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May 2004

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Ait El Houssi, A.; Morel, K. P.; and Hultink, E. J.: Analogical learning of new product benefits: Between-domain analogies versus within-domain analogies. 2004.  
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## **Analogical learning of new product benefits: Between-domain analogies versus within-domain analogies.**

### **Abstract**

The slow rate at which many really new products (RNPs) are adopted can at least partially be explained by the low observability of the distinct benefits. It is suggested that between-domain analogies rather than within-domain analogies are effective in directing consumer's attention to the key benefits of and developing preferences for a RNP. The results of a laboratory experiment show a significant relationship between ads using between-domain analogies and consumer's benefit comprehension for one of the two RNPs. The relationship with preferences for the RNP, however, is insignificant. But an increased benefit comprehension positively influences preferences for the RNP. We discuss these findings and outline directions for future research.

### **Keywords**

Analogies, consumer learning, really new products, marketing communications

### **Disciplines**

Business | Social and Behavioral Sciences

### **Publication Details**

This conference paper was originally published as Ait El Houssi, A, Morel, KPN and Hultink, EJ, in Analogical learning of new product benefits: Between-domain analogies versus within-domain analogies. 33rd EMAC Conference, Murcia, Spain, 18-21 May 2004. Best Paper Award EMAC 2004.

# **Analogical Learning of New Product Benefits: Between-Domain Analogies versus Within-Domain Analogies**

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Paper prepared for the 33<sup>rd</sup> EMAC Conference,  
Murcia, Spain, 18<sup>th</sup> – 21<sup>st</sup> May, 2004

Suggested tracks:

1. Marketing Communications
2. Marketing and Innovation

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# **Analogical Learning of New Product Benefits: Between-Domain Analogies versus Within-Domain Analogies**

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## **Abstract**

The slow rate at which many really new products (RNPs) are adopted can at least partially be explained by the low observability of the distinct benefits. It is suggested that between-domain analogies rather than within-domain analogies are effective in directing consumer's attention to the key benefits of and developing preferences for a RNP. The results of a laboratory experiment show a significant relationship between ads using between-domain analogies and consumer's benefit comprehension for one of the two RNPs. The relationship with preferences for the RNP, however, is insignificant. But an increased benefit comprehension positively influences preferences for the RNP. We discuss these findings and outline directions for future research.

*Keywords:* Analogies; Benefit comprehension; Marketing communications; Really new products.

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## **1. Introduction**

New products play an essential role in providing increased sales, profits, and competitive strength for most organisations. A growing percentage of these new product introductions represent really new products (RNPs); products that create entirely new categories (Gregan-Paxton and Roedder John, 1997; Gregan-Paxton et al., 2002), such as the personal digital assistant (PDA). A particular problem of RNPs is that their distinctive benefits generally lie in technologically innovative features that are hard, or even impossible, to observe from the outside. This constitutes a serious problem to marketers, since the degree to which consumers perceive distinctive advantages in new products crucially affects their market acceptance (Cooper and Kleinschmidt, 1995; Hultink and Robben, 1999). Roehm and Sternthal acknowledge this problem and note that the challenge in marketing new products is "to help consumers identify and appreciate their product benefits, particularly those that might not be apparent from an inspection of a product's surface attributes" (2001, p. 257). As the strategic and financial importance of launching new products increases (Moreau et al., 2001a), it is necessary to investigate communication strategies during the introduction of a RNP in order to facilitate consumer learning of key benefits.

Analogies may be effective learning aids as they involve the transfer of existing knowledge to the new product in order to facilitate learning, increase comprehension, and direct consumer's attention to the key benefits (Gregan-Paxton and Roedder John, 1997). Recent research in marketing and consumer behaviour has suggested that analogies may be useful to enhance consumer learning of RNPs (Gregan-Paxton et al., 2002, Moreau et al., 2001a; Roehm and Sternthal, 2001). However, these studies have employed within-domain analogies<sup>1</sup> that are limited in their utility as they are ineffective in explaining the distinctive competitive benefits of a RNP (see Gregan-Paxton et al., 2002 for a notable exception). We

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<sup>1</sup> According to Gentner and her colleagues a "true" analogy is a comparison between two disparate domains with a high degree of relational similarity (see e.g., Clement and Gentner, 1991, Gentner, 1989, Gentner, Rotherman and Forbus, 1993). This terminology excludes within-domain analogy from the realm of true analogies.

believe and will argue that between-domain analogies rather than within-domain analogies serve the purpose of facilitating consumer learning of RNPs. Apart from this, Gregan-Paxton et al. (2002) showed that the use of between-domain analogies directs consumer's attention to the attributes that play a role in the relational structure of the base, but the important question remains whether such a focus on corresponding attributes enhances consumer's *comprehension* of the key benefits of a RNP. It is the aim of the present study to answer this question.

