

# Science in Car and Shampoo Ads



Why do Shampoo Adverts Contain So  
Much Science and Car Adverts So Little?

Puzzle Report by Iris, Nik, and Didier

## Car & Shampoo Puzzle Report

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## Introduction

A picture of molecules and rich vitamins penetrating hair: the transformation from frizzy dry to shiny healthy hair is complete, to the satisfaction of the model. A car driving smoothly across a rocky desert: the driver enjoys the experience, utter relaxation and comfort reflected in her gaze. These are two typical adverts for shampoos and cars as we encounter them every day. Anecdotal evidence suggests that science is used to advertise shampoos, yet car adverts often merely feature a picture of the product... – the discrepancy between advertising strategies for shampoos and cars may strike as counterintuitive. Why would something as technical as a car, packed full with the achievements of science and technology, do without scientific information, yet a shampoo – to the layperson merely a pale liquid with cleansing powers – is advertised with so much?

In this report we outline how we carried out a small research project in order to investigate this rather puzzling use of science in advertising. The aim was to find out why there is a discrepancy between car and shampoo adverts in terms of using science. In order to answer this question, as a first step, it was necessary to establish whether this observed difference really exists. We used a content analysis of car and shampoo adverts in contemporary British magazines as to confirm the puzzle as a first step. Furthermore, additional data were collected to explore the puzzle to the fullest extent given the time constraints.

The discussion of the content analysis forms the first section of the report, complemented with investigations over time and space. The outcomes from a small-scale survey are introduced to complement the results of the content analysis, by introducing the viewpoint of the consumer. As a second step we elaborate the original analysis with the introduction of new variables, such as the price of products. This is then furthered by an analysis of the current shampoo and automobile market structure, which led to rather interesting results. The data gathered are then discussed in terms of different explanations, which are subsequently evaluated in their explanatory power.

## Establishing the Puzzle

### *Content Analysis*

In order to test whether the puzzle is true, we decided to analyse the content of adverts in contemporary UK magazines. We sampled women's magazines, men's magazines, and magazines with a general audience. The magazines chosen were selected on the basis of readership numbers in the UK. Originally, we decided to choose monthly magazines only – as opposed to weekly ones. However, there are not many monthly magazines with a large readership for a general audience, so we decided to include weekly magazines there. The size of the readership was taken from the Audit Bureau of Circulations (2005), but the sample itself is affected by the availability of the magazines in Oxford's Bodleian library. We originally chose 5 women's monthly magazines, 5 men's monthly and 5 general magazines, but due to constraints of availability only coded adverts in three of each category.

The magazines sampled are reproduced in table 1. We content analysed 267 different adverts, 206 of which car adverts, and 61 of which shampoo adverts. This difference is entirely due to the far more frequent occurrence of car adverts. We did

not code repeatedly occurring adverts, and neither did we count how often the adverts were repeated.

Magazine	Primary Audience	Readership (2004)
Cosmopolitan	Women	478,394
Economist	General	204,869
Good Housekeeping	Women	435,076
GQ	Men	125,016
Marie Claire	Women	384,502
Maxim	Men	234,183
Men's Health	Men	229,116
Reader's Digest	General	773,731
Time	General	555,205

**Table 1** • The magazines used for the content analysis including their primary audience and readership figures for 2004.

We first test coded five shampoo and five car adverts and discussed the points where we differed. Once satisfied with what we want to code in what way, we coded 267 car and shampoo adverts. Repeated occurrences of the same advert were skipped. Our coding frame included items on the audience, the kind of product advertised, the brand and product, whether there is a woman or a man in the advert, the tagline, whether there is science relevant to the product or otherwise, what kind of aspects were advertised, and the kind of images used to advertise the product. Table 2 includes examples of the codes used; an exhaustive list including examples can be found in appendix 1. Appendix 2 includes twenty-one adverts together with their actual coding, included to demonstrate the coding strategy in a more accessible manner.

Code	Definition and Example
Brand	Definition: The brand advertised. <i>Example: Audi; L'Oréal</i>
Product	Definition: The Product advertised. <i>Example: Ibiza; Elvive</i>
Person in Ad	Definition: There is a man or a woman pictured in the advert; what sex.
Tagline	Definition: The actual tagline used in the advert. <i>Example: The ultimate driving machine; Wash your hair in sunshine.</i>
Relevant Science	Definition: Scientific information that is related to the product. <i>Example: pictures of molecules; rich pro-vitamin formula</i>
Irrelevant Science	Definition: Presence of scientific information that is not related to the product advertised. This includes unverifiable data on the reliability/quality of the product. <i>Example: Up to 70% smoother and shinier.</i>
Aesthetic Aspects	Definition: Aesthetic aspects of the product are advertised. This includes appeals to the senses, looks of the product as key focus. <i>Example: stylised shampoo bottle; alloy wheels</i>
Performance Aspects	Definition: Performance aspects of the product are advertised. <i>Example: 16V, power steering; keeps your hair blond; Car of the Year award.</i>
Lifestyle	Definition: Lifestyle images are used to advertise the product. Obvious implication of image and status. <i>Example: For the girl-about-town, our [car] is the thing to be seen in.</i>
Humour	Definition: Humour used to advertise the product. <i>Example: Hair used as a scarf in conjunction with the tagline 'winter is so last season'</i>
Family	Definition: Family images are used to advertise the product <i>Example: Car and family on the beach.</i>

Sexual	Definition: Sexual and suggestive images are used to advertise the product <i>Example: Obvious suggestive looks or gestures.</i>
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**Table 2** • Extract from the codebook. The complete list of codes used in the content analysis and examples can be found in appendix 1.

After coding the 267 adverts, we coded five additional shampoo and car adverts each, in order to check inter-coder reliability. The Krippendorff Alpha (Krippendorff, 1980; 2002) was 0.85, which is a surprisingly high value, given the ad-hoc organization of the content analysis. However, there are a large number of cases where some of the items simply do not occur, and thus inter-coder agreement increases. Therefore we calculated Krippendorff's Alpha for the categories *relevant science* and *irrelevant science* only – our core interest. The value was 0.55. This confirmed our suspicions that ideally we would have spent more time on discussing how to code what, training the different coders<sup>1</sup>.

As a next step we fed the results of the analysis into SPSS and found a statistically significant relationship between shampoo adverts and the featuring of science – both relevant or not. The results for relevant science are represented in table 3. Based on these findings we assume the puzzle to be true.

**Use of Science in Car and Shampoo Adverts**

		Science relevant to product		Total
		No	Yes	
Car	Observed	171	35	206
	Expected	154,3	51,7	206,0
Shampoo	Observed	29	32	61
	Expected	45,7	15,3	61,0
Total	Observed	200	67	267
	Expected	200,0	67,0	267,0

**Table 3** • Crosstabulation between the kind of product advertised and the occurrence of science relevant to the product. The relationship is statistically highly significant (Pearson  $\chi^2=31.499$ , p-value of 0.000). Based on 267 cases.

## ***Samples Across Time***

We sampled car and shampoo adverts from the internet, using the *Yahoo!* image search facility. We sampled past adverts to test possible limitations of the content analysis. Due to time constraints and the limited availability of old magazines in the Bodleian, added to the lack of easily accessible past readership data, we sampled these adverts online. We are aware that most of the adverts are from the US American market, but no significant differences were teased out by the authors, and the difference at present between the two countries also appears to negligible. The fact that the adverts were sampled online should not affect the representativeness of this convenience sample.

For the shampoo adverts we were unable to find a significant difference in terms of the use of science, the aspects advertised, and the kind of images used to advertise the product. Obviously, differences in image style can be found in both car and shampoo

<sup>1</sup> Our analysis found that two of the coders had a high reliability in terms of coding the same proportion of the same codes, whereas the third coder differed.

adverts. The car adverts, in contrast to the shampoo adverts, appear to contain more science in the earliest samples. However, from the 1950s onwards, the car appears to have become a lifestyle product. This could explain why aesthetic aspects are stressed more from the same time onwards.

The sample used for this analysis is very small: 41 car adverts and only 14 shampoo adverts. Added to this, the fact that the sample is based on convenience means that the inferences that can be drawn are limited. However, we do believe that we can elicit some general tendencies from the sample. Three typical shampoo advert and three typical car adverts are represented in appendix 5.

### ***Samples Across Space***

Similarly, we hypothesised that the findings of the content analysis may be limited in terms of space. We assumed that the kind of advertising is tightly linked with cultural specificities. We received three contemporary magazines from Greece. The magazines were two women's magazines, namely *Cosmopolitan* and *Marie Claire*, and one typical men's magazine: *Status*. We found significant differences in the few adverts we could find. In Greece, tobacco advertising is still possible, and the magazines therefore full of such adverts. It was striking to see that there was only one advert for shampoos in the two women's magazines we analysed. The British women's magazines we analysed all contained a considerable number of shampoo adverts.

The car adverts in the Greek magazines showed a strong tendency to utilize family images. Our sample is of course too small to make any firm statements; however, we firmly believe that the findings of the content analysis are limited in terms of cultural specificity.

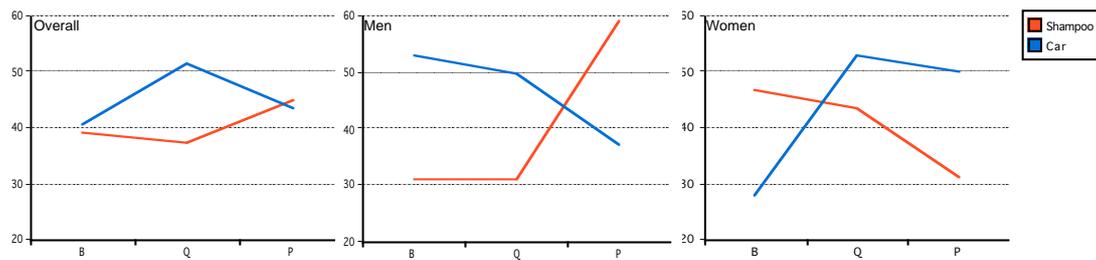
### ***Survey***

In order to explain why shampoos and cars are advertised using different strategies, that is why they focus on different characteristics, we hypothesised that the adverts may merely reflect the demands of the general public. To that end we conducted a small-scale survey<sup>2</sup>. We used a haphazard sample of 64 people, 'randomly' selected in the streets of Oxford. We made sure to sample the same number of female and male respondents, that is 32 each.

