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# The effectiveness of true analogies for consumer learning of really new products

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Recent research has suggested that analogies may be useful to enhance consumer learning of really new products (RNPs). However, these studies have failed to show convincingly that analogies enhance consumers' comprehension of RNPs as their operationalisation of analogies does not represent a "true" analogy. Besides, they examined the interaction effects of numerous moderators without showing the existence of a main effect first. Hence, it remains unclear what the effectiveness of analogies for consumer learning of RNPs truly is. It is the aim of the present study to fill this void by means of an experiment in which consumers evaluate product descriptions of three RNPs containing either an analogy or no analogy.

## **Keywords**

Analogies, consumer learning, really new products, marketing communications

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# The Effectiveness of True Analogies for Consumer Learning of Really New Products

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# The Effectiveness of True Analogies for Consumer Learning of Really New Products

## Abstract

Recent research has suggested that analogies may be useful to enhance consumer learning of really new products (RNPs). However, these studies have failed to show convincingly that analogies enhance consumers' comprehension of RNPs as their operationalisation of analogies does not represent a "true" analogy. Besides, they examined the interaction effects of numerous moderators without showing the existence of a main effect first. Hence, it remains unclear what the effectiveness of analogies for consumer learning of RNPs truly is. It is the aim of the present study to fill this void by means of an experiment in which consumers evaluate product descriptions of three RNPs containing either an analogy or no analogy.

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

## 1. Introduction

It is generally acknowledged that consumers face special challenges when they attempt to understand products arising from new technologies (Higgins and Shanklin, 1992; Moreau et al., 2001b). This is true because prior knowledge of the product class is limited or nonexistent (Debevec et al., 1985). Really new products (RNPs) do not fit neatly into any existing product category (Gregan-Paxton and Roedder John, 1997; Moreau et al., 2001b). Not only are RNPs difficult to understand, their relative advantage is likely to remain unnoticed as well, since a RNP's 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 failed to show convincingly that analogies enhance consumers' comprehension of RNPs. First of all, although these studies have been guided by the analogical transfer paradigm from cognitive science (cf. Genter, 1989; Gentner et al., 1993; Gentner and Markman, 1997; Vosniadou, 1989), their operationalisation of analogies does not represent what has been defined as a "true" analogy (see Gregan-Paxton et al., 2002 for a notable exception). More specifically, these studies have adopted a terminology that does not exclude mere-appearance and literal similarity comparisons from being analogies. Apart from this, we believe and will argue that neither a mere-appearance comparison nor a literal similarity comparison serves the purpose of facilitating consumer learning of RNPs. Another weakness of the existing research is that it has examined the effects of numerous moderators such as expertise, resource ability and

mood, but failed to establish a direct relationship between the use of analogies and consumer's understanding of RNPs. In other words, the research has focused on several interaction effects without showing the existence of a main effect first. Hence, in spite of the research that has been carried out so far, it remains unclear what the effectiveness of the use of analogies on consumer comprehension of RNPs is. It is the objective of the present study to fill this gap by assessing whether the use of a "true" analogy does indeed enhance consumer comprehension of a RNP as previous research has suggested.

## **2. Learning by Analogy**

The extant literature on consumer learning suggests several ways on how marketers should teach consumers the benefits of a new product. It is assumed that most consumer learning occurs through exposure to *external* information sources such as advertising and direct experience (Hoch and Deighton, 1989; Kempf and Smith, 1998). Only recently, it has been suggested that consumers can learn about and develop a representation of a RNP through a process of *internal* knowledge transfer from familiar to novel domains (Gregan-Paxton and Roedder John, 1997). Analogical reasoning has been recognized as a key mechanism for internal knowledge transfer (Gregan-Paxton and Roedder John, 1997). The process of reasoning by analogy involves 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 (Gentner, 1989).

