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The influence of camera angle on evaluating low and high involvement products

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Abstract

This study addressed the question whether camera angle (high or low) had an impact on the evaluation of low and high involvement products. Pictures of low involvement products were hypothesized to be evaluated more positive when photographed from a low camera angle compared to a high camera angle. These camera angle effects were tested in an experiment where subjects viewed pictures from both a low and a high involvement product from either a high or a low camera angle. The results did not support the hypothesis. Furthermore, no proof was found that camera angle effects occur more often (or are stronger) in the low involvement product pictures then in the high involvement product pictures.

1 Introduction

The majority of communication research has, in order to understand the impact of media messages, focussed on the effect of content of the messages. Consequently less attention has been given to visual aspects of media messages that also could have an important impact on human behaviour. Such elements are for example camera angle, lighting, juxtaposition, context, relative size, etc. The viewer is not always aware of these elements and manipulation of these elements can therefore lead to changes in attitude while there is relatively little awareness of the manipulation.

In order to test this supposition for the visual aspect of camera angle, several researchers have been conducting research in this field (Kraft 1987; Mandell & Shaw 1973; Tiemens 1970) in which they gave special attention to the impact of camera angle in which a person was photographed on the judgements of that person. They found that subjects evaluated persons that were photographed at a low camera angle much more positive than persons whose pictures were taken from a high camera angle. The effect is known as the camera angle effect. An interesting question is if these effects also occur when the evaluated object is a product rather then a person.

1.1 Camera angle effect on product evaluation

In 1992 Meyers-Levy and Peracchio conducted an experiment to examine the effect of camera angle on the evaluation of a photographed product. The manipulation of the camera angle concerned an ad for a bicycle in which the bicycle was presented at an angle of approximately 40 degrees above and below eye level (see Appendix A). Furthermore, Meyers-Levy and Peracchio manipulated the subjects on the motivation to process the information of the ad. The manipulation to process information was done by two procedures. First the group of participants was divided in two; the first half was told that they would have a great chance to win the item of research while the other half was told that they would have a slim chance of winning the item. The second procedure entailed the measuring of the degree to which the subjects had the natural tendency to think extensively about issues and enjoyed engaging in cognition. This natural tendency was measured with Cacioppo, Petty and Kao's (1984) version of the need for cognition (NFC) scale.

The study of Meyers-Levy and Peracchio tried to find support for one of the two hypotheses for camera angle effects suggested by Kraft (1987). The two hypotheses were the heuristic processing hypothesis and the differential information hypothesis. The heuristic processing hypothesis stated that camera angle effects may be due to the fact that we make use of simple decision rules or heuristics to form judgements on elements in our environment whereby, as a result of our experience with the natural world, objects that we look up to are viewed as more positive and objects that we look down on are viewed as more negative. If, for example in a movie, the viewer has to look up to the actor from a low-angle camera shot, the actor is perceived as if in a position of dominance and visual authority. If the shot is taken at eye-level, the viewer is more face-to-face with the actors, which results in visual parity. Finally, if the viewer can look down on the actor from a high-angle shot he is placed in a position of visual dominance and authority (Kraft, 1987). The alternative hypothesis that Kraft suggested was the differential information hypotheses, which states that there is different information available in shots that are taken from different camera angles and that because of this difference in information there is a difference in the judgement between the shots taken from a low and a high camera angle. Kraft referred to Gaunt and Petzold (1968) who stated that high camera shots displayed features that were unflattering and as a result the displayed object was perceived to be top heavy whereas the low camera shots gave rise to the display of features that lay the emphasis on the stability and grace of the object. In other words, looking

down on an object gives the viewer insight into less flattering features of that object whereas looking up to an object results in perceiving the highly positive features of the object.

Meyers-Levy and Peracchio predicted that the differential information hypothesis was confirmed if the viewer evaluates the product more positive when the motivation to process information was high. This is because when the viewer examines the product thoroughly, the unflattering features of the product viewed from a high camera angle and the positive features of the product viewed from a low camera angle are both clear to the viewer. If, on the other hand, the camera effect occurs more strongly when the motivation to process information was low, the heuristic processing hypothesis had to be correct. This is because if the viewer lacks the motivation to perform a detailed analysis of the product, judgements about the product are made in a less analytical manner and people tend to make judgements about products using a simple decision rule or heuristic. They found that when motivation to process information was low, the camera angle effect was stronger compared to the situation where the motivation to process information was high. In other words there was a greater difference in the judgement for the ad between the high and the low camera angle in the situation where the motivation to process information was low than between the high and the low camera angle in the situation where the motivation to process information was high. This outcome supports the heuristic information hypothesis that states that camera angle effects are due to the fact that we use simple decision rules or heuristics to form judgements on photographed items.

In summary, the study of Meyers-Levy and Peracchio found proof for the fact that camera angle effects not only occur for persons but that they also can occur for products. Also, this study found support for the heuristic processing hypothesis. An interesting question is whether this effect will also appear for different kinds of products and if this effect is constant over different products. In their study Meyers-Levy and Peracchio manipulated motivation to process information of the photographed object by varying the task instruction. The study described in this paper differentiates on motivation to process the information of the photographed object by selecting different products that belong to product categories that differ on involvement. For this situation the heuristic processing hypothesis would predict that the camera angle effects would appear more often in the situation where a low involvement product is shown compared to the situation where a high involvement product is shown. If this effect is found, this implies that it should be possible to predict camera angle effects for different products if the level of involvement of the products is known in advance.