We could not confirm the large difference between aesthetic and performance aspects found in the sampled adverts. In fact, the people asked seemed to look for similar aspects in shampoos and cars. The only sizeable discrepancy was in terms of quality, a characteristic named more often in conjunction with cars rather than shampoos.

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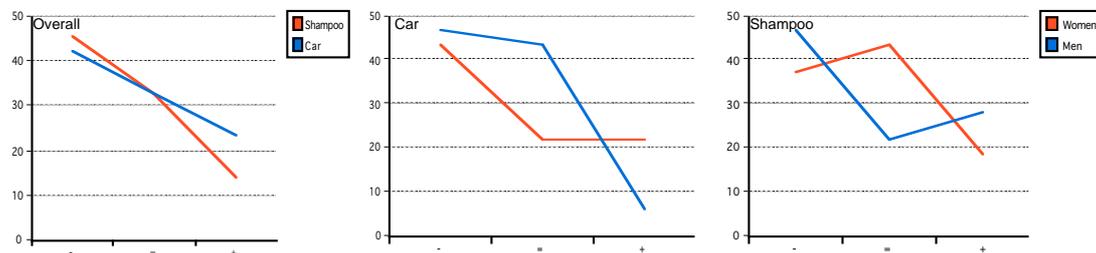
<sup>2</sup> The questionnaire itself is included in appendix 4.



**Figure 1** • The different criteria people use to determine which product to buy. The graph on the left shows the overall results, the middle graph for men, the right graph for women. The different aspects in this graph are brand (B), quality (Q), and price (P). The vertical axes represent the percentage of responses in the respective category. Based on 64 cases overall, 32 for each sex.

We found a significant difference between men and women in terms of the characteristics they look for when buying a product. Women tend to value the brand and quality of shampoos much more than the price. Men, in contrast, value the brand and quality of cars much more than the price. The situation for the opposite sex in each case is reversed. This seems to suggest that both sexes invest more in the product that is stereotypically associated with them, rather than only considering the price<sup>3</sup>.

The views of the general public appear to support the fact that the use of science in the two products is counterintuitive. Indeed, the proportion of respondents who expected ‘a lot’ of scientific information in car adverts is larger than the one who anticipated ‘a lot’ of science in shampoo adverts. Likewise, the proportion of those who expected ‘a little’ science in shampoo adverts is larger than that of those who anticipated no or little scientific information in car adverts.



**Figure 2** • The different anticipations of scientific information in car and shampoo adverts. The responses are grouped into ‘a little’ (-), ‘average’ (=), and ‘a lot’ (+). The graph on the left shows the result for all 64 responses. The other two graphs show the expectation of scientific information by sex. The graph in the middle shows anticipations for car adverts; the graph on the right for shampoo adverts. A difference between sexes can be identified. The vertical axes represent the percentage of responses in the respective category. Based on 32 cases each.

A difference between the sexes could be identified. Women are more likely to expect ‘a lot’ of science in car adverts; whilst for men the higher anticipation of science in car adverts is found in the ‘average’ response. These findings confirm that the use of scientific information in car and shampoo adverts is indeed puzzling. However, specific gender implications can be identified.

<sup>3</sup> The survey was carried out in the streets of Oxford’s centre. We assume that for that reason we sampled mostly people from a middleclass background, but are unable to test the effects of class background. We consider it possible that the interest in brand and quality as opposed to price might be less apparent, had a representative sample been used.

## Hypotheses

Based on our initial findings, we came up with the following hypotheses. We hypothesized that maybe science was used to legitimise a product. Alternatively, we considered the use of science a means to differentiate products that are otherwise similar. Other possible explanations we pondered about were the role of gender in the audience of the advert, as well as the different use of the products.

Hypotheses	
H <sub>a</sub>	Science legitimises a plain product.
H <sub>b</sub>	Science helps distinguish otherwise undistinguishable products.
H <sub>c</sub>	The use of science is linked to the gender of the audience of the advert.
H <sub>d</sub>	Science is linked to specific uses of the product.

Table 4 • Hypotheses about the use of science in shampoo and car adverts.

## Further Tests

Figures 3 to 5 represent the different characteristics that are stressed in adverts. The distribution of these characteristics differs significantly between car and shampoo adverts. Car adverts tend to stress aesthetic features, whereas shampoo adverts focus more on performance aspects. These findings led us to investigate the role of the different aspects further. In particular, we were interested in finding whether the different use of science in car and shampoo adverts is in fact a spurious relationship.

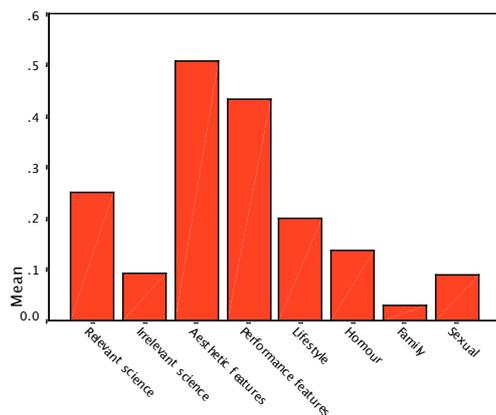
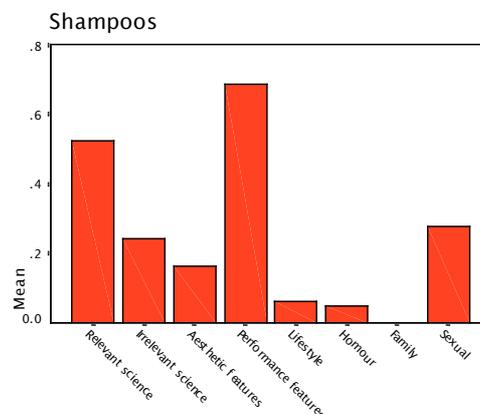
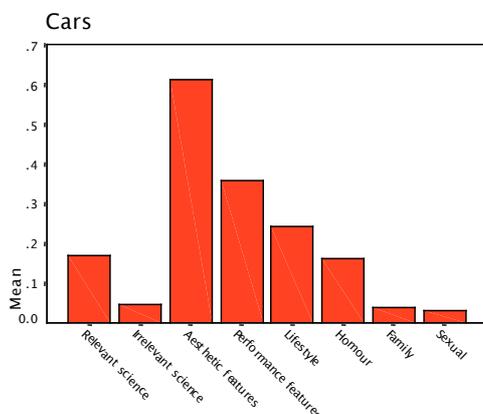


Figure 3 • Distribution of the different characteristics stressed in both car and shampoo adverts. Based on 267 cases.



Figures 4 and 5 • Distribution of the different characteristics stressed in car adverts (left) and shampoo adverts (right). Based on 206 cases for the car adverts, and 61 for the shampoo adverts.

## Performance

We tested the relationship between advertising performance aspects of the product and the use of science. The idea was to see whether there is a close relationship between the two. Maybe science is used to back up the performance aspects advertised. The relationship we found was indeed that if performance aspects are advertised, the likelihood of using science is much larger than otherwise (Pearson  $\chi^2=32.087$ , p-value of 0.000). The relationship, however, is only statistically significant for cars, although it can also be observed as a tendency with the shampoos (see table 5). A larger data set would enable us to test the relationship in more detail.

### Science and Performance Features

Count			Performance aspects advertised		Total
			No	Yes	
Kind of advert	Car	Relevant Science No	124	47	171
		Yes	8	27	35
		Total	132	74	206
Shampoo	Relevant Science	No	9	20	29
		Yes	10	22	32
		Total	19	42	61

**Table 5** • Crosstabulation between the use of science and the advertising of performance aspects, sorted by kind of product. The relationship is statistically highly significant only for car adverts (Pearson  $\chi^2=31.124$ , p-value of 0.000), not so for shampoo adverts (p-value of 0.986). Based on 267 cases.

## Audience

We then tested a relationship between the primary audience of the magazines – assuming that the primary audience of the adverts is the same as that of the magazine – and whether science is used in the advert. The relationship is not statistically significant (Pearson  $\chi^2=2.365$ , p-value of 0.307). However, when looking at car adverts only, the relationship is statistically significant (Pearson  $\chi^2=6.573$ , p-value of 0.037). Although not statistically significant for shampoos – probably due to the fact that the frequencies in most of the cells are too small –, this relationship may still be helpful to think about why science is used. It is male audiences who are subjected to more science in the adverts (see table 6). A larger data set would be needed to test this association in more detail.

### Science for Different Audiences

Kind of advert			Audience		
			Female	Male	General
Car	Science	No	34,5%	44,4%	21,1%
		Yes	14,3%	65,7%	20,0%
	Total		31,1%	48,1%	20,9%
Shampoo	Science	No	86,2%	10,3%	3,4%
		Yes	81,3%	18,8%	
	Total		83,6%	14,8%	1,6%

**Table 6 •** Crosstabulation testing the use of science in adverts for different audiences. The relationship is statistically significant only for car adverts (Pearson  $\chi^2=6.573$ , p-value of 0.037), not so for shampoo adverts (p-value of 0.391). Based on 267 cases.