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. The Effectiveness of a "True" Analogy**

Characteristic for a true analogy is a high degree of relational similarity (i.e., an interconnected system of properties or components) between two disparate domains with a low degree of attribute similarity (Gentner, 1989; Gentner et al., 1993; Gentner and Markman, 1997). In other words, analogies involve common relations but not common object descriptions (Clement and Gentner, 1991; Gentner, 1989; Gentner et al., 1993). Recent studies into the impact of analogy on consumer comprehension of RNPs, however, have not used true analogies, but comparisons that have been termed literal similarity (i.e., mappings based on both attributes and relations) and mere-appearance comparisons (i.e., mappings based on attributes only). For example, Roehm et al. (1999) consider the comparison of an E-book (target) with a palmtop computer (base) to be an analogy. Moreau et al. (2001a) talk about analogical learning when consumers compare a digital camera (target) to a film-based camera (primary base) and a computer (secondary base). Roehm and Sternthal (2001) use the "analogies" nutritional management software (target) / financial management software (base), and PDA (target) / telephone (base). Only Gregan-Paxton et al. (2002) have examined a true analogy between a PDA (target) and a secretary or librarian (base).

The problem with using literal similarity and mere-appearance comparisons instead of true analogies is not only that they are conceptually different, but more importantly that they are theoretically incapable of conveying the key benefits of RNPs to consumers. When it concerns consumer learning of a RNP, mere-appearance comparisons are limited in their utility as they are ineffective in explaining the distinctive competitive benefits of a RNP. Mere-appearance comparisons may even lead to wrong inferences (Gentner, 1989). To illustrate, comparing a digital camera to a film-based camera does not teach consumers the distinctive benefit of a digital camera, namely digital storage and processing of pictorial information. Even worse, consumers may incorrectly conclude from their knowledge about film-based camera's that pictures can only be taken once and have to be developed afterwards. Literal similarity comparisons are by definition unable to convey new information about RNPs to consumers. A target and base that are literally similar possess both the same attributes and relations. This implies that it is impossible to come up with a literal similarity base for a RNP as that would mean that the RNP would already exist. To illustrate this point, try to come up with an existing product that shares both attributes and relations with 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 literal similar base, however, is subject to the same problems that have been noted regarding mere-appearance comparisons. They are insufficient to communicate the RNP's distinctive benefits and may even lead to false inferences about the RNP. Having said this, only one type of comparison might be useful for marketers to manage consumer learning of RNPs and that is analogy.

The use of analogies in the communication of RNPs is thus proposed to be the most effective tool to direct consumer's attention to and increase their comprehension of the discriminating benefits of RNPs. When processing an analogy, cognitive effort is likely to be allocated to the structural relations between the base and the RNP rather than to attribute similarities between them (which are few or absent). Hence, a product description containing an analogy will generate greater attention to structural relations than a product description containing merely attributes. The focus on structural relationships enhances comprehension of the distinctive benefits of the RNP, because structural relations are thought to be more informative about what benefits a product offers than are attributes (Gregan-Paxton and Roeder John, 1997). Indeed, recent research confirmed that the use of analogies in product descriptions causes consumers to focus on corresponding relationships between target and base and to disregard feature similarity (Gregan-Paxton et al., 2002). In addition, Vosniadou and Ortony (1983) found that analogies increase recall. In sum, the use of analogies is likely to promote understanding of the discriminating benefits of a RNP due to an increased focus on and an enhanced elaboration and recall of the key benefits.

*H1a: When a description of a RNP contains an analogy, consumers will better comprehend the distinctive benefits of the RNP than when the description does not contain an analogy.*

The positive effect of the use of analogies on product comprehension is moderated by the degree to which consumers understand the analogy, that is the extent to which structural relations are mapped from the base to the target. In order for comprehension to occur, consumers must understand the intended meaning of the analogy which is frequently the marketing message. An analogy is only understood by consumers to the extent to which they are able to apply information from the base to the target (Vosniadou and Ortony, 1983). Consequently, we propose that the strength of the relationship between analogy and consumer's comprehension of a RNP may depend on consumer's comprehension of the analogy.

*H1b: Analogy comprehension will positively affect consumer comprehension of the distinct benefits of RNPs.*

Obviously, when consumers have a better understanding of what a RNP is and which benefits it offers, their preference for this new product is predicted to increase.

*H2: Consumers' comprehension of the distinct benefits of RNPs will positively affect their preference for these RNPs.*

#### **4. Method**

##### ***Subjects***

Subjects were 210 undergraduate students from the Faculty of Medicine of a large university (mean age was 19 years, 33 percent of the subjects were male). Participation was voluntarily, but to encourage participation subjects entered into a lottery for 10 cash prizes of € 25.

