

Product attachment and satisfaction: understanding consumers' post-purchase behavior

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Abstract

Purpose – Past research on consumers' post-purchase behavior has focused on understanding satisfaction. However, the consumer-product relationship is much broader. This paper aims to deal with another aspect of post-purchase behavior: the emotional bond consumers experience with their durables during ownership. The paper contributes to the literature on this topic by testing a conceptual model of product attachment and its relationships with satisfaction, and the determinants: utility, appearance, and memories.

Design/methodology/approach – Two experiments are presented in which the product categories photo cameras and mobile phones were used as stimuli to test the conceptual model.

Findings – Results show that the product's utility and its appearance positively affect both product attachment and satisfaction. For both product attachment and satisfaction, the pleasure elicited mediates the effects of utility and appearance. Only for product attachment, the presence of memories serves as an additional determinant that also moderates the effects of utility and appearance. Importantly, satisfaction has no direct effect on product attachment.

Originality/value – The paper contributes to the lack of knowledge concerning consumers' post-purchase behavior by exploring the relationships between product attachment and satisfaction.

Keywords Behaviour, Bonding, Consumers

Paper type Research paper

An executive summary for managers and executive readers can be found at the end of this article.

Introduction

Consumer behavior research has focused primarily on buying behavior, whereas knowledge of all phases in the consumption cycle, from acquisition, through use, to disposition is valuable. As a result, less is understood about the consumer-product relationship during ownership, even though this post-purchase behavior plays an important role in replacement purchases. Consumers' tendency to replace the product they own by purchasing a new one depends on their experiences with and feelings toward their old product. Hence, more research on the consumer-product relationship during ownership is necessary. The purpose of this article is to shed more light on a construct related to the consumer-product relationship, i.e. consumer-product attachment.

In the literature on person-person relationships, it is suggested that an attachment is an emotion-laden target-specific bond between two persons (Bowlby, 1979). Attachments can be relatively strong or weak. Strong attachments are associated with stronger feelings of connection, affection, love, and passion. Correspondingly,

Schifferstein and Zwartkruis-Pelgrim (2008) defined consumer-product attachment as "the strength of the emotional bond a consumer experiences with a product". This definition implies that an emotional tie exists between the owner and his/her object. People develop attachments to products that have a special meaning for them (Wallendorf and Arnould, 1988). As people strive to maintain strong attachments, the strength of the emotional bond with a product is reflected in specific thoughts, feelings, and behaviors toward this object (Schultz *et al.*, 1989). When a person becomes attached to an object, he/she is more likely to handle the product with care, to repair it when it breaks down, and to postpone its replacement (Mugge *et al.*, 2005).

Kleine and Baker (2004) suggested that product attachment is conceptually distinct from materialism, involvement, brand attachment, and attitude or affect toward the object. Materialism is a consumer's tendency to be attached to his possessions in general ("possessiveness"), whereas product attachment is typically concerned with a specific object or product variant (Wallendorf and Arnould, 1988). Similarly, product attachment differs from the construct of involvement (e.g., Costley, 1988), because involvement is generally conceived as the importance of a product category to a person (Ball and Tasaki, 1992). Product attachment is also conceptually distinct from consumer-brand relationships (e.g., Fournier, 1998), because the latter implies that consumers develop relationships with brands, rather than with specific objects (Kleine and Baker, 2004). Finally, attachment is not the same as attitude or evaluative affect (Kleine *et al.*, 1995; Schultz *et al.*, 1989). Although positive attitudes toward the product are often reflected in strong attachment, Schultz *et al.* (1989) found that stronger attachments were not always associated with positive

The current issue and full text archive of this journal is available at www.emeraldinsight.com/0736-3761.htm



Journal of Consumer Marketing
27/3 (2010) 271–282
© Emerald Group Publishing Limited [ISSN 0736-3761]
[DOI 10.1108/07363761011038347]

emotions, nor were negative feelings always associated with weak attachments.

Thomson *et al.* (2005) discussed several ways in which brand attachment differs from brand attitudes. Their way of reasoning can also be applied to distinguish the constructs product attachment and product attitudes. First, attachments develop over time as a result of the interaction between a person and the object (Baldwin *et al.*, 1996), due to which the object gains meaning to the owner. In contrast, attitudes develop without any direct contact with a product (Ajzen and Fishbein, 1977). Second, products to which one feels attached are generally considered to be special and significant to the owner (Ball and Tasaki, 1992; Richins, 1994; Schultz *et al.*, 1989). Conversely, people can have positive attitudes toward ordinary products that have little importance to them. Finally, the experience of attachment results in specific protective behaviors (Ball and Tasaki, 1992; Mugge *et al.*, 2005), because people want to preserve their relationship with the object. Favorable attitudes do not necessarily bring about these protective behaviors.

Although scholars asserted that attachment is conceptually distinct from several other constructs, the empirical demonstration of their relationships has been limited (Kleine and Baker, 2004, p. 5). This article contributes to the literature on attachment by investigating the relationship between product attachment and satisfaction. More knowledge on how these concepts relate to each other and in what aspects they are similar or distinct enhances the comprehension of consumers' post-purchase behavior. In addition, product attachment has not yet been studied in an experimental setting. Until now, mostly qualitative studies on product attachment were conducted. Nevertheless, scholars argued that continued use of multiple methods will enhance our understanding of product attachment (Kleine and Baker, 2004).

This article explores the relationship between product attachment and satisfaction. Satisfaction is affected by a product's utility and its appearance (Mano and Oliver, 1993). Accordingly, utility and appearance are examined as determinants. Furthermore, we investigate the presence of memories associated with the product as a determinant, because memories have a relatively strong effect on the development of product attachment (Schifferstein and Zwartkruis-Pelgrim, 2008; Wallendorf and Arnould, 1988). In this article, we propose and test a conceptual model of the relationships between product attachment, satisfaction, and the determinants utility, appearance, and memories.