These findings mean that our hypothesis  $H_9$  may need revision. It may be that men are more subjected to science because there is a gender stereotype that links men and science. It is the case that more men than women enter science subjects at university level (University Gazette, 2004), which could serve as an indication that men do prefer science. Data from the equal opportunities commission (2001) suggest that although the gap is slowly narrowing, gender stereotypes are stubbornly persistent. For this reason we believe it is safe to assume that the tendency found here would be confirmed in a larger and better data set.

### ***Aesthetics***

We also looked at the use of other aspects of the adverts to see if this could be used to predict whether an advert would use science or not. We were interested whether the use of science comes together with other features, just like the performance aspects identified above. In this respect we tested a relationship between aesthetic aspects advertised and the use of science. The result was promising: statistically significant (Pearson  $\chi^2=8.177$ , p-value of 0.004), with a trend that adverts which use aesthetic aspects do not tend to include science. This finding is not entirely surprising, given that we have already established a strong correlation between the use of science and performance aspects being advertised.

### ***Sexual Imagery, Families, Lifestyle, Humour***

The use of sexual images to advertise a product, however, proved insignificant in relation to the use of science (Pearson  $\chi^2=0.233$ , p-value of 0.629). The use of family images is also inconclusive (p-value  $>0.05$ ), and not used at all in shampoo adverts. For lifestyle used, there is no statistically significant relationship (p-value  $>0.05$ ), but there might be a tendency for adverts not to include both lifestyle and science. The same tendency can also be observed for the use of humour, but only for car adverts the findings are statistically relevant (Pearson  $\chi^2=5.699$ , p-value of 0.017). Most of these aspects of the adverts, however, suffer from extremely small numbers – some combinations, such as family images and shampoo adverts do not occur at all. The exceptions here are the use of aesthetic aspects, and the use of lifestyle in car adverts. For these reasons the claims made on the basis of these data must be treated with extreme care.

## **Individual Magazines**

We also tested other relationships that turned out to be statistically insignificant. Amongst these were a relationship between the individual magazines and whether science was used in the adverts or not. The chi-squared test suggested that for cars, the concentration of adverts containing science in some magazines was statistically significant ( $p=0.042$ ), for shampoos; however, there was no such concentration ( $p=0.308$ ). Magazines with a high proportion of science in their adverts are the two men's magazines *GQ* and *Maxim*, as well as the *Economist*<sup>4</sup>. *Men's Health*, interestingly, although a magazine with a very masculine readership, does not fit. This finding suggests that  $H_0$  may need further refinement. Shampoo adverts suffer from small frequencies in some of the magazines, so the more general analysis of audiences above may be more appropriate.

We did this analysis because we thought that it might be individual magazines rather than the male/female split in the audiences that accounts for the differences. The results for the car adverts give some hints that this may be the case, but the data available is too limited to make firm statements.

## **Price**

We hypothesised that the use of science may be related to the price of the product. In particular, following  $H_a$  we expected that cheap products would be characterized by a more frequent use of science.

The data set was expanded by a variable on price. The prices of the products were sampled from *ASDA Online*, and *Yahoo! Cars*. For the cars, some prices were also collected from the manufacturer's webpage where unavailable from *Yahoo!*. The use of these sources may mask differences in status in terms that in *ASDA* almost all shampoos are cheap and of a similar price. Similarly, the use of different sources for the cars may mask difference or similarities in price, as car prices vary significantly from dealer to dealer. However, having relied mostly on two sources – one for each product – we believe that such errors were kept to a minimum.

We plotted the distribution of the different prices in a histogram for each kind of advert (see figures 6 and 7). The aim was to see whether there are any distinctions by price. The analysis catered for the fact that not all shampoo bottles are of the same size, and price per volume was used.

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<sup>4</sup> The fact that the *Economist* features a significant number of car adverts with science may be partly explained by the more expensive brands advertised. The role of price is examined further down.



**Figures 6 and 7** • The distribution of price in cars (left) and shampoos (right). Both graphs are fitted with the normal curve for comparison. Prices are given in Pound Sterling, and are based on 190 cases for the cars, and 54 for the shampoos.

For the shampoos as well as for the cars, we identified two price levels. For the shampoos the difference seems very clear: there are low-priced shampoos, and a few high-priced shampoos. The latter could be regarded as ‘luxury’ products. For the cars, however, the boundary between ordinary cars and luxury cars seemed less clear. We chose the cut-off point for cars rather arbitrarily at £40,000. More data would be needed to confirm this relationship. We then created a dummy variable for high- and low priced products for easier interpretation in cross tabulations. For most of the data analyses, however, price was used as a continuous variable.

We tested the relationship between price of the product, and whether the advert uses science. We found a positive correlation in terms that the more expensive products were more likely to use science in their adverts. The relationship can be found for both kinds of products, but is only statistically significant for cars (Wald statistic=7.728, p-value of 0.005; compared to  $p=0.261$  for shampoos). A binary logistic regression was run to establish this relationship, thus price was used as a continuous variable. The results do not change significantly when price groups (normal/luxury) are used instead of the continuous data. The very small number of luxury items in both kinds of products, however, is worrisome: more data is needed to provide more robust results.

As a possible explanation for the use of science with more expensive products, we tested the relationship between price and the use of humour. We hypothesised that cheaper products would use humour as an advertising strategy. The idea that cheaper products are more likely to be advertised using humour, however, could not be supported by the data (Pearson  $\chi^2=2.191$ , p-value of 0.139). Similarly, no relationship between price and the use of lifestyle (p-value  $>0.05$ ), or between price and the advertising of aesthetic features (p-value  $>0.05$ ) could be supported.

## **Brand**

The initial intuition to include a variable on brand, product name and the tagline, was that there could be an association between these characteristics and the use of science in the adverts. We coded all three aspects into a binary variable on whether science was implied or not. The additional data on whether the brand itself, or the name of the product connotes something scientific proved inconclusive ( $p>0.05$ ).

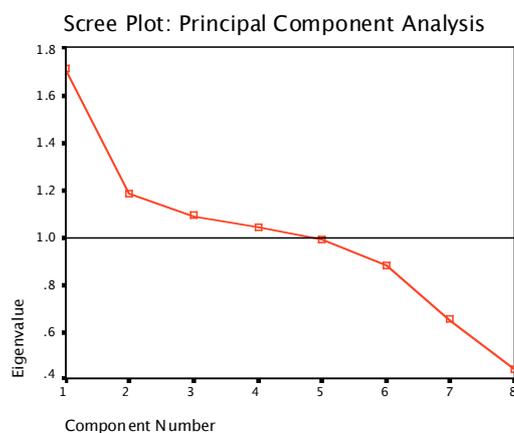
There appears to be no difference between the different products advertised in this regard.

## **Wordiness**

Another factor we considered was the wordiness of adverts – that is the number of words used. We hypothesised that car and shampoo ads are differentiated in their use of words. The idea was that because shampoo adverts tend to stress performance aspects, they would use more words for this reason. We could not find any relationship that would differentiate car adverts from shampoo adverts, neither a difference between adverts that also use science, or not. The sample used was small (N=20), but nothing was found whatsoever, not even a slight tendency. Of course the sample was too small to provide a definite answer.

## **Principal Components**

A factor analysis (principal component analysis, see figure 8) indicated that there are probably essentially two kinds of adverts. The first group of adverts is most strongly correlated with the inclusion of performance aspect ( $r=0.736$ ), and also the use of science ( $r=0.571$ ). The second group is more strongly correlated with the use of lifestyle ( $r=0.820$ ). Another potential cluster can be identified around the use of sexual implications. These results confirm some of the tendencies found in the analyses above. Due to its nature, a principal component analysis should not be used to confirm data on its own. Put in more general terms, these results confirm that different adverts use different strategies.



**Figure 8** • Scree plot of a principal component analysis that was undertaken.

## **Number of Aspects Advertised**

The data set was expanded by a variable on how many aspects are advertised. This variable is the simple sum of the existing binary variables on the aspects used to advertise the product. The intuition was that maybe the use of science was just one of many aspects, and that the more expensive products tend to advertise a number of aspects, rather than a single factor. It was striking to see that the range is from 0 to 4, with almost all adverts using either 1 or 2 aspects – with a theoretical possibility to use 8 different aspects. There seems to be a tendency for shampoos to advertise slightly more aspects. There is not really a correlation between price and the use of more or less items ( $r=0.049$ ). Inspired by  $H_9$ , we also tested an association between audience and the number of aspects advertised, with no significant result ( $p=0.490$ ).

Interestingly, the relationship between owner (who owns the product) and the number of aspects advertised is highly significant (Pearson  $\chi^2=108.365$ , p-value of 0.001). However, looking at the table itself, it may be suggested that this is *entirely* a statistical effect explained by the small number of items in each cell (the whole table is included as table 15 in appendix 6).

### **Table of Key Differences**

In order to explain the different use of science in the adverts for the two kinds of products, we identified the key features of each. We hoped that this would provide a basis for an explanatory analysis, particularly in terms of our hypothesis  $H_d$ . The key features are presented in table 7.

<b>Shampoo</b>	<b>Shared</b>	<b>Car</b>
'Linked' to women		'Linked' to men
Cheap		Expensive
Disposable good: Everyday purchase		Durable: Extraordinary purchase
	Everyday use	
Private use		Public display
Short price range		Wide price range
Small		Large
Non visible components		Many visible components

**Table 7 •** Key features of shampoos and cars.

Such a table is invariably affected by subjective perceptions and interpretations. For example, to an uninterested observer, the distinction between different components of cars may appear trivial. For somebody interested, however, such differences may be the basis of differentiation. The fact that it was possible to draw a table of differences between the products indicates that  $H_o$  and  $H_d$  could be further pursued.