##### ***Experimental Design and Stimuli***

The experiment employed a 2 (message appeal: analogy vs. no-analogy) by 3 (product category: Auto Mower, PAM, and PDA) between-subject factorial design. Each subject evaluated one type of message appeal of a single product category. Subjects were randomly assigned to one of the six experimental conditions.

To enhance generalizability, three different RNPs were used: Auto Mower, PAM, and PDA (see Appendix). These products were selected on the basis of three criteria. First, respondents had to be unfamiliar with each RNP, since a representation had to be absent or at least impoverished. A pretest established that all RNPs were highly unfamiliar to the subjects. Second, sound analogies had to be available for each RNP reflecting the degree of overlap in relations. A pretest established that all three analogies used in the present study were perceived as sound. A final criterion was that the benefits of each RNP were unperceivable from the product form.

In order to examine the effectiveness of analogies, six printed verbal descriptions were used corresponding to the experimental conditions (see Appendix). All product descriptions consisted of a headline, a body of text of one paragraph long, and a picture of the target product. The product descriptions contained merely attributes; no benefits were included. The descriptions in the analogy condition stressed the comparison between the base domain and the target product in the body of text. To strengthen the manipulation, the analogy was also manipulated in the headline: "The PDA that settles all your office duties like a secretary!".

##### ***Experimental Procedure***

Subjects received a booklet containing instructions, stimulus, and dependent measures. Subjects were allowed to examine the product descriptions at their own pace, after which they filled out the post-exposure questionnaire containing the dependent variables. With the exception of the recall question regarding product's features, subjects could freely turn back to the product description while filling out the questionnaire. Subjects were debriefed and thanked for their participation afterwards. One week later, subjects wrote down, by email, as many details from the product description as they could recall as well as their preference for the target product.

## **Dependent measures**

*Comprehension.* Comprehension of the distinctive benefits was assessed by asking subjects to (a) list their thoughts regarding the product description; (b) write down as many product features as possible and evaluate each feature as negative, neutral or positive; (c) describe and evaluate *distinctive* product features; (d) report how well they understood the product and its (distinctive) benefits on a five-item scale based on Moreau et al. (2001a); (e) rate the difficulty of comprehending the product description using three semantic differential scales anchored by “very easy to understand/very difficult to understand”, “very straightforward/very confusing” and “the meaning is very unambiguous/the meaning is very ambiguous” (McQuarrie and Mick, 1999).

*Analogy comprehension.* Based on Morgan and Reichert (1999) analogy comprehension was measured by asking subjects a single open-ended question that took the form of, e.g., ‘When the product description says, “The PDA that settles all your office duties like a secretary?”, what does it mean?’. In addition, subjects were asked to describe the RNP as they would to their grandmother/father (Gregan-Paxton et al., 2002).

*Preference.* Preference for the RNP was measured on seven items that captured subject’s evaluations, attitudes, and purchase intentions for the product.

## **5. Results**

Data have been partly collected. Results, conclusions and recommendations will be available within two months.

## **Appendix: Product Descriptions<sup>1,2</sup>**

### **The PAM that keeps you fit [like a personal coach]!**

The **PAM** (Personal Activity Meter) is a small device that measures your daily activities by registering your movements [just like a personal coach that keeps you fit]. [Like a personal coach who measures the fitness of a sportsman by means of special equipment, so does] The PAM keep track of the intensity of the activities by measuring the acceleration of the body in four directions: forward, backward, upward, and downward. By wearing the PAM at the front of your hip, the level of activity is expressed in a universal activity index – the PAM score. By means of the holder included in the package, the device is able to make contact automatically with the website of PAM through a COM-port on the computer. The memory of the PAM can be read out on the website and personal guidance is thereby provided [like a personal coach giving advise about the training schedule and eating pattern]. On the basis of personal information, such as age, height, weight, motivation and preference for sport activities, PAM advises you about the ideal weight, eating pattern and training schedule. The motivation test of the PAM provides, if so desired, support in setting your goals. The PAM operates on a CR2032 battery. It measures 58 x 42 x 13 mm and weighs 28 grams.

