases, although few, where prestigious cars belong according to the above classification, to medium or even small size cars. Price could be used as another criterion.

The sample of car advertisements is broken down (no duplications included) by colour (non - metallic or metallic) and by origin of the make (British, German French, Italian, other European and Japanese). The following are derived :

- (i) More non - metallic than metallic colours are used for all categories of British made cars.
- (ii) Metallic colours are preferred to non-metallic colours to advertise German makes. Metallic colours, in particular, are used to advertise large and super - large cars. The same trend is seen in «Other European makes».
- (iii) Metallic colours are used to advertise the «large» categories of Japanese made cars, and «medium», «large» and «super - large» categories of French made cars. Non - metallic colours are used more for the «small» category of cars.
- (v) Overall, non-metallic colours are used more than metallic ones.

TABLE 9

	1977 - 1980		
	Non-metallic colours	Metallic colours	Total
British makes	134 (112.8)	55 (76.2)	189
German makes	47 (67.4)	66 (45.6)	113
French makes	47 (44.1)	27 (29.8)	74
Italian makes	29 (25.1)	13 (16.9)	42
Other European makes	6 (10.1)	11 (6.9)	17
Japanese makes	30 (33.4)	26 (22.6)	56
Total	293	198	491

The test shows that there exists an association between the type of colour used to illustrate the car and the origin of the make. This can be attributed to the different national stereotypes.

(Degrees of freedom = 5, X^2 value calculated = 43.2, $X_{2,0.01} = 15.09$ -Table 9).

(C) SUMMARY

Summarising the previous analysis, the hypotheses examined and which proved to be statistically valid are the following :

— there has been an increased use of colour advertisements, as opposed to black and white ;

- colour advertisements are larger in size than black and white ones ;
- colour enables the advertiser to associate the product illustrated with other things/meanings/images more than black and white ;
- different themes, from those used in black and white advertisements, are used in colour advertisements ;
- a seasonal variation can be seen in colour advertisements ;
- an association exists between specific colour choices and the prestige of the product, and
- a relationship exists between advertising colour and national colour stereotypes.

The hypothesis that photographic techniques are different in colour and black and white advertisements was shown to be not statistically significant.

The bias which arose from the subjective application of the criteria suggested could have been reduced if greater resources had been available to study a wider sample of publications over a larger period. Nevertheless, the results suggest that more complete testing could and should be carried out, based on and developing the present methodology. Possible directions for research might include the following:

- (a) studies of the interaction of the elements suggested ;
- (b) laboratory or marketing tests of the process of compromise between the various components of the Creativity Mix (words, colour, nonverbal visual symbols others than colour and layout).
- (c) studies of the interaction of colour decisions relating to the Media Mix and the Creativity Mix.