The next section will discuss how products can vary in high and low involvement and what role involvement plays in product evaluations.

1.2 The role of involvement on product evaluations

The concept of involvement has been introduced in psychology in 1947 by Sherif and Cantril and was used in the beginning to explain the receptivity of individuals on communications. It was later used to explain the reactions of consumers to advertisements. In the marketing theory, involvement is characterized as follows: the more important a product is for a certain individual, the more he or she is motivated to look at an ad for that product. The definition of involvement used in the present study is: a person's perceived relevance of the object based on inherent needs, values and interests (Zaichkowsky, 1985). This definition corresponds with past definitions of involvement (e.g. Krugman, 1967; Mitchel, 1979).

A theory in which involvement plays a central role is the elaboration likelihood model from Petty and Cacciopo (1981). This theory states that if a person is highly involved with a product than that product will personally touch him and the motivation to process information about that product will be high. Consequently the central route of information processing will be taken. If, on the other hand, the product doesn't personally touch the person, he has a low involvement with it and he will not be motivated to process the information. An attitude for a

low involvement product is not formed rationally according to the central route of information processing, but is formed in the peripheral route. This route does not consciously forms or changes attitudes, but does this with the help of so-called positive or negative 'cues'. These 'cues' are factors or motives that are sufficient to influence the formed attitude about the object, without thinking about the attributes of the object under consideration. Camera angle is such a factor that can influence attitudes about objects without the subjects being consciously aware of it.

Involvement also plays an important role in purchase decisions. According to Vaughn (1980) involvement is one of the dimensions on which classical purchase decisions are made, the other dimension is the think/feel dimension. The dimension of involvement implies the level of attention to something because it is somehow relevant or important. Frequent purchases that do not pose a big (financial) risk for the purchasers, for example toilet paper, are most likely to be low involvement purchases while non-frequent purchases that pose a high-risk for the purchaser, for example a new car, are most likely to be high involvement purchases. The think (cognitive) and feel (affective) dimension refers to the purchase motive which causes an attitude to be formed about the object. Cognitive motives tend to stress the utilitarian needs, which expresses itself in concentrating on the performance related product dimensions (Ratchford, 1987). This means that purchase decisions are stimulated by a need, a negative cue, which causes the purchaser to extensively investigate the positive and negative aspect of the possible purchase. The affective motives on the other hand stress the need to reach a satisfied feeling and to attain emotional goals (Ratchford, 1987). McGuire (1976) classified the latter motive in three major 'feeling' motives: ego gratification, social acceptance, and sensory pleasure motives. These motives are highly personal; each motive is for each individual different in intensity and in direction.

Foote, Cone and Belding (FCB) created the 'FCD-grid' that is presented in Figure 1. This grid categorizes the four basic types of purchase decisions along the low/high involvement and think/feel dimension in: Low involvement-Feel, Low involvement-Think, High involvement-Feel and High involvement-Think (see for a discussion Vaugh (1980)).