Utility and appearance

To examine the relationship between product attachment and satisfaction, the processes by which utility and appearance affect both concepts are explored. An important conceptualization of satisfaction is based on the expectation-disconfirmation paradigm (E-D-paradigm) (e.g., Oliver, 1980). According to this paradigm, the degree of satisfaction is related to the confirmation or disconfirmation of prior expectations, that is the difference between the expected and the perceived performance of a product. When the product's performance is acceptable, the cognitive evaluations of the product's utility result in the experience of satisfaction. People experience more satisfaction for a product performing better than expected than for one

performing according to expectations (Oliver, 1980; Oliver, 1996). Through the cognitive evaluations, the product's utility has a direct effect on the degree of satisfaction. In addition, Mano and Oliver (1993) also found an indirect relationship through the affect elicited by the product. Their framework is based on the suggestion that satisfaction is not a purely cognitive evaluation, and that overlap exists in the processes that underlie consumption emotions and satisfaction (Oliver, 1989; Westbrook, 1987; Westbrook and Oliver, 1991). Both utilitarian and hedonic judgments can lead to the experience of pleasure for a product, and pleasure serves as a mediator for their effect on satisfaction (Mano and Oliver, 1993). Bloch (1995) also argued that beautifully designed products can provide consumers pleasure. This pleasure positively affects the degree of satisfaction for this product. In conclusion, the determinant utility has a direct (via the cognitive evaluations of the E-D-paradigm) and an indirect effect (via the mediator pleasure) on satisfaction. Hence, pleasure serves as a partial mediator for the determinant utility (Mano and Oliver, 1993). For the product's hedonic features (e.g., product appearance), pleasure serves as a perfect mediator (Mano and Oliver, 1993), because these features merely elicit affective responses, and no cognitive evaluations (via the E-D-paradigm).

Utility and appearance do not only affect satisfaction, but are also reasons for people to consider a product as treasured (Kamptner, 1991, 1995), special (Csikszentmihalyi and Rochberg-Halton, 1981), important (Dittmar, 1991; Richins, 1994), or favorite (Dyl and Wapner, 1996; Kleine *et al.*, 1995; Wallendorf and Arnould, 1988). As people only develop attachments to products that have a special meaning to them, we suggest that products with superior utility and/or a superior appearance can stimulate attachment. To obtain a special meaning, a product should provide the owner with more than just its basic function. A product with superior utility offers extra utilitarian benefits (e.g., higher quality, extra features, better usability). Due to these superior benefits, consumers may perceive these products as more valuable than other similar products. The product obtains a special meaning to the owner, which can result in the development of an emotional bond. On the contrary, products with average utility and average appearance can easily be replaced by other products in the category and are thus unlikely to evoke feelings of attachment.

Literature in the field of product design corroborates that pleasure is affected by utilitarian and appearance-related aspects of the product, and is related to satisfaction (e.g., Jordan, 1998). Several scholars advocated that the experience of pleasure during the product usage is related to attachment as well (Davis, 2002; Norman, 2004; Savas, 2004; Schifferstein and Zwartkruis-Pelgrim, 2008). Although no empirical support is given, they have argued that people are more likely to develop emotional bonds to products that give them pleasure. Hence, we believe that pleasure serves as a perfect mediator for the effects of utility and appearance on product attachment. In contrast to the direct effect of utility on satisfaction, no direct effect of utility is expected for attachment. When a product does not provide the owner superior benefits, he/she may be satisfied with it, due to the cognitive evaluations of the product's utility (Oliver, 1996), but the product does not elicit pleasure or evoke feelings of attachment. These arguments are summarized as follows:

- H1.* For a product with above average utility, the degree of product attachment (*H1a*) and the degree of satisfaction (*H1b*) are higher than for a product with average utility.
- H2.* For a product with above average appearance, the degree of product attachment (*H2a*) and the degree of satisfaction (*H2b*) are higher than for a product with average appearance.
- H3.* Pleasure evoked by a product partially mediates the effect of utility (*H3a*) and perfectly mediates the effect of appearance (*H3b*) on the degree of satisfaction.
- H4.* Pleasure evoked by a product perfectly mediates the effect of utility (*H4a*) and appearance (*H4b*) on the degree of product attachment.

The preceding arguments suggest that attachment and satisfaction are both affected by the construct of pleasure, but are not directly related. In the present article, we explore whether a direct relationship exists between attachment and satisfaction.

Memories

Products can remind the owner of a specific time, place, or person and can thus help to maintain a sense of the past (Belk, 1988, 1990). Wallendorf and Arnould (1988) have shown that in the USA the explanation for valuing one's favorite possessions is most often the memories they evoke. Due to the physical association between the product and a special person or place in the past, the product has gained symbolic meaning for the owner (Belk, 1988, 1990). This article focuses on positive memories, because people are more likely to treasure those possessions that are associated with pleasant memories (Belk, 1988, 1990). If a person reminds the owner of the past, this is a feeling of nostalgia, "a longing for the past, a yearning for yesterday, or a fondness for possessions and activities associated with days of yore" (Holbrook, 1993, p. 245).

Past research observed a relatively strong relationship between the memories associated with the product and the experience of attachment (Kleine *et al.*, 1995; Schifferstein and Zwartkruis-Pelgrim, 2008; Wallendorf and Arnould, 1988). This may have consequences for the effects of other determinants on the degree of product attachment. Due to the memories a product evokes, the degree of attachment is high and, therefore, the additional effect of other determinants is expected to be small. For example, a person who has inherited a clock from his/her parents experiences a strong attachment to this clock, because of the memories associated with it. The attachment is not likely to decrease when its functionality decreases or when it is scratched. The clock still has its most important asset: the memories. The impact of utilitarian and appearance attributes on product attachment is thereby reduced. Accordingly, we hypothesize:

- H5.* When positive memories are associated with a product, the degree of product attachment is higher than when no memories are associated with it.
- H6.* Positive memories associated with a product moderate the effects of the product's utility (*H6a*) and the product's appearance (*H6b*) on product attachment. When positive memories are associated with a product, people experience product attachment regardless of the product's utility or the product's appearance. When no

memories are associated with the product, people experience a higher degree of product attachment when the product's utility or appearance is above average than when it is average.

Study 1 tests the proposed conceptual model and examines the determinants' effects on product attachment. Study 2 extends study 1 by examining the determinant appearance using improved stimulus material and a different product category. Furthermore, the second study replicates the conceptual model and provides insights into the generalizability of our findings. To investigate the effects of utility, appearance, and memories on product attachment and on satisfaction, we use written scenarios. A scenario or a vignette is a "short story about hypothetical characters in specified circumstances to which the interviewee is invited to respond" (Finch, 1987, p. 105). Scenarios are useful for the study of attachment, because they allow studying processes that develop over a long period of time. In addition, they allow focusing on the topic of interest while controlling for additional variables that would interact in a real-life situation (e.g., type of product, memories elicited by the product, financial aspects). This selective representation of the real world can help to disentangle the complexities and conflicts present in everyday life (Hughes and Huby, 2002). Robinson and Clore (2001) found a large degree of correspondence between the emotions experienced in a real life setting and the emotions subjects in a scenario-setting believed they were likely to experience. As a consequence, scenarios can play a useful role in theory construction and scenarios are often used within research on post-purchase affect (e.g., Tsiros and Mittal, 2000).