## **2. Consumer learning by analogy**

A crucial communication objective during the introduction of a RNP is to ensure that consumers learn its distinctive attributes and new benefits; consumers should acquire an appropriate knowledge structure for the RNP. In general, marketers tend to turn to advertising to inform consumers about a new product. Advertising is relatively cheap, the information that is communicated to consumers is under control, and it can reach a mass audience (Hoch and Deighton 1989). Nevertheless, advertising is not a suitable tool for consumer learning of RNPs, at least not when it is used in its traditional way of communicating product attributes and benefits. Ads regarding complex products, such as RNPs, typically need to contain a high level of attribute information, because there is more content-related information to impart about a PC, for instance, than about a bottle of perfume or soft drink. Studies on product learning suggest that learning from multi-attribute information is difficult for consumers because of problems of selective attention, information overload, and complex relationships between largely unfamiliar attributes, technologies and benefits. Using advertising to explain all the functionalities and benefits a RNP has to offer is far from easy and likely to be inefficient. For this reason, the present study focuses on the use of analogies in advertising as a means to enhance consumer learning of new product benefits.

Analogy takes advantage of similarities between a familiar domain (the base) and a new domain (the target), using the relational commonalities (i.e., an interconnected system of properties or components) as a basis for generating inferences that enhance comprehension of the new product's benefits. Applying this framework to RNPs, prior knowledge of a familiar, well-known domain (e.g., secretary) may enable consumers to learn about and develop a representation of a RNP (e.g., PDA). Learning by analogy occurs through a series of stages: access, mapping, and transfer (Gentner, 1989; Keane et al., 1994). In the access stage, a relevant base domain becomes active in a person's memory and serves as a source of information about the target. Access is likely to occur spontaneously when the target shares a number of surface similarities (i.e., visible attributes) with the base (Gentner et al., 1993). In a marketing communications setting, the base is usually prompted from an external source such as a print advertisement (Gregan-Paxton et al., 2002; Moreau et al., 2001a/b). Once the base has been activated, its content and structure are compared with the target domain in the mapping stage. Unlike access, mapping is characterised by a preference for relation-based rather than attribute-based comparisons between domains (Clement and Gentner, 1991; Gentner et al., 1993). Finally, in the transfer stage, the base and target domains are aligned based on the similarities of relations between the two. It is in this stage that learning occurs, when knowledge is moved from the base to the target along the mappings that have been made during the mapping stage.

## **3. Two types of analogy**

The literature distinguishes two types of analogy: between-domain analogies and within-domain analogies (Gentner, 1989; Vosniadou, 1989). The former refers to the transfer of knowledge between two systems or concepts which belong to fundamentally different or remote conceptual domains, but which share a similar explanatory structure. The latter type of

analogy pertains to the knowledge transfer of common surface attributes between concepts within highly similar domains. Recent studies into the impact of analogy on consumer comprehension of RNPs used within-domain analogies. For example, Moreau et al. (2001a) compared a digital camera (target) with a film-based camera (primary base) and a computer (secondary base). Roehm and Sternthal (2001) compared nutritional management software (target) with financial management software (base) and a PDA (target) with a cellular phone (base). The problem with using within-domain analogies instead of between-domain analogies is that they are incapable of conveying the key benefits of RNPs to consumers. A base from a within-domain, such as an existing product, may share attributes with a RNP but it is unable to convey *new information* about the RNP as that would mean that the RNP would already exist. To illustrate this point, try to come up with an existing product that conveys the key benefits of a PDA that is not a PDA. It appears that only a base that is partly similar with the RNP may be used to learn about and develop a representation of a RNP, such as a telephone in the case of a PDA. Such a partly similar base is incapable of conveying the key benefits of RNPs to consumers resulting in slower rates of acceptance. It has been argued that the slow adoption rate of cellular phones was due to the comparison drawn with traditional phones (Fusco, 1994), which made it difficult for consumers to perceive the distinctive benefit (i.e., mobility) of the cellular phone. Apart from this, within-domain analogies may even lead to false inferences (Gentner, 1989) about the RNP. To illustrate, comparing a digital camera to a film-based camera does not teach consumers the distinctive benefits of a digital camera, namely digital storage and processing of pictorial information. Consumers may incorrectly conclude from their knowledge about film-based cameras that pictures can only be taken once and have to be developed afterwards. Based on the idea that a within-domain analogy fails to spot the key benefits of a RNP a between-domain analogy is assumed to be more effective for consumer learning.