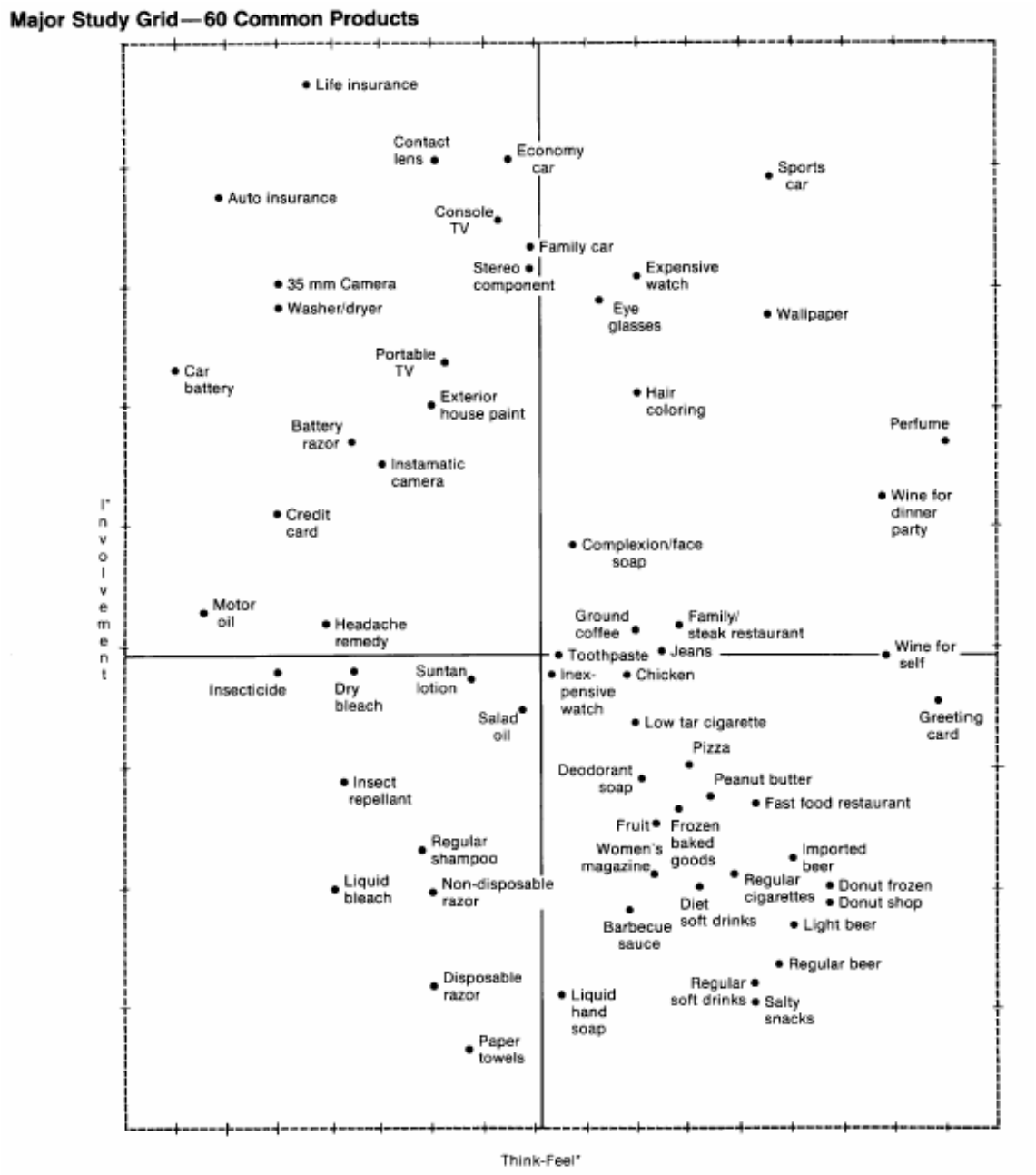


Figure 1. Foot, Cone & Belding-grid (Vaugh, 1980)

Rositter and Percy (1987) suggested an improved advertising grid, in stead of the FCB-grid, in which the dimensions were formed by the type of decision, reflected by the level of involvement, and the type of motivation, reflected by positive (transformational) or negative (informational) purchase motivations. The Rossiter-Percy grid is presented in Figure 2. The purchase motives in the transformational group, analogue to products in the 'feel' dimension, are purchase decisions that occur when a person is positively reinforced to make that decision by the presentation of positive attributes. The nature of these attributes are subjective and thus for every person different. The purchase motives in the informational group, analogue to the 'think' dimension of the FCD-grid, are driven by negative feelings such as a consumer problem that occurs. These motives are less subjective of nature and thus have a bigger chance to stay constant over different persons. For this reason, the products used in this experiment were drawn from the informational group.