Study 1

Subjects and design

A total of 118 students volunteered to participate in this study (50 percent male; 50 percent female). Eight experimental conditions were generated following a 2 (product's utility: average v. above average) × 2 (product's appearance: average v. above average) × 2 (memories associated with the product: present v. absent) between-subjects full factorial design. For example, in the first condition, the scenario described a person who owned a photo camera with average utility, average appearance and that reminded him of an important person and an important past event. Each subject was assigned randomly to one of the eight conditions.

Stimulus material

Written scenarios were used to manipulate the eight conditions. We used a photo camera as the product being studied. To operationalize the determinant utility, the scenario illustrated certain aspects of the camera's functions and its ease of use. Appearance was operationalized by describing the product's design and finishing. The determinant memories was operationalized by describing the manner in which the camera was obtained (received as a gift v. an ordinary purchase).

Procedure

The subjects were instructed to read the presented scenario carefully. The scenario portrayed a male person (named Joris), who owned a photo camera. Subsequently, multi-item measures of expected attachment, satisfaction, pleasure, as

well as the product's utility, its appearance, and the presence of memories were obtained. The last three served as manipulation checks. The items were presented in random order. Subjects took about 10 minutes to complete the questionnaire. After the experiment, they were thanked and debriefed.

All variables were measured with multiple items on seven-point Likert scales (1 = strongly disagree, 7 = strongly agree). Most of these items were obtained from Mugge *et al.* (2009). The other items were self-generated. Table I displays the items for the dependent variables [1]. Our measure of pleasure focused on the pleasure during usage, because Jordan (1998) argued that pleasure accrues from the interaction between a person and a product. We used four items to measure utility: "Joris thinks this camera functions very well", "Joris thinks this camera is not easy to use" (reverse coded), "Joris thinks this camera is very useful", and "Joris thinks this camera is very practical in its daily use". Appearance was measured using four items: "Joris thinks this camera is beautiful", "Joris thinks this camera has an exquisite design", "Joris thinks this camera is ugly" (reverse coded), and "Joris thinks this camera looks attractive". The presence of memories was measured using three items: "This camera reminds Joris of persons who are important to him", "For Joris this camera is proof that something has happened", and "For Joris this camera symbolizes a bond with friends or family".

Results

Measurement properties of the constructs

A confirmatory factor analysis (CFA) was performed in LISREL 8.50 (Jöreskog and Sörbom, 1993) on the 15 items of product attachment, satisfaction, and pleasure to establish the convergent and discriminant validities of the measurement

scales. To obtain an adequate fit, the modification indices were inspected, which resulted in the deletion of the following three items: "Joris is emotionally connected to the camera", the Delighted-Terrible scale, and "This camera does not move Joris". A CFA on the remaining 12 items demonstrated that a three-factor solution resulted in a good fit ($\chi^2 = 64.85$, $df = 51$, $p = 0.09$; GFI = 0.91; CFI = 0.97; RMSEA = 0.050).

Next, we considered the average variance extracted (AVE) of the constructs to assess their convergent validity. Because the AVE of pleasure was initially 0.43, which is significantly below the required threshold of 0.50 (Fornell and Larcker, 1981), we decided to delete the item: "Joris likes to use this camera". As a result, the AVE increased to 0.50 and the three-factor solution resulted in a good fit ($\chi^2 = 45.39$, $df = 41$, $p = 0.29$; GFI = 0.93; CFI = 0.99; RMSEA = 0.031). Table I displays the factor loadings of the items for each construct.

Concerning discriminant validity, we compared the baseline model (in which the correlations between related pairs of constructs were freely estimated) with a series of three alternative models (in which the correlations between pairs of constructs were constrained to unity) (Anderson and Gerbing, 1988). In each case, the constrained model exhibited a statistically significant increase in chi-square (mean $\Delta\chi^2 = 77.99$ ($df = 1$), $p < 0.01$), providing evidence of discriminant validity (Bagozzi and Phillips, 1982). These results indicate that the multi-item scales demonstrated satisfactory levels of discriminant and convergent validity. In conclusion, product attachment, satisfaction, and pleasure are empirically distinct. The correlations between the constructs are displayed in Table II.

Table I Construct measurement summary: confirmatory factor analysis and scale reliability

Dependent variables	Items	Study 1			Study 2		
		Factor loading	t-value	Reliability	Factor loading	t-value	Reliability
Product attachment	1. This camera has no special meaning to Joris ^a	-0.61	-6.53	$\alpha = 0.81$ AVE = 0.52	-0.60	-7.28	$\alpha = 0.78$ AVE = 0.52
	2. This camera is very dear to Joris	0.76	8.65		0.84	11.37	
	3. Joris has a bond with this camera	0.78	8.93		0.68	8.50	
	4. This camera does not move Joris ^a	-	-		-	-	
	5. Joris is very attached to this camera	0.72	8.08		0.73	9.41	
	6. Joris feels emotionally connected to the camera	-	-		-	-	
Satisfaction	1. Joris is pleased with his camera	0.80	9.75	$\alpha = 0.86$ AVE = 0.61	0.68	8.72	$\alpha = 0.77$ AVE = 0.50
	2. Joris feels dissatisfied after his experiences with the camera ^a	-0.61	-6.68		-0.44	-5.23	
	3. Joris is satisfied with this camera	0.88	11.08		0.80	10.90	
	4. Joris is content with this camera	0.90	9.71		0.83	11.49	
	5. Delighted-Terrible scale (Westbrook, 1980)	-	-		-	-	
Pleasure	1. Joris enjoys this camera	0.73	8.10	$\alpha = 0.73$ AVE = 0.50	0.79	10.56	$\alpha = 0.78$ AVE = 0.56
	2. It is a pleasure for Joris to use this camera	0.77	8.65		0.73	9.59	
	3. Joris feels good when he uses this camera	0.60	6.30		0.72	9.32	
	4. Joris likes to use this camera	-	-		-	-	

Notes: ^aIndicates a reversed item; - Indicates a deleted item

Table II Correlations between product attachment, satisfaction, and pleasure

Dependent variable	1	2	3
Study 1			
1. Product attachment	–	0.23*	0.44*
2. Satisfaction		–	0.52*
3. Pleasure			–
Study 2			
1. Product attachment	–	0.37*	0.55*
2. Satisfaction		–	0.68*
3. Pleasure			–

Note: * $p < 0.01$

Manipulation and confounding checks

Cronbach's alphas for the constructs of the three independent variables were: utility: $\alpha = 0.70$; appearance: $\alpha = 0.88$; memories: $\alpha = 0.90$. To test the convergent and discriminant validities of our manipulations, we conducted three ANOVA's using the summated scales of utility, appearance, and memories as the dependent variables. The independent variables were the three manipulated variables. The main effect for the manipulations being analyzed in each of the three separate ANOVAs was statistically significant ($p < 0.001$) and the corresponding effect sizes were substantial (utility, $\eta^2 = 0.49$; appearance, $\eta^2 = 0.68$; memories, $\eta^2 = 0.52$), demonstrating the convergent validity of the manipulations. Ideally, these three main effects should be the only significant effects in their respective ANOVAs, otherwise their discriminant validity is diminished. The ANOVAs also had two other statistically-significant effects: the appearance main effect on the utility data and the utility \times appearance interaction on the memories data. Fortunately, these factors had relatively small effect sizes: $\eta^2 = 0.11$ and $\eta^2 = 0.04$, respectively, indicating adequate discriminant validity (Perdue and Summers, 1986).