Unlike within-domain-analogies, between-domain analogies contain great explanatory power (Clement and Gentner, 1991) regarding the key benefits of a RNP. Gregan-Paxton et al. (2002) showed that the use of between-domain analogies in product descriptions causes consumers to focus on corresponding relationships between target and base and to disregard dissimilarity in attributes. The focus on structural relationships is proposed to enhance comprehension of the distinctive benefits of a RNP because structural relations are thought to be more informative about what benefits a product offers than are common surface similarities (Gregan-Paxton and Roeder John, 1997). Based on the previous arguments, we hypothesise that:

*H1: Consumers will better comprehend the distinctive benefits of a RNP advertised through a between-domain analogy than through a within-domain analogy.*

Consumers typically have to learn about new benefits in order to appreciate RNPs (Lehmann, 1994; Urban et al., 1996). Hence, marketers strive to achieve communication goals that go beyond understanding; that is, creating a positive exaggerated impression of the key benefits that make the RNP more appealing to consumers. The tactic of presenting a RNP to the consumer using a between-domain analogy is suggested to be a powerful way to induce comprehension and by that speed adoption. As a between-domain analogy attracts attention to the key benefits of a RNP it may consequently increase consumer's preference for this new product. Hence, we hypothesise:

*H2: Consumers will develop higher preferences for a RNP advertised through a between-domain analogy than through a within-domain analogy.*

## 4. Method

### 4.1 Subjects

The research was conducted among 97 members of a consumer panel consisting of a cross section of inhabitants of a mid-sized city. Subjects ranged in age from 19 to 74 years ( $M = 49.3$ ) and approximately 50% were men. Only participants who possessed a home computer, private access to the Internet, new products such as an MP3, DVD, or digital (video) camera, and a house with a garden were selected, since they were likely to be innovative and interested in the two RNPs examined in the study.

### 4.2 Design and Stimuli

In order to test the hypotheses, this study examined the effect of two types of analogy (within-domain versus between-domain) on consumer benefit comprehension and evaluation of two RNPs. The Auto Mower (autonomous lawn mower), and the Smart Pen (device that biometrically identifies its user) were selected on the bases of two criterions. First, subjects had to be unfamiliar with the products, since a representation of either product had to be absent or at least limited. A pre-test ( $N = 62$ ) established that all RNPs were highly unfamiliar to the subjects. Second, for both products two different knowledge domains (bases) had to be available, one that could serve as the base for the within-domain analogy (Auto Mower: lawn mower; Smart Pen: ball pen), and one that could serve as the base for the between-domain analogy (Auto Mower: robot; Smart Pen: fingerprint). These bases were generated and selected with the help of two pre-tests.

Each ad corresponded to one experimental condition. The print ad consisted of a body of text, a headline and a picture. The main purpose of the ad was to stress the comparison between the target product and the base domain. Centred at the top of each ad in large typeface was the product name. The analogy type was manipulated in the sub headline, “The Smart Pen is like a ball pen [fingerprint]!” of which the base domain was printed in red. Below this sub headline a picture of the target product was shown. To strengthen the manipulation, the body opened with the line: “The Smart Pen works like a ball pen [fingerprint]”. Next to this line a picture of the base domain (ball pen or fingerprint) was shown. Information about three other product attributes was included in the lower right corner of each ad. A pre-test ( $N = 62$ ) revealed no significant differences between the ads in terms of subject’s (a) ad’s difficulty of comprehension (b) attitude toward the ad, and (c) informativeness of the ad (one-way ANOVA’s; all  $p$ ’s  $> 0.25$ ).

### 4.3 Experimental procedure

The experiment was administered individually. Subjects received a booklet containing instructions, stimulus, and dependent measures. Immediately after reading the instructions subjects examined the stimulus print ad for 60 seconds after which they filled out the questionnaire containing the dependent variables. Finally, the purpose of the experiment was explained and subjects received a small financial compensation (€6.5). The whole procedure took approximately 20 minutes.