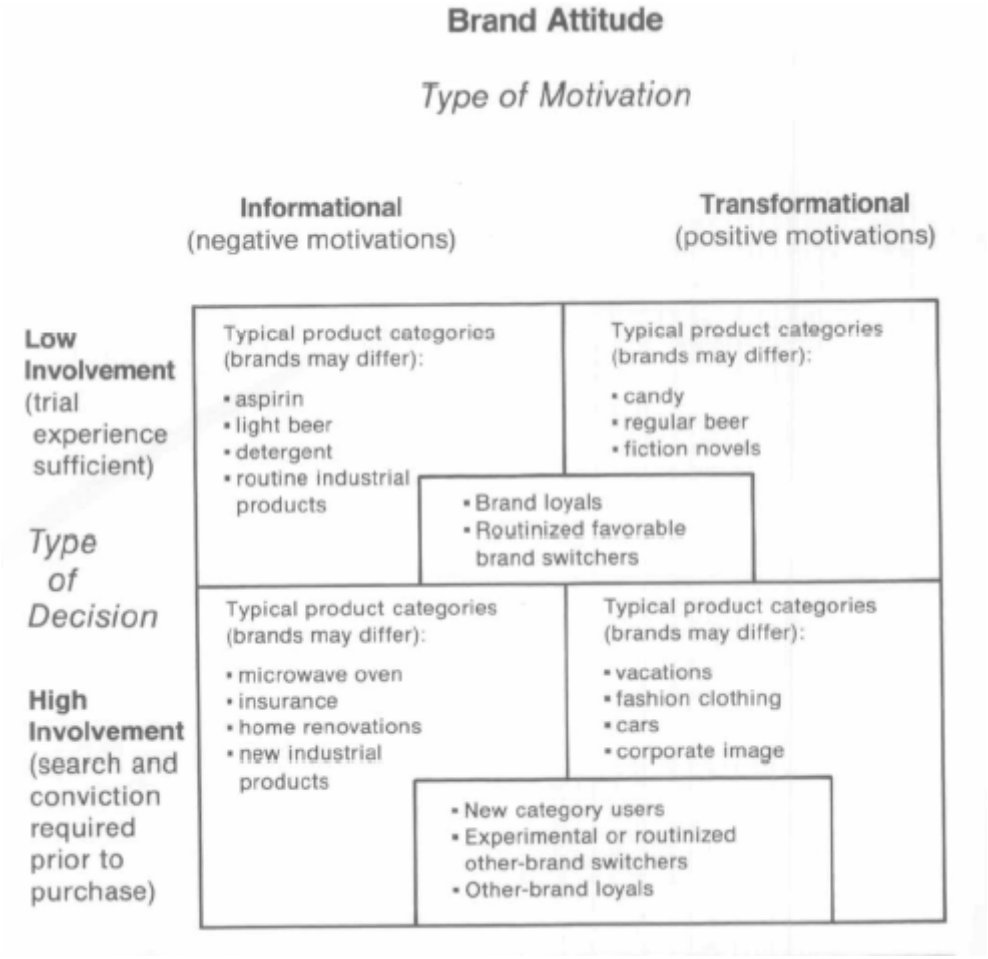


Figure 2. Rossiter-Percy grid (Rossiter & Percy, 1987)

The term "low and high involvement products" can be misleading in the sense that involvement is not a property of a product (Salmon, 1986). Involvement is recognized as the interaction between the product and the individual. Although involvement tends to be defined as the relevance of a product rather than the interest of an individual in a product, involvement can be interpreted to be more on the side of the stimulus than on the side of the viewer (Salmon, 1986). If involvement can be defined according to the stimulus, than products can be organized into different product involvement categories and ideally, markets can be segmented on the basis of product involvement (Grunig, 1989; Taylor & Joseph, 1984). This should make it possible to make predictions about the effect that camera angle has on particular target group.

In summary, the previous discussion suggests that it is possible to manipulate motivation to process information by differentiating products on involvement. In this study the products are chosen from the informational group, because the purchase motives of this group are less subjective by nature compared to the motives of the transformational group. Therefore, they have a bigger chance to stay constant over different persons. Finally, this discussion has suggested that it is possible to make predictions about camera angle effects if the level of involvement for products for a particular target group is known in advance. This would be interesting for marketers who want to know the best way to present a particular product to a specific target group.

1.3 Implication of the present study

The present study wants to investigate whether camera angle effects occur for different kinds of products. This study chooses to differentiate products on involvement, which automatically leads to a manipulation in motivation to process information about these products. We predict that the camera angle effects occur more strongly with low involvement products than with high involvement products, because the heuristic processing hypotheses predicts that when motivation to process information is low, the camera angle effects occur more strongly than when motivation to process information is high. The following hypothesis can be stated:

Hypothesis: Camera angle effects occur more strongly in low involvement products than in high involvement products.

This hypothesis implies that the difference in evaluation of the low involvement product between the high and the low camera angle condition is larger than the difference in evaluation for the high involvement product in the same condition. This is illustrated in Table 1. Consequently, if D-C > B-A, and this difference is significant (alpha < .05) than the hypothesis can be accepted.

Table 1
Clarification of the implication of the hypothesis

	High camera angle	Low camera angle
High involvement	A	B
Low involvement	C	D

In order to check if the products are rightly differentiated on involvement the following statement has to be true:

I: $(n*A + m*B) / (n + m) > (k*C + l*D) / (k + l)$ (n,m,k,l = nr. of subjects)

In short, this mathematical expression (I) compares the mean of the low involvement product with the mean of the high involvement product. If the difference between the two products is significant than the products are correctly placed in the two involvement groups. In order to check if the camera effect takes place in the first place, the evaluations of the high camera angle and the low camera angle can be compared to each other as follows:

II: $(m*B + l*D) / (m + l) > (n*A + k*C) / (n + k)$ (n,m,k,l = nr. of subjects)

If the comparison as presented in II turns out to be true than it can be concluded that a camera angle effect has occurred.

2 Method

In order to test the hypothesis outlined above, a 2 x 2 design is used with a camera angle (high, low) as between-subject variable and involvement (high, low) as within-subject variable. The dependent variable for this experiment is the evaluation of the products.

2.1 Stimuli

Two products that differed in level of involvement were photographed from a low and a high camera angle. The products were chosen from the informative group of the Rossiter-Percy grid. As discussed earlier, the purchase motives for these products are less subjective in nature and thus have a bigger chance to stay stable across different persons. Two products were chosen that were relatively of the same size to ensure that the size of the products does not have any influence on the evaluation of the products. For the low involvement category a box of pepper was chosen and for the high involvement category a mobile phone was chosen. The box of pepper is a low involvement product from the informational group because the box is a repeated purchase product for which the purchase risk is very low and it is a product for which the need is apparent. The mobile phone is a non-frequent high-risk purchase. It is most likely a necessary purchase for the participants and it is not a luxury object. To limit the influence of pre-existing brand perceptions on evaluations, all brand characteristics of the products were masked.

The products were photographed at an angle of 18 degrees above and below eye level. This angle is derived from a study conducted by Kepplinger (1987) in which he reviewed five studies in which the vertical camera angle was varied and found that an angle of 11,5º could be seen as a moderate camera angle, 18º as a strong camera angle and 31º as an extreme camera angle. If an extreme camera angle is used for this experiment there is a risk that the subjects will get a suspicion about the purpose of this study, especially because relatively small products are used. On the other hand if a camera angle of 11,5º is used there is the risk that the camera angle effect could not appear. In light of this reasoning a trade-off between the moderate and the extreme camera angle is made and the camera angle of 18º is chosen. The pictures used in this experiment are shown in Figure 3.