Effects of utility, appearance, and memories

To test *H1*, *H2*, *H5*, and *H6*, two separate ANOVAs were run with either attachment or satisfaction as the dependent variable and utility, appearance, and memories as the independent variables. In the analyses, the scores on the adjusted scales derived from the CFA were used as the dependent variables. No effect was found for subjects' gender (as a covariate) on either product attachment or satisfaction ($p > 0.05$) and, therefore, gender was excluded from the analyses. The means and standard deviations for the different conditions are presented in Tables III and IV. Both ANOVAs

revealed a significant main effect of utility. As hypothesized, the subjects with the scenario of the product that functioned above average predicted a higher degree of attachment ($M_{+ut} = 4.75$ v. $M_{0ut} = 4.13$; $F(1, 108) = 9.87$, $p < 0.01$) and satisfaction ($M_{+ut} = 6.23$ v. $M_{0ut} = 5.05$; $F(1, 109) = 53.95$, $p < 0.001$) than those with the product with average utility. These results support *H1a* and *H1b*: Consumers experience more attachment to and more satisfaction for a product with above average utility than for an average product.

Furthermore, a main effect of memories on product attachment was found ($F(1, 108) = 56.25$, $p < 0.001$), whereas no effect was found for satisfaction ($F(1, 109) < 1$). As hypothesized, the subjects in the "memories" conditions predicted more attachment than those in the "no memories" conditions ($M_{mem} = 5.18$ v. $M_{nomem} = 3.70$). These results support *H5*. The interaction effect between memories and utility on the dependent variable product attachment was also significant ($F(1, 108) = 4.00$, $p < 0.05$). Among the subjects in the "no memories" conditions, those who read about the product with the above average utility predicted more attachment than those who read about the average product ($M_{nomem,+ut} = 4.21$ v. $M_{nomem,0ut} = 3.19$; $t(57) = 3.74$, $p < 0.001$). On the other hand, for the "memories" conditions, there was no difference in the degree of attachment among subjects who read about the product with the above average utility and those who read about the product with the average utility ($M_{mem,+ut} = 5.30$ v. $M_{mem,0ut} = 5.07$; $t(55) = 0.80$, $p > 0.20$). These results support *H6a*. People become strongly attached to products that remind them of past experiences. As a consequence, memories moderate the effect of a product's utility. When memories are present, they play a major role in the development of product attachment and any other determinants' effects become negligible.

No effects were found for appearance on product attachment ($F(1, 108) = 1.89$, $p > 0.10$) and satisfaction ($F(1, 109) = 1.14$, $p > 0.20$) and for the appearance \times memories interaction on product attachment ($F(1, 108) = 1.35$, $p > 0.20$). The results thus fail to support *H2a*, *H2b*, and *H6b*.

Mediation analysis

Baron and Kenny's (1986) framework for mediation was used to investigate the role of pleasure in mediating the effect of utility on product attachment and satisfaction (*H3a* and *H4a*). *H3b* and *H4b* could not be tested, because appearance did not have an effect on the two dependent variables. Baron and Kenny's (1986) test for mediation hinges on three statistical outcomes. First, the effect of the independent variables (i.e.

Table III Means of product attachment and satisfaction for the different conditions

Dependent measures	Study 1															
	Average utility								Superior utility							
	Average appearance				Superior appearance				Average appearance				Superior appearance			
	No		Memories		No		Memories		No		Memories		No		Memories	
	memories	Memories	memories	Memories	memories	Memories	memories	Memories	memories	Memories	memories	Memories	memories	Memories	memories	Memories
	($n = 15$)	($n = 14$)	($n = 14$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	($n = 15$)	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Product attachment	2.85	0.89	5.07	1.58	3.54	1.06	5.07	1.17	4.05	1.03	5.25	0.61	4.37	1.14	5.34	0.70
Satisfaction	5.11	0.99	5.01	1.08	5.14	0.85	4.93	0.77	6.13	0.63	6.63	0.28	6.22	0.77	5.92	1.21

Table IV Means of product attachment and satisfaction for the different conditions

Dependent measures	Study 2															
	Average utility								Superior utility							
	Average appearance				Superior appearance				Average appearance				Superior appearance			
	No memories (n = 20)		Memories (n = 20)		No memories (n = 20)		Memories (n = 20)		No memories (n = 20)		Memories (n = 20)		No memories (n = 20)		Memories (n = 20)	
Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
Product attachment	2.80	1.05	4.29	0.96	3.91	0.97	4.66	1.22	3.91	1.18	4.85	0.82	4.50	1.07	4.89	0.79
Satisfaction	4.23	0.92	4.47	0.89	4.73	0.82	4.88	0.91	5.38	0.72	5.46	0.72	6.01	0.63	5.96	0.52

utility) on the dependent variables (i.e. product attachment and satisfaction) must be significant without incorporating the effect of the mediator (i.e. pleasure), as was shown in the previous section. Second, the effect of the independent variables on the mediator variable must be significant. This was tested by performing a 2 × 2 × 2 ANOVA using the scores on the pleasure scale as the dependent variable and utility, appearance, and memories as the independent variables. This ANOVA supported the role of pleasure as a mediator by revealing a significant main effect of utility on pleasure ($M_{+ut} = 5.22$ v. $M_{0ut} = 4.25$; $F(1, 109) = 30.80$, $p < 0.001$). No other effects were found. Third, when the mediator variable is added to the original analysis as a covariate, the effect of the covariate on the dependent variables must be significant. If the effect of the independent variable on the dependent variable becomes non-significant when the mediating variable is added, perfect mediation is demonstrated. If the effect of the independent variable remains significant but the effect size reduces, partial mediation is demonstrated. Two separate ANCOVAs were performed with either product attachment or satisfaction as the dependent variable, and with utility, appearance, and memories as the independent variables (see Table V). In both analyses, pleasure was included as a covariate. Pleasure significantly affected attachment as well as satisfaction ($F(1, 107) = 21.49$, $p < 0.001$ and $F(1, 108) = 16.03$, $p < 0.001$, respectively). Importantly, as predicted by H4a, the analyses revealed that the previously significant main effect of utility on product attachment was no longer significant, when pleasure was included as a covariate ($F(1,107) < 1$). This finding demonstrated that pleasure perfectly mediated the effect of utility on product attachment, supporting H4a. For satisfaction, the main effect of utility was reduced

($\Delta\eta^2 = -42$ percent), but remained significant ($F(1, 108) = 25.70$, $p < 0.001$) when we added pleasure to the analysis as a covariate. This suggested both a direct and an indirect effect (through pleasure) of utility on satisfaction. Thus, partial mediation was observed for the effect of utility on satisfaction, supporting H3a.