### **Multivariate Analysis I**

In order comparatively assess the different findings so far, we ran a binary logistic regression (see table 8). The results show that the use of performance aspects in adverts, as well as the kind of advert – that is car or shampoo – is highly significant. The likelihood of including science is 3 times larger for adverts that stress performance aspects compared to those that do not. Similarly, a shampoo advert is 10 times more likely to feature scientific information than a car advert.

<b>Logistic Regression: The Use of Science in Adverts</b>			
	B	Sig.	Exp(B)
Irrelevant Science	-1.041	.103	.353
Performance	1.137	<b>.005</b>	3.118
Kind of Advert	2.389	<b>.000</b>	10.903
Price	.000	<b>.046</b>	1.000
General Audience		.168	
Female Audience	.173	.801	1.188
Male Audience	.834	.149	2.302
Aesthetics	-.260	.521	.771
Lifestyle	-.493	.389	.611
Humour	-1.180	.088	.307
Family	.016	.989	1.016
Sexual Images	-.508	.440	.602
Constant	-2.818	.000	.060

**Table 8** • Results of a logistic regression predicting the use of science in adverts (-2 Log Likelihood=215.190, Nagelkerke  $R^2=0.328$ ). Highlighted in bold are significant values to the 0.05 level.

### ***What We Wanted to Have***

Initially we sought to sample shampoo and car adverts in different media, particularly television. We hypothesized that the impact of television adverts on consumers would outstrip the effects from other media. Moreover, we thought that the use of scientific information in car and shampoo adverts might differ between the media. However, access to TV adverts proved more difficult, particularly since we were interested in a representative sample<sup>5</sup>. Further research is needed to test whether the use of science in different adverts varies across media.

We planned to interview an advertising expert, as an insider view might have provided some valuable insights. Particularly, the organization of the advertising industry – as well as common practices and approaches in the industry – may help understand the difference between the use of science in car and shampoo adverts. Unfortunately, initial contact broke down. However, we did manage to approach a former advertiser on a more informal basis.

### ***Discussion***

Using these different sources of data, we managed to establish interesting relationships. First of all, the content analysis enabled us to confirm that science is more commonly used as an advertising practice for shampoo products. If science was a key element to distinguish between the different kinds of advertising, it was price that distinguished the products within each category.

<sup>5</sup> Extraordinary television adverts tend to be made freely available on the internet by the companies themselves.

Samples across space and time confirmed our intuitions that the researched relationship is not a universal one. It also appears to be constrained by the characteristics of late modernity. The use of science to legitimise a product and make it appear in a more serious light is a common strategy that only seems to appear after the 1950s. Prior to that, there appeared to be less blurring in the advertising strategies, as the use of science was restricted to cars, whilst aesthetic aspects were highlighted in shampoo adverts.

The small-scale survey conducted seemed to confirm the puzzling nature of the use of science in advertising. Significant difference between the two sexes could be identified, confirming stereotypical associations of men, science and cars on the one hand, and women and shampoos on the other.

It is not unlikely that the data used in this report are limited in terms that they miss some essential differences between different adverts. For instance, the content analysis does not provide any information on the key aspect advertised: the key focus. The connotations involved the adverts, although an essential mechanism of how advertising works, were not coded. The authors are aware of these limitations, but coding connotations is as such difficult and open to contest.

### The Market

Having found differences in the use of science, we hypothesised that the companies behind the product may differ in their use of scientific information in advertising. In order to test this, we collected information on the concentration of ownership in the two respective markets. This information is available from the web pages of the different companies. The data on this are summarized in the following diagrams.

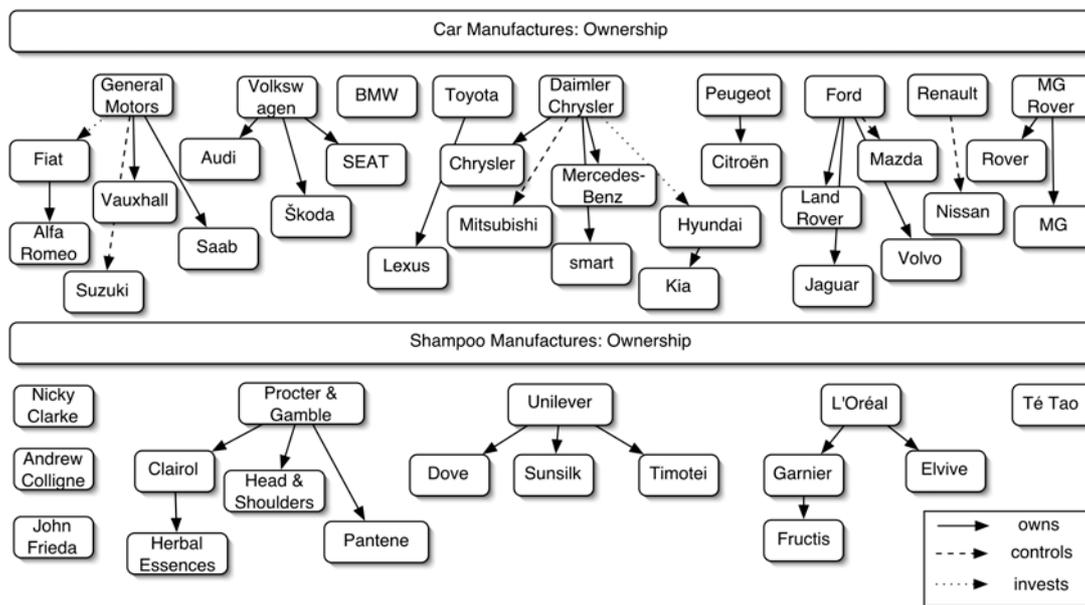


Figure 9 • The concentration of ownership in the two markets of interest.

Based on this additional information, we assigned each coded advert to the ultimate owner, and tested whether there was a significant relationship between the two. We found that for cars no such relationship can be established. We tried to vary

the degree of ownership, such as treating partly owned or controlled companies separately, but with no difference in the results.

### Ownership and the Use of Science

Count		Science relevant to product		Total
		No	Yes	
Owner	General Motors	27	3	30
	Volkswagen	28	8	36
	BMW	3	3	6
	Toyota	15	3	18
	Daimler Chrysler	12	4	16
	Peugeot	6	1	7
	Ford	51	5	56
	Renault	27	8	35
	MG Rover	2	0	2
	Procter & Gamble	18	15	33
	Unilever	4	1	5
	L'Oreal	2	12	14
	John Frieda	0	4	4
	Others	5	0	5
Total	200	67	267	

**Table 9** • Different owners and their use of scientific information in adverts. The relationship is statistically significant, particularly for shampoos (Pearson  $\chi^2=18.112$ , p-value of 0.001). For cars no such relationship can be found (Pearson  $\chi^2=10.983$ , p-value of 0.203). Based on 267 cases.

In addition to the findings based on the concentration of ownership, a personal conversation with a former advertiser (Fox, 2005) confirmed that different companies employ different advertising strategies. The use of science, she argued, was one of the aspects where different companies appear to have a divergent approach. The reason why some companies use science to distinguish their product from the rest rather than other characteristics remained unanswered by this finding. The advertiser herself was unable to point us to a specific explanatory direction.

### **Multivariate Analysis II**

With this additional data on ownership we were able to run another logistic regression. The results are represented in table 10. Although the values for audience are not all statistically significant, it is interesting to see that the likelihood of finding an advert with science is greatest for male audiences, confirming our previous results. Interestingly, maybe, the use of science in women's magazines is larger than in magazines targeted at both sexes. We are unable to explain this relationship, but it

may be that the women's and men's magazines sampled differ from the general ones in some other aspect<sup>6</sup>.

Factors Contributing to the Use of Science in Adverts			
	B	Sig.	Exp(B)
General Audience		.084	
Female Audience	.991	.227	2.694
Male Audience	1.470	<b>.036</b>	4.347
Irrelevant Science	-1.736	<b>.028</b>	.176
Aesthetic Aspects Advertised	-.253	.562	.777
Performance Aspect Advertised	.909	<b>.041</b>	2.481
Use of Lifestyle	-.342	.573	.710
Use of Humour	-1.415	.095	.243
Use of Family Images	-.757	.627	.469
Use of Sexual Images	-1.119	.157	.327
Price	.000	<b>.044</b>	1.000
General Motors		<b>.020</b>	
Volkswagen	.287	.713	1.333
BMW	2.544	<b>.048</b>	12.727
Toyota	.041	.969	1.042
DaimlerChrysler	.823	.455	2.277
Peugeot	.393	.772	1.481
Ford	-.797	.384	.450
Renault	.667	.405	1.948
MG Rover	-5.090	.894	.006
PG	2.371	<b>.006</b>	10.711
Unilever	1.269	.387	3.556
L'Oreal	5.260	<b>.000</b>	192.560
John Frieda	10.792	.718	48620.250
Other Shampoo	-3.929	.948	.020
Constant	-3.640	.001	.026

**Table 10** • Results of a logistic regression predicting the use of science in adverts, using ownership (-2 Log Likelihood= 189.314, Nagelkerke R<sup>2</sup>=0.443). Highlighted in bold are significant values to the 0.05 level. A model with fewer variables is included as table 17 in appendix 6.

The fact that the use of aesthetics, lifestyle, humour, family images, and sexual implications are all negatively correlated, supports or previous finding that adverts may be grouped in different clusters. The kind of advert that stresses performance – and may use science for this – is unlikely to also employ any of the aforementioned factors. This correlation between performance and the use of science is further illustrated by the finding that an advert stressing performance is 2<sup>1/2</sup>times more likely to feature scientific information compared to one that does not.