Figure 3. Black and white photographs of the two high and low involvement products.

2.2 Instruments

In this experiment two instruments are used. First a manipulation check is executed to determine if the box of pepper and the mobile phone are rightly placed in the low involvement and in the high involvement group. In order to check this, the subjects had to finish a questionnaire that measured the level of involvement. The Involvement Scale used for this, is a subset of Zaichkowsky's (1985) items from the Personal Involvement Inventory (PII) translated in Dutch. This scale is used in a variety of studies and has shown to be a reliable scale for the measurement of involvement (i.e. McQuarrie & Munson, 1987; Flynn & Goldsmith, 1993; Foxall & Bhale, 1993). In order to hide the purpose of the study, the subjects had to finish the Involvement Scale for eight more products, four low and four high involvement products, all taken from the informational group. In the high involvement category a laptop, a washing machine, a car and a television were chosen; in the low involvement group the products of choice were detergent, toilet paper, toothpaste and a sponge.

The second instrument used in this experiment is a questionnaire that measures the evaluation of the two products. This questionnaire was created by selecting nine 7-point scales that were relevant to the products from the semantic differential (Osgood, Suci and Tannenbaum, 1957). The Evaluation Scale for the mobile phone consisted of nine scales that were presented in the following order: (1) good/bad, (2) large/small, (3) ugly/beautiful, (4) expensive/cheap, (5) user-friendly/user-unfriendly, (6) thick/thin, (7) heavy/light, (8) fast/slow, (9) weak/strong. The Evaluation Scale for the box of pepper consisted of nine scales that were presented in the following order: (1) tasteful/tasteless, (2) bad/good, (3) small/large, (4) thick/thin, (5) old/fresh, (6) cheap/expensive, (7) heavy/light, (8) healthy/unhealthy, (9) ugly/beautiful. This resulted in two Evaluation Scales, one for each product.

2.3 Procedure

Fourty-one subjects participated in this experiment. The participants were divided randomly to the low angle group, for which the pictures are presented at a low camera angle, or to the high angle group, for which the products are presented at a high camera angle. Each subject started the experiment with filling in a questionnaire to test their level of involvement for a number of products including the box of pepper and the mobile phone. Next the pictures of the products were shown to the subjects. All the pictures were shown for exactly 5 seconds. When the participants were finished viewing the pictures, they had to complete a final questionnaire that measured the evaluation of the box of pepper and the mobile phone.

In order to balance for possible sequence effects, half of the subjects were shown the low involvement products first and the high involvement product second while the other half was presented the sequence the other way around. In this way, as can be seen in Table 2, four experimental groups are created.

Table 2
Experimental groups

	1st low inv / 2nd high inv	1st high inv / 2nd low inv
High camera angle	1	2
Low camera angle	3	4

To ensure that the sequence in which the pictures were presented to the subjects did not have any influence on the judgement of the pictures, the data of both high camera angle-groups (group 1 and 2) and both low camera angle-groups (group 3 and 4) are compared to

each other. Levene's test shows no significant difference (M_{low} = .11, p_{low} = .69; M_{high} = .12, p_{high} = .73) between the groups. Therefore, the data of the two low angle groups can be joined together just like the data of the two high involvement groups to form one low and one high camera angle group.

3 Results

3.1 Preliminary analysis

The PII was used in this study to assess whether the manipulation of involvement, with high and low involvement products, was successful. Data inspection revealed that the data of 10 subjects had to be excluded from further analysis, because of observed outliers (Appendix B). Reliability analysis shows that after this exclusion the Cronbach's alpha of the Involvement Scale was .87, indicating a satisfactory reliability of the scale.

After confirming the assumption of normality and internal consistency, the independent-samples *t*-test was selected to test whether the two products were rightly chosen to represent the high and low involvement product categories. The difference between the mobile phone (M = 5.27, SD = .99) and the box of pepper (M = 4.38, SD = .89) was significant, (t = 4.01, p = .00). As can be seen in Appendix B, there is a significant difference of M = .88 between the means of the level of involvement for the box of pepper and the mobile phone which is proof that the two products are rightly chosen to represent the high and the low involvement products. This indicates that the two products are rightly chosen from the high and the low involvement product categories.

3.2 Main analysis

Because of observed outliers, the data of four subjects were excluded from further analysis. After excluding these outliers the Involvement Scale for the box of pepper had a Cronbach's alpha of .49. In order to improve reliability, an item-analysis was conducted (see Appendix C). Based on this analysis, the items heavy/light, thick/thin, cheap/expensive and small/large were excluded from the dataset. After this exclusion the Cronbach's alpha raised to .82. The reliability of the Evaluation Scale for the mobile phone was already relatively high with a Cronbach's alpha of .69. The original item-total statistic table shows the possible improvement if certain items are deleted. After deleting the items expensive/cheap and weak/strong, the Cronbach's alpha was raised to .75 (see Appendix D).