In conclusion, products with superior utility elicit pleasure, which serves as a mediator for the effect of utility on the attachment to and satisfaction for a product. For satisfaction, this mediation is partial, because utility can also result in the experience of satisfaction through cognitive evaluations. The effect of utility on product attachment is perfectly mediated by the pleasure elicited: Consumers only become attached to a product for utilitarian reasons when the product elicits pleasure.

Relationships between product attachment, satisfaction, and pleasure

To test the relationships between attachment, satisfaction, and pleasure, we estimated a structural model. The model resulted in a good fit to the data ($\chi^2 = 47.71$ (df = 42), $p = 0.25$; GFI = 0.93; CFI = 0.99; RMSEA = 0.035). Pleasure had a significant effect on product attachment ($\gamma = 0.58$, $p < 0.01$) and on satisfaction ($\gamma = 0.66$, $p < 0.01$). A second model was estimated to explore the relationship between attachment and satisfaction. Specifically, we estimated whether satisfaction had a direct effect on product attachment. The results showed that the fit of this model was not significantly better ($\Delta\chi^2 = 2.32$, df = 1, $p > 0.05$) than the original model and that satisfaction had no direct effect on product attachment ($\gamma = -0.21$, $p > 0.05$).

Table V ANOVA and ANCOVA results with pleasure as a covariate

Independent variable	Covariate	F-value	Dependent variable							
			Product attachment		Satisfaction			Satisfaction		
			p	η^2	$\Delta\eta^2$ (%)	F-value	p	η^2	$\Delta\eta^2$ (%)	
Study 1										
Utility	None	$F(1, 108) = 9.87$	0.002	0.084		$F(1, 109) = 53.95$	0.000	0.33		
	Pleasure	$F(1,107) < 1$	0.35	0.008	- 90	$F(1, 108) = 25.70$	0.000	0.19	- 42	
Study 2										
Utility	None	$F(1, 149) = 14.73$	0.000	0.090		$F(1, 149) = 82.44$	0.000	0.36		
	Pleasure	$F(1,148) < 1$	0.62	0.002	- 98	$F(1, 148) = 31.41$	0.000	0.18	- 50	
Appearance	None	$F(1, 149) = 10.54$	0.001	0.066		$F(1, 149) = 16.67$	0.000	0.10		
	Pleasure	$F(1, 148) = 3.14$	0.079	0.021	- 68	$F(1, 148) = 5.93$	0.016	0.039	- 61	

Discussion

Study 1 provides partial support for our conceptual model of product attachment. All hypotheses were supported, except those concerning the effects of appearance. A possible explanation for the lack of significance of appearance is our operationalization of this determinant. Appearance was operationalized by a written description of the product's design and finishing. The use of written scenarios may have been inappropriate to study appearance. Subjects may have experienced some difficulty in visualizing the product's appearance on the basis of the product's description only. The finding that the appearance manipulation affected ratings on the utility and memories variables in the confounding checks corroborate the assumption that the appearance manipulation was inadequate. In contrast, written scenarios proved to be successful for the manipulation of the determinants utility and memories.

Another limitation of study 1 is that the person in the scenario was a male. Past research showed that gender affects the reasons for consumers to become attached to products (Csikszentmihalyi and Rochberg-Halton, 1981; Dittmar, 1991; Dyl and Wapner, 1996; Kamptner, 1991). For males, utilitarian related reasons are more important in the development of product attachment than for females. To generalize our findings concerning the determinant utility, it is relevant to replicate the study using a scenario in which a female is portrayed.

In conclusion, the main objective of the following study is to improve our stimulus material to further examine the effect of the determinant appearance. In study 2, we also provide insights in the generalizability of the proposed conceptual model by replicating the study for a female person and for a second product category.

Study 2

Subjects and design

A total of 160 students volunteered to participate in the second study (51 percent male, 49 percent female). The study had a 2 (product's utility: average v. above average) \times 2 (product's appearance: average v. above average) \times 2 (memories associated with a product: present v. absent) between-subjects full factorial design. Each subject was assigned randomly to one of the eight conditions.

Stimulus material and procedure

Similarly to study 1, scenarios were used to control the manipulated determinants of product attachment. The scenario portrayed a female person (named Susan), who owned a mobile phone. For study 2, we investigated the product category of mobile phones to provide insights in the generalizability of the conceptual model. To overcome a limitation of study 1, appearance was operationalized using visual scenario elements.

Past research showed that individual differences exist for what people judge as a superior appearance, dependent on the person, culture, and fashion (Bloch, 1995; McCracken, 1986). Furthermore, the appearance of possessions is relevant for maintaining a person's identity (e.g., Burroughs, 1991). Products possess symbolic self-defining functions, which consumers use to define and maintain their identities (Sirgy, 1982; Solomon, 1983). Consumers tend to prefer products and product appearances that are congruent with their self-

concept (e.g., Sirgy, 1982). Therefore, a scenario in which the product's appearance is related to the owner's identity and taste seems more appropriate to study the effects of appearance. The role a product's appearance plays in maintaining one's identity was incorporated in the scenarios by describing the person's opinion on the appearances of other consumer durables. This provided subjects with a frame of reference on the person's preferences with respect to products' appearances. Subjects were presented with color pictures of four different products that the person portrayed in the scenario liked for their design and color. All products were similar in style of design: They had rounded shapes and conspicuous colors. Three professional designers of consumer durables selected these products as being similar in style of design by mutual agreement. Two color pictures of mobile phones were selected, for which the styles of design were either similar or dissimilar to the four products. The two selected mobile phones were similar in price. All pictures were digitally altered to hide brand identification as much as possible. We expected the subjects in the "similarity" group to perceive the product's appearance as superior to those in the "dissimilarity" group, resulting in superior versus average appearance conditions.