<sup>6</sup> *Cosmopolitan* and *Men's Health*, for instance, probably differ substantially from the *Economist* or *Reader's Digest* in their target audience and genre of magazine. A control for the age of the target audience, albeit difficult to establish, would probably help to unravel this point.

Looking at the ownership variable, we can support that shampoo adverts differ significantly from car adverts in their use of science. The increased likelihood of using science for companies such as *P&G (Procter & Gamble)* and *L'Oréal*, as compared to *General Motors*, indicates that it is probably specific companies that use science significantly more often. Tables 11 and 12 look at ownership for car and shampoo adverts separately. For cars, none of the owners is characterized by an increased use of science in their adverts (see table 11). None of the differences is statistically significantly different from the reference variable *General Motors*. The high odds-ratio for *BMW* can be explained with the small number of adverts sampled from this specific company.

Car Adverts			
	B	Sig.	Exp(B)
Irrelevant Science	-14.399	.690	.000
Performance	2.012	.000	7.478
Price	.000	.089	1.000
General Motors		.837	
Volkswagen	.365	.641	1.440
BMW	8.246	.747	3811.819
Toyota	.446	.683	1.561
DaimlerChrysler	.901	.398	2.463
Peugeot	.248	.850	1.281
Ford	-.440	.628	.644
Renault	.897	.255	2.453
MG Rover	-7.043	.906	.001
Constant	-3.494	.000	.030

**Table 11** • Results of the logistic regression, looking at cars only. This table is based on the parsimonious model included in appendix 6. None of the companies differs significantly from the base category (*General Motors*).

Shampoo Adverts			
	B	Sig.	Exp(B)
Irrelevant Science	-.397	.633	.672
Performance	-.595	.419	.552
Price	683.437	.137	1000+
PG		.147	
Unilever	-.170	.899	.843
L'Oreal	3.381	.016	29.398
John Frieda	2.607	.931	13.553
Others	-12.846	.832	.000
Constant	-5.368	.157	.005

**Table 12** • Results of the logistic regression, looking at shampoos only. This table is based on the parsimonious model included in appendix 6. Compared to the reference category (*P&G*), it is only *L'Oréal* that stands out by using science more frequently.

Using probabilities, calculated through the  $P = \frac{e^{a+b_1X_1+\dots+b_nX_n}}{1+e^{a+b_1X_1+\dots+b_nX_n}}$  formula, the results of the logistic regression are easier to understand. The numbers in this paragraph are based on the parsimonious model included as table 17 in appendix 6. The likelihood of a *Volkswagen* advert that does not stress performance aspects to have science is 6.7%. However, the same advert featuring irrelevant science is predicted a mere 1.5% likelihood of including science. The effects of irrelevant science become more visible when comparing, for instance, the prediction for a *P&G* advert with or without irrelevant science: 8.5% with, and 30.1% without. A *Ford* advert using performance aspects is predicted an 8.6% likelihood of featuring science, as compared to 2.5% without<sup>7</sup>. The probability of a *Unilever* advert that features performance aspects to use scientific information is 37.1%. For the same characteristics, but with *L'Oréal* as the owner instead, the probability of using science increases to a staggering 93.7%.

## Discussion

An analysis of the structure of the market helped us further our understanding of the puzzle in the sense that the advertising strategies of individual companies are an important factor. In contrast to the car adverts, for the shampoos, we found that a small number of owners differ significantly from the rest in terms of their use of science in the adverts of their products. Namely, *L'Oréal* and possibly *John Frieda* use science significantly more frequently than their competitors. This led us to think that maybe *L'Oréal* advertises its products much more frequently than its competitors. This could explain the puzzle on the basis that *L'Oréal* is a frequently advertised company that follows a strategy of including science in its adverts. Such a case could lead the casual observer to assume a more general pattern, linking shampoos and science.

In order to pursue this, we sampled men's and women's magazines for May 2005. The data suggest that *L'Oréal* does not advertise more than the rest (see table 13).

P&G	8	Renault	7	General Motors	4
John Frieda	4	DaimlerChrysler	9	Toyota	3
L'Oréal	4	Volkswagen	2	MG Rover	1
Unilever	1	Ford	8		
Other Shampoos	4	Peugeot	3		

**Table 13** • Frequency of adverts by different companies and their subsidiaries. The grouping of owners is based on figure 9.

<sup>7</sup> This findings confirms our casual observation that *Ford* does not use follow an advertising strategy that involves scientific information.

## Explanations

### *Introduction*

This section includes a discussion of possible explanations for the different use of science in different kinds of adverts. We primarily focus on explanations that are substantiated by the data collected as part of this research. This does not mean alternative explanations are invalid; far from it, the approach taken more commonly in cultural studies may provide a more sophisticated explanatory framework. Nevertheless, we focus on the explanations that emerged from the data collected. Given the constraints and limitations of the research, we nevertheless are confident that the explanations offered here provide a satisfactory framework.

We identified two approaches to answering the research question. On the one hand, a top-down approach starts with the advert and then moves to the consumers. Bottom-up views, on the other hand, start with the characteristics of the consumers and moves to the advertising. Both approaches are considered in this report.

### *Private Use and Public Display*

An explanation on the primary use of the product can be utilized to explain why different advertising strategies are used for shampoos and cars. Whereas a shampoo is consumed in the private realm – usually without spectators –, a car is the epitome of a product used in the public realm. This follows  $H_d$  about the use of science in terms of different use of the products.

This difference is interesting in terms of status. The public use of a car implies certain elements of status. It can be argued that the image or status of a particular car is a main reason why people invest in the product. Cars in this sense can be understood as a means to display identity and status. Our survey showed that men in particular are looking for the brand of the car. Combined with the fact that the majority of car drivers are still men (National Travel Survey, 2005), it can be argued that the status of a particular car is a fundamental feature influencing purchasing decisions. The wide range of prices in cars also suggests that there is more to cars than merely a means of transport.

The lack of spectators in the case of shampoos, on the other hand, allows the consumer to focus on attributes not linked to social pressures. Where these social pressures exist, such as having clean and shiny hair, there is no prescription of how to achieve this state. For that reason, the consumer may be more interested in the quality of the product. Using this bottom-up approach, it becomes reasonable why adverts focus on different characteristics: because this is what consumers are looking for in the product.

Figures 4 and 5 above (see page 8) show the different characteristics used in car and shampoo adverts, based on the content analysis. In the case of cars aesthetic characteristics are stressed more than any other, whereas in shampoo adverts characteristics of performance are more dominant. The use of science is strongly correlated with the advertising of performance: science is one way to advertise performance features.

## **Price**

Following hypothesis  $H_a$  we predicted that the more expensive products would be characterised by a less frequent use of science in the adverts, since there is not need to legitimise the more exclusive product.

The data on price, however, suggests that the exact opposite is true: the more expensive the product, the more likely the use of science in the advert. The original hypothesis  $H_a$  can be reformulated into

$H_a^*$ : Expensive products use science to legitimise their high price.

Since the use of science is strongly correlated with performance aspect in adverts, it may be argued that some companies choose scientific information to highlight the high performance of their more expensive brands. The multivariate regression analyses, however, suggest that the effects of price largely disappear once controlling for other factors, such as ownership.

## **Differentiation**

$H_b$  states that science can be used to distinguish otherwise indistinguishable products. This expands on the explanation based purely on price. Such an argument was formulated by Adorno and Horkheimer (Negus, 1997; Adorno, 1991). Mass-produced goods are only distinguished in terms of pseudo-individuality, whilst essentially all the goods are regarded indistinguishable by these authors.

That the difference between the Chrysler range and General Motors products is basically illusory strikes every child with a keen interest in varieties. (Adorno & Horkheimer, 1997 [1944], p.123)

We can observe the use of science to distinguish between different shampoos, but for cars no such relationship can be found. The analysis of the market structure helped to identify one or two companies which use scientific information more frequently than their competitors. This does not mean that the other companies – or all the car manufacturers – use the same advertising strategies; science is one way to differentiate between otherwise indistinguishable products. The content analysis, unfortunately, is unable to substantiate this argument much further.

An account by the president of the Advertising Standards Authority on a broadcast on BBC Radio 4 (2005) suggested that regulation of the advertising industry is necessary because the advertisers are extremely keen to stand out from the competitors. Every year there are an increasing number of complaints, which are linked to the need of advertisers to stand out. This supports the view that distinguishability is valued but very difficult a feature to accomplish.

The very concept of indistinguishability is problematic when referring to the differences between shampoos and cars. The suggestion that two shampoos are more similar than two cars entails specific value judgements. It is probably the case that the more familiar a person is with the product at hand, the more differentiating features they are able to identify. This may be the same mechanism as found in languages, whereby common occurrences in specific cultures are described with varying and

more precise words – the equivalent of which does often not exist in other cultures (Hall, 1997).

## **Gender**

Our third hypothesis ( $H_3$ ) ponders about the effects of gender. We found a relationship between the primary audience of the adverts and gender. Apart from the fact that men are subjected to more science in adverts, this relationship seemed less clear. Additionally, our analyses found some other significant gender effects. Based on the survey, we found gender stereotypes somewhat confirmed. For instance women and men tend to look for different characteristics in the different products. In the case women, the characteristics they are looking for in shampoos are quality and brand, whereas in cars they go for price. The case for men is the exact opposite: price is the primary criteria for shampoo purchases, whilst they look for quality and the brand in cars. This suggests that men and women value the products in an opposing manner. The graphs in figure 2 above (see page 7) highlight this clearly.

Given the definite gender patterns, it may be surprising to find science primarily in conjunction with the female product: the shampoo<sup>8</sup>. A radical feminist point of view would suggest that in a patriarchy the male concept of science is used to infantilise women. The data of this research, however, is unable to substantiate such a claim. Nevertheless, the concept of a male gaze in advertising has been used in other research to make a compelling case (Woodward, 1997; Goffman, 1976).