A one-sample Kolmogorov-Smirnov test confirmed the normality of the distributions. The Levene's test showed, that the variances of the different groups differ significantly from each other. Therefore, the unequal variance *t*-test is used to test the differences between the means of the high involvement group (M_{mobile} = 4.79, SD = .75) and the low involvement group (M_{pepper} = 3.89, SD = .51). The *t*-test shows that there is a significant difference (M = .90, SD = .14) between the evaluation of the mobile phone and the box of pepper (t = 6.29, p = .00).

From Table 3 (see also Table 11 in Appendix D) it is clear that for the mobile phone, there is no difference (M = .00) between the high camera angle group and the low camera angle group (t =.02, ns = .99). The difference found between the low and the high camera angle for the box of pepper (M = .18) was also not significant (t = .94, ns = .35). This means that no camera angle effects occurred in both involvement conditions.

Table 3

Means and standard deviations for evaluations of low and the high involvement products

	High camera angle	Low camera angle
High involvement	4.78	4.79
(mobile phone)	(.55)	(.94)
Low involvement	3.80	3.98
(box of pepper)	(.73)	(.35)

3.3 Additional analysis camera angle effect

The present study assumes that camera angle effects not only occur when a person is photographed but also that these effects occur when a product is photographed. In order to check if this assumption holds an additional analysis is conducted.

In order to check the assumption, the means of the low and the high camera angle groups are compared with each other. The means of the two groups can be found by using formula II from Paragraph 1.3:

$$(m*B + l*D) / (m + l) > (n*A + k*C) / (n + k) \qquad (n,m,k,l = \text{nr. of subjects})$$

This formula results in a mean for the low camera angle group of $M_{low} = 4.40$ (SD = 1.26) and in a mean for the high camera angle group of $M_{high} = 4.29$ (SD = .87). In order to check the assumption the unequal variance *t*-test is used to compare the means of the high and the low camera angle groups. The difference ($M_{dif} = .11$, SD = .23) is not significant (t = .541, ns = .653) and thus it is not apparent that camera angle effects occur for these two products.

4 Discussion

The study of Meyers-Levy & Peracchio (1992) was the starting point of this study. In order to find out which of the two hypothesis for camera angle effects stated by Kraft (1987) was true, the differential information hypothesis or the heuristic processing hypothesis, they manipulated the motivation to process information of the photographed object by varying the task instruction. They found a camera angle effect for the situation where the motivation to process information was low and these findings suggested that the heuristic processing hypothesis was true. This study takes on a different approach and tries to manipulate the motivation to process information by selecting products that varied on involvement. The results found in this study do not provide any proof that camera angle effects occur more strongly in low involvement products than in high involvement products. In fact, no camera angle effect was found whatsoever, even not in the low involvement product condition. Given these results, questions can be asked whether the assumptions on which this study were based were correct. The source of the absence of camera angle effects in this experiment may lie in the differences between this study and the studies that formed the base for our hypothesis.

The first apparent difference is that the heuristic processing hypothesis was formulated for evaluations of persons and not for evaluations of products (Kraft, 1987). Although Meyers-Levy and Peracchio (1992) showed that camera angle effects occurred for a computer and a racing bicycle, it is not certain that these effects are stable across different kinds of products. A possible explanation may lie in the difference in size of the used products in real-life.

A possible explanation of the absence of camera angle effects is that the size of the products has an impact on camera angle effects. In this experiment, small products were used and it is possible that the real-life experience of the participants influenced the attitude towards small products. Messaris (1992) suggested that the effect that a camera angle has on an individual is dependent on the different real-life experiences that the individual has had: looking up to persons who are larger and have more strength (parents) compared to looking down on persons that are smaller and less powerful (children). The importance of social-psychological influences on ad responses is shown here by the fact that for persons low angle shots generate more positive affective responses than high angle shots (Larsen, Luna & Peracchio, 2004). This also means that small sized products are always viewed from above, so the high camera angle has become the normal angle for small products to be looked at. The photograph of the product from a low camera angle is now more salient then the photograph of the product from a high angle because it deviates more from the expected norm. According to the resource matching theory (Larsen, Luna & Peracchio, 2004), images that deviate from an expected norm lead to a higher level of attention and thus more resources will be allocated to process the image. On the other hand, because these images deviate from the expected norm, they need a heightened level of resources in order to be fully processed. It is possible that not enough resources were available to process the images that were shot from a low camera angle and this would imply that it is possible that these images could not be processed fully, which could explain why the camera angle effects did not appear.

A second possible explanation is that although camera angle must be an unconscious cue, the angle could be too small to have an effect on the evaluations. In their study, Meyers-Levy & Peracchio (1992) used an angle of 40º above and below eye level in comparison with the present study where an angle was used of 18º, the strong camera angle according to Kepplinger (1987). Because product size could have an impact on the way that the camera angle influences the evaluation, future studies should vary the camera angle and the product size to find out what the effect of the camera angle and product size is on the intensity and direction of the camera angle effect.