These visual scenario elements were combined with written scenario elements to operationalize the determinants utility and memories. We attempted to keep the written scenario elements equivalent to those used in study 1. However, several changes were necessary, because the two product categories differed. The independent and dependent measures (i.e. product attachment, satisfaction, pleasure, utility, appearance, and memories) were identical to those in study 1.

Results

Manipulation and confounding checks

Cronbach's alphas for the scales of the three independent variables were: utility: $\alpha = 0.77$; appearance: $\alpha = 0.94$; memories: $\alpha = 0.83$. Similar to study 1, we tested the convergent and discriminant validities of our manipulations by performing three ANOVAs. The results showed that all manipulations were successful (p 's < 0.001) and the corresponding effect sizes were substantial (utility, $\eta^2 = 0.52$; appearance, $\eta^2 = 0.60$; memories, $\eta^2 = 0.29$). No other effects were found ($p > 0.05$), providing evidence for the validity of our manipulations.

Replication analysis

To test the dimensional structure of the dependent variables, we performed a strictly confirmatory factor analysis (Jöreskog and Sörbom, 1993) on the items of the adjusted scales derived from study 1 ($\chi^2 = 67.77$, $df = 41$, $p < 0.01$; GFI = 0.92; CFI = 0.95; RMSEA = 0.068). While the chi-square was significant, it was within the rule of 2.5 to 3 times the number of degrees as suggested by Bollen (1989). Both the CFI of 0.95 and the GFI of 0.92 satisfied the minimum requirements of 0.90 (Bollen, 1989). Moreover, the lower bound of the RMSEA was below the value of 0.08 (Browne and Cudeck, 1993). As in study 1, the three-factor model provided a good fit to the data. Table I displays the factor loadings of the items for each construct. Based on these findings, we find further evidence that product attachment, satisfaction, and pleasure are empirically distinct. The correlations between the dependent variables are displayed in Table II.

Effects of utility, appearance, and memories

Two ANOVAs were performed with either attachment or satisfaction as the dependent variable and utility, appearance, and memories as the independent variables. Similar to study 1, subjects' gender had no effect on both product attachment and satisfaction ($p > 0.05$), and this covariate was thus deleted from the analyses. The means and standard deviations for the different conditions are presented in Tables III and IV. As predicted, the results showed a main effect of utility on product attachment ($F(1, 149) = 14.73$, $p < 0.001$) and satisfaction ($F(1, 149) = 82.44$, $p < 0.001$). When the product functioned above average, the subjects predicted higher degrees of attachment ($M_{+ut} = 4.54$ v. $M_{0ut} = 3.91$) and satisfaction ($M_{+ut} = 5.71$ v. $M_{0ut} = 4.58$) than for a product with average utility. These results support *H1a* and *H1b*. Furthermore, significant main effects were found for appearance on the dependent variables product attachment ($F(1, 149) = 10.54$, $p < 0.002$) and satisfaction ($F(1, 149) = 16.67$, $p < 0.001$). Subjects predicted higher degrees of product attachment ($M_{+app} = 4.49$ v. $M_{0app} = 3.96$) and satisfaction ($M_{+app} = 5.39$ v. $M_{0app} = 4.89$) for the product with above average appearance, than for the product with average appearance. These findings support *H2a* and *H2b*. A main effect of memories on product attachment was also found ($F(1, 149) = 30.02$, $p < 0.001$). As hypothesized, the subjects in the "memories" conditions predicted more attachment ($M_{mem} = 4.67$ v. $M_{nomem} = 3.78$) than those in the "no memories" conditions, supporting *H5*. No effect of memories was found for satisfaction ($F(1, 149) < 1$).

The results yielded a significant memories \times appearance interaction on the dependent variable product attachment ($F(1, 149) = 3.96$, $p < 0.05$). Among the subjects in the "no memories" conditions, those presented with the product with superior appearance predicted more product attachment than those presented with the average appearance ($M_{nomem,+app} = 4.21$ v. $M_{nomem,0app} = 3.36$; $t(76) = 3.20$, $p < 0.001$). However, among the subjects in the "memories" conditions, there was no significant difference between these groups ($M_{mem,+app} = 4.77$ v. $M_{mem,0app} = 4.57$; $t(77) = 0.95$, $p > 0.20$), supporting *H6b*. The data did not support the hypothesized memories \times utility interaction (*H6a*) ($F(1, 149) = 1.96$, $p > 0.10$).

Mediation analysis

A $2 \times 2 \times 2$ ANOVA was performed with the mediator pleasure as the dependent variable and utility, appearance, and memories as the independent variables. Significant main effects of utility ($M_{+ut} = 4.97$ v. $M_{0ut} = 3.97$; $F(1, 151) = 46.62$, $p < 0.001$) and appearance ($M_{+app} = 4.73$ v. $M_{0app} = 4.21$; $F(1, 151) = 12.47$, $p < 0.01$) on the mediator were found. No effect of memories was found ($F(1, 151) < 1$). Subsequently, the original ANOVAs with product attachment or satisfaction as the dependent variables were run with pleasure as a covariate (see Table V). Pleasure significantly affected both product attachment as well as satisfaction ($F(1, 148) = 47.43$, $p < 0.001$ and $F(1, 148) = 59.50$, $p < 0.001$, respectively). As hypothesized, the previously significant main effect of utility on attachment was no longer significant when pleasure was included as a covariate ($F(1, 148) = 0.24$, $p = 0.62$), whereas the main effect of utility on satisfaction was reduced ($\Delta\eta^2 = -50$ percent), but remained significant

($F(1, 148) = 31.41$, $p < 0.001$). These results support *H3a* and *H4a*: Pleasure perfectly mediates the effect of utility on product attachment and partially mediates its effect on satisfaction. Furthermore, the main effect of appearance on product attachment and satisfaction was reduced ($\Delta\eta^2 = -68$ percent and $\Delta\eta^2 = -61$ percent, respectively) when pleasure was included as a covariate, but did remain significant for satisfaction ($F(1, 148) = 5.93$, $p < 0.02$) and marginally significant for attachment ($F(1, 148) = 3.14$, $p = 0.08$). These results partially support *H3b* and *H4b*: Pleasure appears to serve as a partial mediator for the effect of appearance on satisfaction, whereas perfect mediation was expected. The results are inconclusive whether the mediation process for product attachment was partial or perfect, because the main effect of appearance was marginally significant and the effect size was not completely removed. By comparison with the reduction in effect size for satisfaction, the difference appears to be small. Based on these results the mediation for product attachment is interpreted as partial mediation.