### 4.4 Dependent measures

*Benefit comprehension.* Three bipolar items ( $\alpha = 0.91$ ) were used to capture subject’s understanding of the new product’s benefits. Subjects were asked to what extent the analogy clarified the new features of the advertised product (“helpful”/“not helpful”; “useful”/“not useful”; “confusing”/“not confusing”).

*Preferences.* Based on Moreau et al. (2001a) preferences for the RNP were measured on five-item scales ( $\alpha = 0.84$ ) that captured subject’s product attitude (“good”/“bad”,

“favourable”/“unfavourable”, “like”/“dislike”), behavioural intention (“This is a product I would like to try”), and information intention (“I would like to have more information about this product”).

## 5. Results

Consistent with the first hypothesis an ANOVA yielded a significant main effect for analogy type ( $F_{1,96} = 5.67, p < 0.05$ ) indicating that an ad containing a between-domain analogy ( $M = 5.35$ ) increased benefit comprehension of a RNP more than an ad containing a within-domain analogy ( $M = 4.30$ ). This effect, however, was qualified by a significant two-way interaction between product category and analogy type; that is between-domain analogy increased benefit comprehension of the Smart Pen ( $M_{\text{within-domain}} = 3.37$  versus  $M_{\text{between-domain}} = 5.06$ ), but not of the Auto Mower ( $M_{\text{within-domain}} = 5.74$  versus  $M_{\text{between-domain}} = 5.70$ ;  $F_{1,96} = 6.32, p < 0.001$ ). The second hypothesis was rejected as the analysis did not show a significant main effect of analogy type on preferences for the RNP ( $F_{1,95} = 0.22, p = 0.64$ ) indicating that both analogy types generated about the same preferences for the RNP ( $M_{\text{within-domain}} = 4.47$  versus  $M_{\text{between-domain}} = 4.63$ ). An additional analysis shows that consumer’s benefit comprehension positively influences preferences for the RNP ( $r = 0.31, p < 0.01$ ), but only in case of the Smart Pen ( $r = 0.29, p < 0.05$ ) and not of the Auto Mower ( $r = 0.25, p = 0.13$ ).

## 6. Conclusion and discussion

The finding that consumers’ benefit comprehension of the Smart Pen is increased to a greater extent by using an advertisement containing a between-domain analogy rather than a within-domain analogy, supports our basic assertion about the communication gains potentially offered by between-domain analogies. We can only speculate as to why a positive effect was found for the Smart Pen and not for the Auto Mower. Potential explanations that the Smart Pen was more novel and more complex than the Auto Mower should be rejected because pre-tests showed no significant differences regarding these two aspects. A more likely explanation could be that benefit comprehension was higher *a priori* for the Auto Mower than for the Smart Pen. The use of a between-domain analogy did not further increase benefit comprehension for the Auto Mower, because benefit comprehension was already high. The high mean benefit comprehension score for the Auto Mower (5.7 on a 7-point scale) seems to support this explanation.

The present study has primarily focused on the use of a between-domain analogy conveying the key benefits of a RNP to consumers. From a marketing perspective, a between-domain analogy should not solely explain the key benefits but it should dramatise, *sell* the benefit(s) to consumers as well. Future research will focus on generating between-domain analogies that on the one hand explain the key benefits of the RNP to consumers and on the other hand that create a positive exaggerated impression of the key benefits that make the RNP more appealing to consumers. The RAM-Conveyor theory (Rossiter and Percy, 1997) offers a methodology that may help marketers to select appropriate conveyors (i.e., analogies) that amplifies the new product’s benefits leading to an enhanced impression of the product being advertised. According to this theory, if a between-domain analogy is employed with the primary purpose of communicating the new product advantages in such a way that consumers develop a favourable impression of the RNP, it should meet five properties as follows: (1) attention-getting, (2) correctly labelled by the consumer (3) perceived as remote (4) high association of the target benefit when prompted, and (5) have no strong contradictory benefit associations. With the help of a brainstorm session several between-domain analogies will be generated and evaluated using the five properties. In a laboratory experiment the effectiveness of between-domain analogies conform the RAM-Conveyor theory will be examined.



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<sup>2</sup> \* Complete list of references is available on request from the first author.