## **Other Factors**

The study of the market of the different product alone can provide a strong yet limited explanation of why science is used with some products more frequently than with others. Whilst it provides a partial answer for the shampoos, it is unclear how the concentration of ownership affects the use of science in car adverts: none of the key players seems to use scientific information more often than others. Solely based on the insights gained from the shampoo market, it may appear rational if one of the car advertisers adopted an advertising strategy using scientific information, in order to stand out from the competition.

The role of professional discourses may provide an answer why science is more common in shampoo adverts. The former advertiser we talked to suggested that specific ways are used to advertise certain products, although the reason why these ways are prevalent is far from clear. The concepts of informational cascades may prove helpful in understanding this. Certain ways to advertise shampoos have been tried before and regarded successful. Other advertisers may think that the successful advertisers have some extra information on the market and it is thus rational for them to utilize a similar approach. Given the stiff competition in a market with very few key-players it may be understandable why advertisers are reluctant to radically innovate.

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<sup>8</sup> It is not the case that a shampoo is an inherently feminine product, but associated through gender stereotypes. The existence and persistence of such stereotypes have been confirmed by other research (Social Trends, 1994; IAT, 2005).

## Evaluation

	Strong Points	Weak Points
Private/Public	<ul style="list-style-type: none"> <li>▪ Powerful narrative</li> <li>▪ Plausible argument</li> <li>▪ Applies to other products</li> </ul>	<ul style="list-style-type: none"> <li>▪ Hard to substantiate from data</li> </ul>
Price	<ul style="list-style-type: none"> <li>▪ Explains the use of science in car adverts as well as in shampoo adverts</li> <li>▪ Fits the data</li> </ul>	<ul style="list-style-type: none"> <li>▪ Unclear whether <math>H_a^*</math> applies to other products</li> <li>▪ Spurious?</li> </ul>
Differentiation	<ul style="list-style-type: none"> <li>▪ Plausible argument</li> <li>▪ Fits the data</li> <li>▪ Applies to other products</li> </ul>	<ul style="list-style-type: none"> <li>▪ Controversial (especially through links to the Frankfurt School)</li> </ul>
Gender	<ul style="list-style-type: none"> <li>▪ Links with literature</li> </ul>	<ul style="list-style-type: none"> <li>▪ Hard to substantiate with data</li> <li>▪ Does not stand on its own (needs literature)</li> </ul>
Discourses, Informational Cascades, Cost of Innovation	<ul style="list-style-type: none"> <li>▪ Plausible arguments</li> </ul>	<ul style="list-style-type: none"> <li>▪ Impossible to measure directly</li> <li>▪ Not all concepts are clear</li> </ul>
Market Structure	<ul style="list-style-type: none"> <li>▪ Powerful argument for the shampoo adverts</li> </ul>	<ul style="list-style-type: none"> <li>▪ Fails to explain car adverts</li> <li>▪ Does not stand on its own</li> </ul>

**Table 14** • Summary of the strengths and weaknesses of the different explanatory frameworks.

Overall, the combination of these approaches can provide a satisfactory explanatory framework to unravel a puzzle which, regardless of the initial appearance as simple and of little significance, turned out to be fairly complicated. An understanding of causal pluralism is more appropriate in dealing with the issue at hand than a search for a single, all-explaining theory. Based on the data collected in this research, the explanations based on price and particularly differentiation are the most satisfactory, given the combination of conceptual coherence and their ability to fit the collected data.

## Conclusion

In this research we investigated why shampoo adverts appear to use more science than car adverts. After establishing the truthfulness of the claim, we expanded the data from the content analysis using various methodologies. The data forced us to revise some of our hypotheses. We explored different explanatory frameworks, ranging from price to critical theory. It was interesting to find gendered patterns, although their explanatory significance towards solving the puzzle is relatively limited. The analysis of market structure in conjunction with a theory on the need to differentiate probably provided the most satisfactory approach, although no single explanation is able to capture all facets to this puzzle. All in all, the combination of explanations provided leaves us with a better understanding of the initial paradox.

## References

- Adorno, T. (1991) *The Cultural Industry*, London, Routledge.
- Adorno, T. & Horkheimer, M. (1944) *Dialectic of Enlightenment*, New York, Verso.
- Advertising Standards Authority (2005) London, BBC Corporation, 26<sup>th</sup> April 2005.
- Anderson, L. & Holt, C. (1996) 'Classroom games: informational cascades', *The Journal of Economic Perspectives*, 10:187-93.
- Audit Bureau of Circulations (2005) *ABC Data: Magazine Data* [online], Berkhamsted, Audit Bureau of Circulations, available from: <http://www.abc.org.uk> [accessed 7<sup>th</sup> February 2005].
- Bedford, A. (2005) *Cars since 1930* [online], Norwich, Eduzone, available from: <http://www.eadt.co.uk/eduzone/Cars/home.asp> [accessed 21st April 2005].
- Bennett, T. and Watson, D. (eds) (2002) *Understanding Everyday Life*, Oxford, Blackwell Publishers/ The Open University.
- du Gay, P. (ed.) (1997) *Production of Culture/Cultures of Production*, London, Sage/The Open University.
- Equal Opportunities Commission (2001) *Women and Men in Great Britain: Sex Stereotyping – from school to work* [online], Manchester, Equal Opportunities Commission, available from: [http://www.eoc.org.uk/cseng/research/wm\\_sex\\_stereotyping.pdf](http://www.eoc.org.uk/cseng/research/wm_sex_stereotyping.pdf) [accessed 23<sup>rd</sup> April 2005].
- Fink, J., Lewis, G., Carabine, J., and Newman, J. (2004) *Course Companion*, Milton Keynes, The Open University.
- Foucault, M. (1984) *Space, Knowledge, and Power*, interview with Rabinow, P. in Rabinow, F. (ed.) (1991) *The Foucault Reader*, London, Penguin.
- Fox, C. (2005) conversation with the authors, 20<sup>th</sup> April 2005.
- Gilbert, N. (ed.) (1996) *Researching Social Life*, London, Sage.
- Gilmour, M. (1999) *Ads of Yesteryear* [online], Typhoon-Casualties.com, available from: <http://www.typhoon-casualties.com/carads.html> [accessed 21st April 2005].
- Goffman, E. (1976) *Gender Advertisements*, London, Macmillan.
- Hall, S. (1997c) 'The work of representation' in Hall, S. (ed.) (1997).
- Hall, S. (ed.) (1997) *Representation: Cultural Representations and Signifying Practices*, London, Sage/ The Open University.
- Hamilton, P. (2002c) 'The street and everyday life' in Bennett, T. and Watson, D. (2002).
- IAT (2005) *Implicit Association Test: Gender* [online], Cambridge, Project Implicit/ Harvard University, available from: <https://implicit.harvard.edu/implicit/uk/selectatest.html> [accessed 18<sup>th</sup> April 2005].
- Krippendorff, K. (1980) *Content Analysis: An Introduction to Its Methodology*, London, Sage.
- Krippendorff, K. (2002) *Computing Krippendorff's Alpha-Reliability* [online], Philadelphia, University of Pennsylvania, available from: <http://www.asc.upenn.edu/usr/krippendorff/webreliability2.pdf> [accessed 9<sup>th</sup> January 2005].
- National Travel Survey (2005) Driving licences [online], London, Department for Transport/National Statistics, available from: <http://www.statistics.gov.uk/CCI/nugget.asp?ID=1093&Pos=&ColRank=1&Rank=374> [accessed 22<sup>nd</sup> April 2005].
- Negus, K. (1997) 'The production of culture' in du Gay, P. (ed.) (1997).
- RareAds.com (2005) *Largest Selection of Rare and Hard to Find Ads on the Net!* [online], RareAds.com, available from: <http://www.rareads.com/rareads/webmiscell.2.html> [accessed 21st April 2005].
- Redman, P. (2002) 'Love is in the air: Romance and the everyday' in Bennett, T. and Watson, D. (2002).
- Social Trends (1994) *Social Trends*, HMSO, London.
- University Gazette (2004) *Undergraduate Admission Statistics: 2004 Entry* [online], Oxford, Oxford University, available from: <http://www.ox.ac.uk/gazette/2004-5/supps/adstats04.pdf> [accessed 23<sup>rd</sup> April 2005].
- Woodward, K. (1997) 'Motherhood: Identities, meanings and myths' in Woodward, K. (ed.) (1997).
- Woodward, K. (ed.) (1997) *Identity and Difference*, London, Sage/ The Open University.