Relationships between product attachment, satisfaction, and pleasure

The relationships between attachment, satisfaction, and pleasure were estimated for the data of study 2 to provide further evidence for our conceptual model. The model resulted in a satisfactory fit to the data ($\chi^2 = 71.39$ (df = 42), $p = 0.003$; GFI = 0.92; CFI = 0.95; RMSEA = 0.070). Pleasure had a significant effect on product attachment ($\gamma = 0.71$, $p < 0.01$) as well as on satisfaction ($\gamma = 0.85$, $p < 0.01$). Similar to study 1, a second model was estimated in which satisfaction had a direct effect on attachment to explore the relationship between these constructs. The results showed that satisfaction had no direct effect on product attachment ($\Delta\chi^2 = 3.62$, df = 1, $p > 0.05$; $\gamma = -0.43$, $p > 0.05$).

Discussion

Study 2 provides additional support for the proposed conceptual model of product attachment. The relationships between product attachment, satisfaction, pleasure, utility, and memories as found in study 1 are all replicated in this study, with the exception of the moderating effect of memories on utility (*H6a*). Because study 2 replicates study 1 for mobile phones and for a female person, these findings support the generalizability of the proposed conceptual model over product categories and over gender. Furthermore, study 2 extends study 1 by providing support for *H2*, *H3b* and *H4b*. In study 2, we operationalized appearance by using visual scenario elements in contrast to written ones. Possibly, written scenarios were inappropriate to study the effects of appearance due to which no effect was found in study 1. In addition, we included individual preferences in our operationalization of appearance by describing the person's opinion concerning other durables' appearances.

The lack of significance for the memories \times utility interaction (*H6a*) in study 2 is unexpected. We believe this may be due to the strength of the manipulation of the determinant memories (study 1: $\eta^2 = 0.52$; study 2: $\eta^2 = 0.29$). In contrast to study 2, the product in study 1 is not merely a gift for one's graduation, but is also a reminder of a special weekend with the person's father. As the manipulation of memories was stronger in study 1, the memories \times utility interaction was more likely to occur.

Our results suggest that pleasure is only a partial mediator for the determinant appearance on product attachment as

well as on satisfaction, whereas perfect mediation was expected. A possible explanation for these findings on product attachment lies in the role the product's appearance plays in maintaining a person's identity. Past research concluded that expressing a person's identity is a determinant of product attachment (Ball and Tasaki, 1992; Kleine *et al.*, 1995; Mugge *et al.*, 2009; Schultz *et al.*, 1989; Wallendorf and Arnould, 1988). As a result, the determinant appearance may not merely have an indirect effect on the degree of product attachment through the mediator pleasure, but also a direct effect. More research is necessary to understand the relationship between the determinants appearance and self-identity and their effects on product attachment. For satisfaction, pleasure serving as a partial mediator for appearance seems inconsistent with the results of Mano and Oliver (1993), who found perfect mediation. However, Mano and Oliver (1993) investigated affect, of which pleasure is only a component. Probably, other emotional reactions (e.g., surprise) serve as additional mediators for the effect of appearance on satisfaction.

General discussion

The present article contributes to our understanding of post-purchase behavior by exploring the relationship between product attachment and satisfaction. We propose and test a conceptual model in two experimental studies. For the most part, the data tested here appear consistent with this model. Specifically, we find that product attachment and satisfaction share two determinants, that is, utility and appearance. Pleasure is a pathway through which utility and appearance increase product attachment and satisfaction. Satisfaction, in turn, does not relate directly to product attachment. These findings corroborate and extend Mano and Oliver's (1993) framework regarding the relationship between satisfaction and affect.

Our results suggest that attachment is conceptually distinct from satisfaction on at least two accounts. First, the mediation processes through the mediator pleasure are different: The product's utility has a direct (via the E-D-paradigm) as well as an indirect effect (via the mediator pleasure) on satisfaction, whereas the effect on attachment is only indirect (via the mediator pleasure). These results support the notion that satisfaction is an evaluative judgment of the product's performance that develops as a result of both cognitive evaluations and affective reactions elicited in consumption (Mano and Oliver, 1993). In contrast, product attachment is an emotion-laden bond that develops if the product has a special meaning to the owner (e.g., Wallendorf and Arnould, 1988). An average performing product can result in the experience of satisfaction, because it is adequate and performs according to expectations. However, a person will not become attached to an average performing product, because it has nothing special, and thus it does not elicit pleasure or stimulates emotional bonding.

Second, product attachment is directly related to memories, whereas satisfaction is not. If a product is associated with memories, the product helps the person to maintain his/her past, due to which it gains a special, symbolic meaning. A product's symbolic meaning is related to attachment, but is not directly related to its performance and, hence, does not affect the degree of satisfaction. The presence versus absence of memories associated with a product moderates the effect of utility and appearance on product attachment. When positive memories

are associated with a product, the impact of the product's utility and/or appearance on product attachment is reduced.

Limitations and future research

Many of this article's limitations stem from the experimental context used to examine product attachment. We recognize the potential disadvantages of investigating a complex construct such as product attachment in a simplified scenario setting. However, we feel this is offset by the valuable insights to be gained through exploration of the relationship between attachment and satisfaction. Scenarios allow for the control of intervening variables and enable the study of long-term effects. Nevertheless, future research should try to explore the external validity of the proposed conceptual model.

In this article, utility, appearance, and memories are examined as possible determinants of product attachment. However, several other possible determinants of product attachment have been identified, such as financial aspects and the product's uniqueness (Dittmar, 1991; Kamptner, 1991, 1995; Richins, 1994). Investigating the other determinants and exploring their interaction effects are fruitful areas for future research.

This research provides an interesting starting point for experimental research on product attachment. Certainly, refinements in conceptualization and measurement are possible and desirable. More knowledge on product attachment as an independent variable and its effects on consumers' behavior are necessary to provide a better understanding of its value for post-purchase consumer research.

Implications

This study explores the concept of product attachment and shows that it is distinct from satisfaction. For companies, understanding the concept of product attachment is valuable for several reasons. First, experiencing product attachment can increase consumers' loyalty to the brand (Davis, 2002). In other words, the attachment to a product may be transferred to the brand, resulting in brand attachment. This can affect consumers' future purchases, because consumers will be more eager to buy other products bearing the same brand. Moreover, attached consumers are likely to be more vocal in recommending the same product or brand to others.

Past research suggested that the experience of attachment to a product affects the manner in which the owner behaves towards this product: The owner may consider the product as irreplaceable (Grayson and Shulman, 2000), is more likely to take care for the product, and to postpone replacement (Belk, 1991). As a large number of the purchases of consumer durables are replacement purchases, more knowledge on the concept of product attachment is relevant to gain a better understanding of consumers' post-purchase behavior and their replacement considerations.