Although the Involvement Scale placed the two products at opposite ends, it is not guaranteed that the participants looked at the pictures with different motivations. It is possible

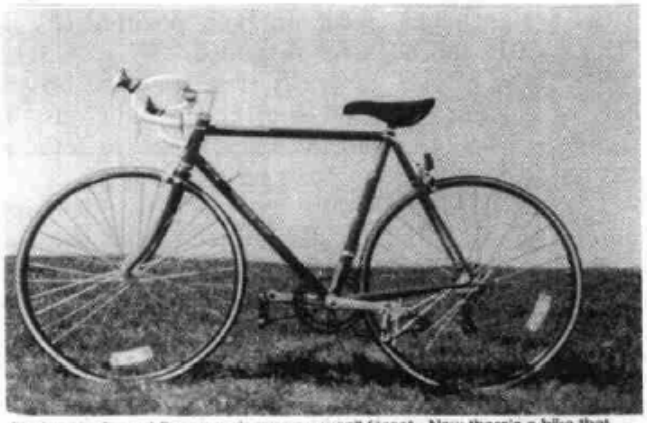
that the products received an equal amount of high attention so the participants followed the central route of the elaboration likelihood model (Petty and Cacciopo, 1981). Through this central route the participant consciously forms or changes attitudes and thus peripheral cues, such as camera angle, do not have an impact on the participants' attitude about the product.

An important field in visual communication to which these results yield implications is advertising. Consumers attend to advertisement only for a short period of time so for marketers it is very important to construct effective visual messages that have the biggest impact in the shortest period of time. The results of this study show that it does not matter at what angle a small product is presented in an advertisement because the camera angle does not have any influence on the evaluation of that product. Future research should provide insight in the influence of the different peripheral cues is on the evaluation of the advertised product. This enables marketers to construct the most effective visual message for their products.

The results of this study demonstrated that the findings of Meyers-Levy and Peracchio (1992) could not be generalized over all products. It shows that the heuristic processing hypothesis does not hold for small products at a, according to Kepplinger (1987), strong camera angle. In order to find out more about the nature of camera angle effects, future research must be executed that addresses the product size in relation to the camera angle. Other interesting questions are whether other product features, such as colour and shape, have an influence on the evaluation of that product. In order to find answer on these questions, future research should attempt to find the optimum camera angles for each product or product group.

Appendix A

Get in gear for a riding experience you won't forget. Now there's a bike that responds adeptly to whatever terrain you decide to take on and will take you wherever you're yearning to go. Equipped with top quality parts and designed with the aid of a computer, it reflects the best in American engineering. So head over to your local bike dealer today and take a look at a bike that's mighty tough to beat.



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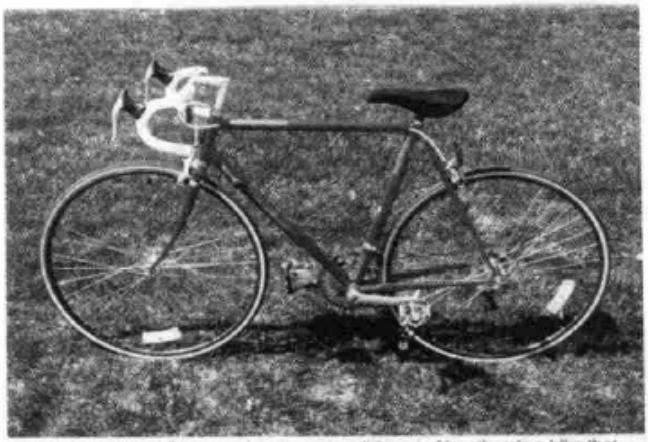

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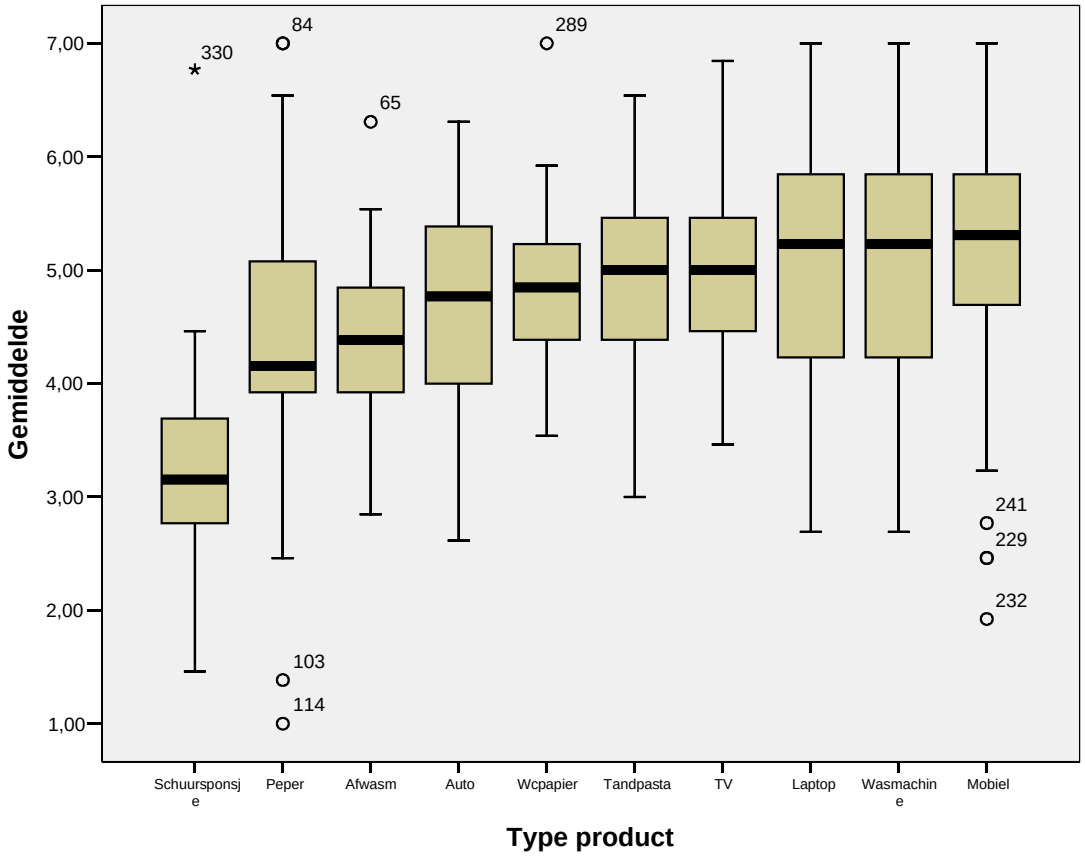
Figure 5. Ad for a bike, used in the 1992 experiment of Meyers-Levy and Peracchio (Meyers-Levy & Peracchio, 1992)