## Appendices

### Appendix 1: How We Coded (Codebook)

Code	Sub-code	Definition and Example
Magazine		Definition: Name of the magazine. <i>Example: Marie Claire</i>
Audience	Female	Definition: Primary audience of the magazine; coded as a binary variable (yes/no), with yes to both sub-codes for a generic audience.
	Male	
Issue		Definition: Issue of the magazine. <i>Example. May 2004</i>
Shampoo		Definition: The product advertised is a shampoo; coded as a binary variable (yes/no).
Car		Definition: The product advertised is a car; coded as a binary variable (yes/no).
Brand		Definition: The brand advertised. <i>Example: Audi; L'Oréal</i>
Product		Definition: The Product advertised. <i>Example: Ibiza; Elvive</i>
Person	Woman	Definition: There is a man or a woman pictured in the advert; coded as a binary variable (yes/no) for each.
	Man	
Tagline		Definition: The actual tagline used in the advert. <i>Example: The ultimate driving machine; Wash your hair in sunshine.</i>
Science	Relevant	Definition: Scientific information that is related to the product; coded as a binary variable (yes/no). <i>Example: pictures of molecules; rich pro-vitamin formula</i>
	Irrelevant	Definition: Presence of scientific information that is not related to the product advertised; coded as a binary variable (yes/no). This includes unverifiable data on the reliability/quality of the product. <i>Example: Up to 70% smoother and shinier.</i>
Aspects	Aesthetic	Definition: Aesthetic aspects of the product are advertised; coded as a binary variable (yes/no). This includes appeals to the senses, looks of the product as key focus. <i>Example: stylised shampoo bottle; alloy wheels</i>
	Performance	Definition: Performance aspects of the product are advertised; coded as a binary variable (yes/no). <i>Example: 16V, power steering; keeps your hair blond; Car of the Year award.</i>
Includes	Lifestyle	Definition: Lifestyle images are used to advertise the product; coded as a binary variable (yes/no). Obvious implication of image and status. <i>Example: For the girl-about-town, our [car] is the thing to be seen in..</i>
	Humour	Definition: Humour used to advertise the product; coded as a binary variable (yes/no). <i>Example: Hair used as a scarf in conjunction with the tagline 'winter is so last season'</i>
	Family	Definition: Family images are used to advertise the product; coded as a binary variable (yes/no). <i>Example: Car and family on the beach.</i>
	Sexual	Definition: Sexual and suggestive images are used to advertise the product; coded as a binary variable (yes/no). <i>Example: Obvious suggestive looks or gestures.</i>

**Table 15** • Codebook for the content analysis on shampoo and car adverts.

## Appendix 2: Twenty-one ads and their coding.

The following section contains a sample of twenty-one adverts and information on how we coded them. There are ten different shampoo adverts, and eleven different car adverts, each preceded by a page outlining how they would have been coded as part of the content analysis.

Advertising 1		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Vauxhall
Product		Corsa
Person	Woman	no
	Man	no
Tagline		Try it for size.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>distinctive new front grille and lights; colour-coded bumpers</i> )
	Performance	no
Includes	Lifestyle	no
	Humour	yes (car on display case links with shoes, supported by the tagline)
	Family	no
	Sexual	no

(Advert 1)

Advertising 2		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Toyota
Product		Yaris
Person	Woman	yes
	Man	yes
Tagline		You could love it too much
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	no
	Performance	no
Includes	Lifestyle	no
	Humour	yes (matching hair colour to that of the car)
	Family	no
	Sexual	no

(Advert 2)

Advertising 3		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Ford
Product		Fiesta
Person	Woman	yes (mannequins)
	Man	yes (mannequins)

Tagline		Designed for living. Engineered to last.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>he couldn't take his eyes off the slinky black leather</i> )
	Performance	no
Includes	Lifestyle	no
	Humour	yes (mannequins and a real car are mixed; doll house image)
	Family	no
	Sexual	yes ( <i>saucy new Fiesta; was it time to change Kenny for a new model as well</i> )

(Advert 3)

Advertising 4		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Seat
Product		Ibiza
Person	Woman	no
	Man	no
Tagline		What car? This car.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	no
	Performance	yes (car of the year award)
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	no

(Advert 4)

Advertising 5		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Renault
Product		Clio
Person	Woman	no
	Man	no
Tagline		Va va voom
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>don't just look good when you could look great</i> )
	Performance	yes ( <i>16V, 2.0 litre</i> )
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	no

(Advert 5)

Advertising 6		
Code	Sub-code	Coding
Shampoo		no

Car		yes
Brand		Vauxhall
Product		Astra Coupé Edition 100
Person	Woman	no
	Man	no
Tagline		Rhapsody in [blue]
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>leather interior; alloy wheels; the colour of the car:blue</i> )
	Performance	yes ( <i>1.8, 2.2, 2.0 litres turbo</i> )
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	no

(Advert 6)

Advertising 7		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Renault
Product		Clio
Person	Woman	yes
	Man	no
Tagline		Va va voom for the people who don't do gear sticks.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>devastatingly styling; electronic sunroof</i> )
	Performance	no
Includes	Lifestyle	yes ( <i>for the girl-about town</i> )
	Humour	no
	Family	no
	Sexual	yes ( <i>suggestive looks</i> )

(Advert 7)

Advertising 8		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Vauxhall
Product		Corsa
Person	Woman	no
	Man	yes
Tagline		Put the fun back into driving.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	no
	Performance	no
Includes	Lifestyle	no
	Humour	yes ( <i>hair of man and bush behind car resemble</i> )
	Family	no
	Sexual	no

(Advert 8)

Advertising 9		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Fiat
Product		Punto
Person	Woman	no
	Man	yes
Tagline		More equipment than you'd expect.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>satellite navigation, CD multi-changer</i> )
	Performance	no
Includes	Lifestyle	no
	Humour	yes (man looks inside car: the car's interior seem to be more interesting than the scenery)
	Family	no
	Sexual	no

(Advert 9)

Advertising 10		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Toyota
Product		Yaris
Person	Woman	no
	Man	no
Tagline		You could love it too much.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	no
	Performance	no
Includes	Lifestyle	no
	Humour	yes (tree is cut so that bird do not make droppings on the car)
	Family	yes (family house in suburbia)
	Sexual	no

(Advert 10)

Advertising 11		
Code	Sub-code	Coding
Shampoo		no
Car		yes
Brand		Ford
Product		Fiesta
Person	Woman	no
	Man	no
Tagline		Designed for living. Engineered to last.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes (image of the car itself; <i>rare piece</i> likens car to a piece of art)
	Performance	no
Includes	Lifestyle	no

	Humour	no
	Family	no
	Sexual	no

(Advert 11)

Advertising 12		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Sunsilk
Product		Sunsilk
Person	Woman	yes
	Man	no
Tagline		Hairsaver.
Science	Relevant	yes ( <i>Duo Keratin</i> )
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>what a silky, smooth, shine</i> )
	Performance	yes (images demonstrate the process)
Includes	Lifestyle	no
	Humour	yes (life saver figure in hair)
	Family	no
	Sexual	no

advert 12

Advertising 13		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Pantene
Product		Pro-V
Person	Woman	yes
	Man	no
Tagline		For hair so healthy it shines.
Science	Relevant	yes ( <i>rich pro-vitamin formula</i> )
	Irrelevant	no
Aspects	Aesthetic	yes ( <i>you really feel the difference; image of the advert itself</i> )
	Performance	yes ( <i>smoother and softer hair in just 10 days</i> )
Includes	Lifestyle	no
	Humour	yes (hair used as a scarf with the supporting text <i>winter is so last season</i> )
	Family	no
	Sexual	no

(Advert 13)

Advertising 14		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Head & Shoulders
Product		Head & Shoulders
Person	Woman	yes
	Man	no
Tagline		You won't believe it's dandruff shampoo.
Science	Relevant	no

	Irrelevant	no
Aspects	Aesthetic	no
	Performance	yes ( <i>a new secret to gorgeous hair</i> )
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	yes (suggestive looks)

(Advert 14)

Advertising 15		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Nicky Clarke
Product		Extra Thickening
Person	Woman	yes
	Man	no
Tagline		Hair should be like men. Gorgeous, rich and full of life.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes (shape of the bottle)
	Performance	yes (image in advert demonstrates the thickening effect)
Includes	Lifestyle	no
	Humour	yes (likening men and shampoos)
	Family	no
	Sexual	yes (suggestive looks)

(Advert 15)

Advertising 16		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Pantene
Product		Pro-V
Person	Woman	yes
	Man	no
Tagline		A lighter kind of shine.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	yes (wavy hair)
	Performance	yes ( <i>gently lifts grease away</i> )
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	no

(Advert 16)

Advertising 17		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Sunsilk
Product		Sunsilk

Person	Woman	yes
	Man	no
Tagline		Frizz tamer
Science	Relevant	yes ( <i>Aloe serum</i> )
	Irrelevant	no
Aspects	Aesthetic	no
	Performance	yes ( <i>give you frizz-free waves and curls</i> )
Includes	Lifestyle	no
	Humour	yes ( <i>frizz tamer figure in hair</i> )
	Family	no
	Sexual	no

(Advert 17)

Advertising 18		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Head & Shoulders
Product		Head & Shoulders
Person	Woman	no
	Man	no
Tagline		The coolest way to get rid of dandruff.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	no
	Performance	yes ( <i>100% flake free; refreshing</i> )
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	no

(Advert 18)

Advertising 19		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Timotei
Product		Golden Highlights
Person	Woman	yes
	Man	no
Tagline		Wash your hair in sunshine.
Science	Relevant	no
	Irrelevant	yes ( <i>80% with blond or brown hair noticed natural-looking highlight after just 8 – 12 washes.</i> )
Aspects	Aesthetic	no
	Performance	yes ( <i>demonstrates highlight effects in advert</i> )
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	no

(Advert 19)

Advertising 20		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Pantene
Product		Pro-V
Person	Woman	yes
	Man	no
Tagline		The measure of healthy looking hair.
Science	Relevant	yes (picture of molecules)
	Irrelevant	yes ( <i>up to 70% smoother and shinier</i> )
Aspects	Aesthetic	no
	Performance	yes (demonstrates effects in advert)
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	no

(Advert 20)

Advertising 21		
Code	Sub-code	Coding
Shampoo		yes
Car		no
Brand		Clairol
Product		Herbal Essences
Person	Woman	yes
	Man	no
Tagline		The experience just got fruity.
Science	Relevant	no
	Irrelevant	no
Aspects	Aesthetic	no
	Performance	no
Includes	Lifestyle	no
	Humour	no
	Family	no
	Sexual	yes ( <i>ever tried it with a mango [...]</i> )

(Advert 21)