From an environmental perspective, it may be valuable to strive for higher degrees of product attachment and so extend the psychological life span of durables (Mugge *et al.*, 2005; Van Hinte, 1997). People dispose of products although they still function properly, for example, because these products look old-fashioned (DeBell and Dardis, 1979). From a viewpoint of sustainability, discarding products that still function properly is in many cases undesirable. Extending product life by increasing the degree of product attachment can slow down product life cycles, and thus result in a reduced demand for scarce resources and a decrease in the rate of solid waste disposal. If a company wants to stimulate

the attachment that consumers experience to their products, our results suggest that they should introduce products with a superior utility or appearance. Furthermore, managers may stimulate the formation of product-related memories through their marketing efforts. In addition, Mugge *et al.* (2005) have proposed to stimulate attachment through the use of materials that wear gracefully in time. As a result of the wear and tear process, the product will reflect the shared history with the owner, and becomes associated with certain memories.

Note

- 1 Owing to the translation of the items in English, the exact meaning of the items has slightly changed.

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Further reading

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Executive summary and implications for managers and executives

This summary has been provided to allow managers and executives a rapid appreciation of the content of this article. Those with a particular interest in the topic covered may then read the article in toto to take advantage of the more comprehensive description of the research undertaken and its results to get the full benefits of the material present.

Research into consumer behavior has concentrated on purchase decisions to the extent that post-buying experience has been largely overlooked despite its influence on replacement purchases. Experience with the old product and feelings towards it shape decisions about selecting a new one.

Attachment to a product can mirror person-to-person relationships that reflect the emotional bond between those concerned. The sense of affection, love and passion become more intense when the connection is stronger. Research has shown that people become attached to products that are special to them and thoughts, feelings and behaviors toward the object help to sustain the bond. Such strong attachment can inspire individuals to carefully maintain a product and to keep it in use for as long as possible. On the other hand, feelings of attachment towards a product that looks and performs averagely are unlikely. Such products are also deemed easy to replace by comparison.

Key factors

Conceptual differences have been identified between product attachment and involvement, materialism and brand attachment. Respectively these constructs are taken to reflect the importance a person attaches to: a product category; possessions generally; brands rather than specific products or objects. Product attachment may also be distinct from attitude or affect toward the object as analysts have found that a relationship between positive or negative emotions and strength of attachment was not always apparent. Another characteristic of attachment is its development through the interaction between person and object. Some scholars differentiate between attitude and attachment in the sense that products do not have to be special or important for people to have a

positive attitude towards them. It is likewise argued that attachment inspires “protective behaviors” that do not necessarily occur through favorable attitudes.

The relationship between product attachment and satisfaction is considered important yet under-examined. A product’s appearance and effectiveness help determine satisfaction. Theorists also point out that the level of consumer satisfaction is determined to some extent by whether or not the product lived up to prior expectations. And according to one perspective, the highest satisfaction levels arise when good performance is better than anticipated.

A key premise of some approaches is that satisfaction is generated through hedonic as well as utilitarian evaluation because both aspects can result in pleasure, which mediates the effect on satisfaction. It has been argued that pleasure partially mediates utilitarian features and wholly mediates hedonic features. A link between pleasure and attachment is also assumed on the grounds that consumers are prone to bond emotionally with products that give pleasure to them.

The ability for objects to evoke memories of “a specific time, place or person” is commonly accepted. Such memories are often the reason why a certain object actually becomes a favorite possession. The product attains symbolic value and is treasured by its owner when memories are pleasant ones. Earlier research has shown that attachment is high in these circumstances. Under these conditions, the impact of other determinants such as utility and appearance is expected to be minimal because attachment to such objects will probably not be diminished when it ceases to be in optimum condition in terms of looks or functionality.

Studies and findings

Mugge *et al.* explore the interaction between the determinants and their impact on product attachment within two experiments using written scenarios. The 118 student volunteers participating in the first study were equally represented by males and females. The scenario in this study described a male person who owned a photo camera and eight experimental conditions were created based on two alternatives of product utility, product appearance and memories associated with the product. Description of the camera’s design and finishing was included in the scenario along with some of its functions and ease of use. How the product was obtained was also documented.

The results indicated that:

- gender had no effect on product attachment or satisfaction;
- attachment and satisfaction are higher for products with above average utility than for products with average utility;
- product attachment is higher when memories are associated with the product than when no memories are associated with it;
- memories moderate the influence of utility on product attachment;
- appearance had no impact on product attachment;
- utility partially mediated satisfaction;
- pleasure mediated the effect of utility on product attachment; and

- satisfaction had no direct impact on product attachment.

It was assumed that the anticipated impact of appearance failed to materialize because subjects may have found it difficult to visualize solely through written description. Using a male in this scenario could also have been significant, given research showing that the motivation for product attachment may differ by gender. For instance, males are likelier to be more influenced by utilitarian reasons than are females.

To further explore this issue, the scenario was changed slightly for the second study. In this instance, a female who owned a mobile phone was portrayed. Visual stimuli in the shape of mobile phones pictures were included alongside equivalent written elements to those used in the first scenario. The aim was to make the images congruent with the self-concept of the subjects as also determined by such as culture and fashion.

In this study, appearance was a factor and product attachment was greater for above average appearance than for average appearance. The effect was lessened, however, by the presence of memories. Pleasure had a similar yet weaker effect but unexpectedly did not mediate the effect of utility on product attachment. Mugge *et al.* believe that stronger manipulation of memory in study one may be responsible. These results apart, findings mirrored those in the first study.

Ideas for marketing and further research

The authors point out that product attachment can be an antecedent of brand loyalty and result in attachment to the brand. Such a development can influence future purchase decisions and also result in consumers engaging in positive word-of-mouth recommendations of the product or brand. Marketers who increase brand attachment can also benefit the environment as lengthening product life cycles reduces both waste and demand for resources. Companies are advised to improve the utility and appearance of products, while marketing efforts can “stimulate the formation of product-related memories”. Another suggestion in this area is to focus on using materials that enable products to “wear gracefully in time” and therefore enable the development of a “shared history” with the owner.

Self-identity has been identified as a determinant of product attachment and this is cited as a possible reason for pleasure only partially mediating the effect of both appearance of product attachment. But the authors acknowledge that further study is needed to understand the relationship between self-identity, appearance and product attachment. Further research might also reveal that emotional factors other than pleasure can additionally mediate the impact of appearance on satisfaction. Although the use of the experimental context is justified by Mugge *et al.*, further study may help externally validate the findings here. A consideration of other potential determinants of product attachment is likewise recommended.

(A précis of the article “Product attachment and satisfaction: understanding consumers’ post-purchase behavior”. Supplied by Marketing Consultants for Emerald.)