Appendix B



Figuur 6. Boxplots manipulation check

Table 4
Manipulation check (product choice justification)

	Levene's Test for Equality of Variances		*t*-test for Equality of Means						
Equal variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Assumed	,32	,58	4,01	73	,**00**	,**88**	,22	,44	1,32
not assumed			4,02	72,24	,00	,88	,22	,44	1,32

Appendix C

Table 5
Original item-total statistics table Box of pepper

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Smaakpep	29,41	19,80	,34	,40
GoedPep	29,81	20,71	,58	,36
GrootPep	**32,22**	**26,95**	**-,09**	**,55**
DikPep	**31,84**	**28,12**	**-,18**	**,57**
VersPep	30,78	20,12	,37	,40
DuurPep	**32,03**	**21,97**	**,28**	**,44**
ZwaarPep	**32,30**	**26,72**	**-,10**	**,58**
GezondPep	29,97	22,75	,30	,44
MooiPep	31,43	18,86	,56	,32

Table 6
Adjusted item-total statistics table Box of pepper

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Smaakpep	17,84	14,95	,68	,77
GoedPep	18,26	17,44	,82	,74
VersPep	19,24	16,35	,60	,79
GezondPep	18,42	19,39	,51	,81
MooiPep	19,82	17,83	,53	,81

Table 7
Original item-total statistics table GSM

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
GoedGsm	38,10	37,58	,47	,64
KleinGsm	38,28	38,10	,50	,64
MooiGsm	39,28	36,67	,40	,66
DuurGsm	**37,93**	**46,02**	**,00**	**,73**
VriendGsm	37,73	42,26	,33	,67
DunGsm	38,53	38,05	,49	,64
LichtGsm	38,28	38,77	,42	,65
SnelGsm	38,10	36,25	,59	,62
SterkGsm	**38,40**	**42,25**	**,16**	**,71**

Table 8
Adjusted item-total statistics table GSM

Item	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
GoedGsm	28,28	31,18	,39	,74
KleinGsm	28,45	29,43	,58	,70
MooiGsm	29,45	29,07	,39	,75
VriendGsm	27,90	33,94	,35	,75
DunGsm	28,70	28,99	,60	,69
LichtGsm	28,45	29,69	,51	,71
SnelGsm	28,28	29,90	,51	,72

Appendix D

Table 9
One-Sample Kolmogorov-Smirnov test - Low Camera Angle

		GemGsm	GemPeper
N		21	19
Normal Parameters(a,b)	Mean	4,79	3,98
	Std. Deviation	,94	,35
Most Extreme Differences	Absolute	,15	,13
	Positive	,08	,11
	Negative	-,15	-,13
Kolmogorov-Smirnov Z		,67	,56
Asymp. Sig. (2-tailed)		,76	,92

Table 10
One-Sample Kolmogorov-Smirnov test – High Camera Angle

		GemGsm	GemPeper
N		19	19
Normal Parameters(a,b)	Mean	4,78	3,80
	Std. Deviation	,55	,73
Most Extreme Differences	Absolute	,21	,18
	Positive	,11	,08
	Negative	-,21	-,18
Kolmogorov-Smirnov Z		,91	,78
Asymp. Sig. (2-tailed)		,38	,58

Table 11

Independent Samples Test for the mobile phone (GMS) and the box of pepper (pepper)

		Levene's Test for Equality of Variances		*t*-test for Equality of Means						
Product	Equal variances	F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
Gsm	assumed	4,18	,05	,02	38	,99	,00	,25	-,51	,50
	not assumed			,02	32,58	,**98**	,**00**	,24	-.50	,49
Pepper	assumed	5,22	,03	,94	36	,35	,18	,19	-,55	.20
	not assumed			,94	25,77	**,35**	,**18**	,19	-,56	,21

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