### Appendix 3: Glossary

Advert	An advertising found in print in a magazine, unless otherwise stated.
Audience	The people an advert is primarily written for. In the context of magazines, the audience refers to the people the magazine is primarily written for. The audience consists of the people who consume a specific cultural text (Hall, 1997; Gilbert, 1996).
Car	In the context of this report we refer to cars as distinct from vans.
Consumer	A consumer is a person who uses specific goods. The term is particularly used in conjunction with the notion of a consumer society: a society driven by the consumption of goods that do not cover basic needs: culturalized goods (Hamilton, 2002).
Discourse	A discourse is a way of representing knowledge of a particular topic. It makes it possible to say some things but restricts what can be said or even thought about that topic. Discourses are historically specific (Redman, 2002; Foucault, 1972).
Information cascade	In an information cascade information inferred from others is used to complement the information held privately. This means that people will go along with a consensus even if the prediction would not be the correct one on the basis of their own sample. In information cascades conformity may prevent new information from being used (Anderson & Holt, 1996).
Lifestyle	Lifestyle is about self-expression, style and taste. It is used to adjust to different target audiences. This is for example achieved by customization or by association of the product with other meanings (Hall, 1997).
Male gaze	The male gaze is the view through the eyes of a man. It is argued that in a patriarchal society only the male gaze is counted. (Woodward, 1997)
Private	The private describes the realm of the personal and domestic. It is traditionally thought to be the realm of the woman: the household and the family. This is where the woman is seen as a wife (Fink <i>et al.</i> , 2004).
Public	The public describes the sphere of the communal life. It is traditionally thought to be the male sphere of politics, government and the work place. This view is challenged by feminists (Fink <i>et al.</i> , 2004).
Risk	Scientifically, a risk is the probability of a hazard occurring in a particular situation.
Science	Scientific information, such as images of molecules, or the names of specific extracts and components.
Shampoo	In the context of this report we refer to shampoos as a product from cleaning hair, but distinct from other products used to treat hair, such as conditioners, or hair dyes.

### Appendix 4: The Survey<sup>1</sup>

Imagine you were to buy one of the following products. Which **criteria** would you use to determine which product to buy?

#### Shampoo

<input type="checkbox"/> brand <input type="checkbox"/> quality <input type="checkbox"/> price <input type="checkbox"/> ..... <input type="checkbox"/> .....
--

#### Car

<input type="checkbox"/> brand <input type="checkbox"/> quality <input type="checkbox"/> price <input type="checkbox"/> ..... <input type="checkbox"/> .....
--

How much science would you expect in a **shampoo** advert?

- a lot     
 average     
 a little     
 don't know

How much science would you expect in a **car** advert?

- a lot     
 average     
 a little     
 don't know

Are you?

- female     
 male

- under 20     
 20 to 30     
 30 to 40     
 40 to 50     
 over 50

Thank you very much for helping us!
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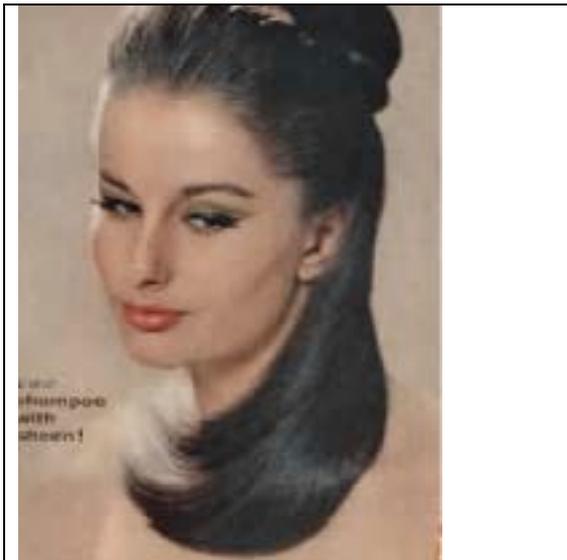
---

<sup>1</sup> The word *expect* used in the survey is ambiguous. We verbally informed the respondent that we meant *anticipate* rather than *want*.

## Appendix 5: Advertising over time

### Shampoo Adverts

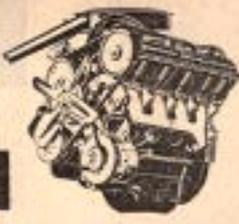
	<p>Year: 1963</p> <p>Advertising the impeccable performance of the new Clairol colourfast shampoo.</p> <p>Source: RareAds.com (2005).</p>
--	---

	<p>Year: 1963</p> <p>Source: RareAds.com (2005).</p>
---	--

	<p>Year: 1958</p> <p>Focus on performance</p> <p>Source: RareAds.com (2005).</p>
---	--

Car Adverts

	<p>Year: 1930s</p> <p>Advert full of performance aspects supported by scientific claims.</p> <p>Source: Bedford (2005).</p>
--	---

<p><b>The great '68 symbol sleek scorchy new Victor</b></p>  <p>Victor gets scorchy O.H.C. power and a completely new, sleek shape for '68. Wide-track stability. All-coil suspension. Unique safety features. Two models: 3500 cc Victor, and the superb Victor 2000.</p>  <p>Victor 2000 Victor 3500</p> <p><b>Come see Victor at</b> Your Vauxhall-Bedford Main Dealer <b>EGERTONS</b> (IPSWICH) LTD. CROWN STREET, IPSWICH Telephone: IPSWICH 55083</p> <p><b>The Vauxhall Breed's got style.</b></p>	<p>Year: 1968</p> <p>Performance aspects still central to the advert.</p> <p>Source: Bedford (2005).</p>
---	--



**Mercury's got it.  
European elegance with an American Cougar wrapped around it.**

From the outside, Cougar looks like it was  
designed in Europe. Inside, it's proved to be.  
But look at all that fine design and you'll  
know it's not just a look. Cougar has a drive  
out, it's an exciting ride. And it's  
One more thing. Cougar comes complete. At  
no extra cost, every Cougar comes equipped  
with a V8 engine, deep-tread bucket seats,  
cruise, concealed headlights, optional

new four-speaker. And so on over a long list  
of goodies. We think a sports car ought to have  
to wrap up the excitement.  
What if those sports cars can't see the  
driver when an oncoming car has taken  
to be in Cougar's lane. In the fact is, you'd  
far prefer and safer for driver. Cougar is  
America's best equipped luxury sports car.  
But the best looking, in your own mind.

How did Cougar get to be the best? We  
like to think it's in the heritage of the  
British "Continental" Cougar takes from  
the Lincoln-Mercury Division. The man who  
built Cougar had a Fine Car touch that  
can't be described. It's  
and we'll see with a Cougar. You'll see  
what we mean very quickly.  
See Fine Car Touch inspired by the Continental.

MERCURY



Year: 1968

Move towards  
aesthetic aspects as  
primary focus of car  
adverts.

Source: Gilmour  
(1999).

**Appendix 6: Further Tables**

Ownership \* Number of Aspects advertised Crosstabulation

		Number of aspects advertised					Total	
		0	1	2	3	4		
Owner	General Motors	Count		17	11	2	30	
		% within Owner		56.7%	36.7%	6.7%	100.0%	
	Volkswagen	Count		16	14	5	1	36
		% within Owner		44.4%	38.9%	13.9%	2.8%	100.0%
	BMW	Count		1	3	1	1	6
		% within Owner		16.7%	50.0%	16.7%	16.7%	100.0%
	Toyota	Count	2	10	5	1	18	
		% within Owner	11.1%	55.6%	27.8%	5.6%	100.0%	
	Daimler Chrysler	Count	1	5	7	3	16	
		% within Owner	6.3%	31.3%	43.8%	18.8%	100.0%	
	Peugeot	Count		4	2		1	7
		% within Owner		57.1%	28.6%		14.3%	100.0%
	Ford	Count		25	25	5	1	56
		% within Owner		44.6%	44.6%	8.9%	1.8%	100.0%
	Renault	Count		14	17	4		35
		% within Owner		40.0%	48.6%	11.4%		100.0%
	MG Rover	Count		1			1	2
		% within Owner		50.0%			50.0%	100.0%
	Procter & Gamble	Count		13	16	4		33
		% within Owner		39.4%	48.5%	12.1%		100.0%
	Unilever	Count		1	4			5
		% within Owner		20.0%	80.0%			100.0%
	L'Oreal	Count			6	5	3	14
		% within Owner			42.9%	35.7%	21.4%	100.0%
	John Frieda	Count		1	1	2		4
		% within Owner		25.0%	25.0%	50.0%		100.0%
	Others	Count		2	2	1		5
		% within Owner		40.0%	40.0%	20.0%		100.0%
Total		Count	3	110	113	33	8	267
		% within Owner	1.1%	41.2%	42.3%	12.4%	3.0%	100.0%

**Table 16** • The relationship between owner of the brand and the number of aspects advertised. The relationship is statistically significant ( $p=0.000$ ), but this is probably entirely a statistical effect. Most of the cells have less than 5 expected frequencies. Based on 267 cases.

**Parsimonious Model: Factors Contributing to the Use of Science in Adverts**

	B	Sig.	Exp(B)
Irrelevant Science	-1.537	.042	.215
Performance	1.304	.001	3.683
Price	.000	.045	1.000
General Motors		.018	
Volkswagen	.459	.547	1.582
BMW	2.005	.107	7.427
Toyota	.179	.864	1.196
DaimlerChrysler	.797	.429	2.218
Peugeot	.333	.794	1.395
Ford	-.570	.515	.565
Renault	.848	.263	2.335
MG Rover	-5.246	.834	.005
PG	2.251	.003	9.502
Unilever	1.263	.366	3.536
L'Oreal	4.492	.000	89.309
John Frieda	9.454	.597	12754.680
Other	-5.410	.883	.004
Constant	-3.095	.000	.045

**Table 17** • Factors contributing to the use of science in adverts. This model uses fewer variables than the one in table 9 in the report itself. This more parsimonious model has a Nagelkerke  $R^2$  of 0.398.