### **The PDA that settles all your office duties [like a secretary]!**

The **PDA** (Personal Digital Assistant) [which like a secretary supports you on all office duties,] is a combination of a computer, telephone/fax and a connection to a network such as Internet. [Like a secretary] The PDA manages your agenda and address book, and this handheld also enables you to send e-mails and browse the web. By means of a USB cable and a wireless interface (infrared and blue tooth) it is possible to import and work on Microsoft Office files [just like a secretary is working and managing your documents]. All your appointments, contacts, e-mails and favorite websites immediately become available on your handheld. The PDA utilizes an Intel XScale processor running at 400 MHz. The PDA comes standard with 32 MB internal memory and 64 MB external Secure Digital / MultiMedia / CompactFlash I memory. Apart from that, the PDA is equipped with a 16 bit TFT coloured touch screen and a built-in light sensor with a maximum resolution of 240 x 320 pixels. The PDA operates on a lithium polymer battery that charges up to 1520 mAH. The operating time of the PDA is 300 hours standby and 12 hours active. It measures 132 x 82 x 17 mm and weighs 175 grams.

### **The Auto Mower that keeps your lawn maintained [like a sheep]!**

The **Auto Mower** maintains the lawn fully independently [like a sheep grazing in your back yard] and operates on a battery with a capacity of 1,2 Ah NiMH. The Auto Mower cuts the grass with three razor-like pivoted blades [like a sheep keeping the grass short]. A boundary loop wire defines the cutting area [like a fence keeping the sheep on the pasture] and together with two crash sensors the Auto Mower is kept on the lawn. These crash sensors ensure that the Auto Mower changes direction when it (gently) touches an obstacle. A search loop wire takes the Auto Mower back to the charging station to be recharged or to be stored [like a sheep retires to its fold to rest]. The charging station is connected to the electric main and the contact points are covered. The Auto Mower is able to cut the lawn for 1 to 2 hours on a cutting area up to 1500 m<sup>2</sup>. Under the hood of the Auto Mower there is a display and a keyboard enabling you to programme the timer, cutting height (30 – 95 mm) and the alarm system. The body of the Auto Mower is made out of ABS-synthetic material. The Auto Mower measures 71 x 60 x 26 cm and weighs 7.1 kg.

<sup>1</sup> Analogical processing manipulations are between brackets.

<sup>2</sup> This is an English translation of the original product descriptions.

## References

- Clement, C.A., Gentner, C.A., 1991. Systematicity as a selection constraint in analogical mapping. *Cognitive Science* 15, 89-132.
- Cooper, R.G., Kleinschmidt, E.J., 1995. New product performance: Keys to success, profitability and cycle time reduction. *Journal of Marketing Management* 11, 315-337.
- Debevec, K., Meyers, P.W., Chan, K.K., 1985. The effects of knowledge and imagery on advertising response to an innovation. *Advances in Consumer Research* 12, 273-278.
- Gentner, D., 1989. The mechanisms of analogical transfer. In: Vosniadou, S., Ortony, A. (Eds.), *Similarity and Analogical Reasoning*. Cambridge University Press, Cambridge, UK, pp. 199-242.
- Gentner, D., Markman, A.B., 1997. Structure mapping in analogy and similarity. *American Psychologist* 52, 45-56.
- Gentner, D., Ratterman, M.J., Forbus, K.D., 1993. The roles of similarity in transfer: Separating retrievability from inferential soundness. *Cognitive Psychology* 25, 524-575.
- Gregan-Paxton, J., Hibbard, J.D., Brunel, F.F., Azar, P., 2002. "So that's what that is: Examining the impact of analogy on consumers' knowledge development for really new products. *Psychology & Marketing* 19 (6), 533-550.
- Gregan-Paxton, J., Roedder John, D., 1997. Consumer learning by analogy: A model of internal knowledge transfer. *Journal of Consumer Research* 24, 266-284.
- Higgins, S.H., Shanklin, W.L., 1992. Seeking mass market acceptance for high-technology consumer products. *The Journal of Consumer Marketing* 9, 5-13.
- Hoch, S.J., Deighton, J., 1989. Managing what consumers learn from experience. *Journal of Marketing* 53, 1-20.
- Hultink, E.J., and Robben, H.S.J., 1999. Launch strategy and new product performance: An empirical examination in the Netherlands. *Journal of Product Innovation Management* 16 (6), 545-556.
- Keane, M.T., Ledgeway, T., Duff, S., 1994. Constraints on analogical mapping: A comparison of three models. *Cognitive Science* 18, 387-438.
- Kempf, D.S., Smith, R.E., 1998. Consumer processing of product trial and the influence of prior advertising: A structural modeling approach. *Journal of Marketing Research* 35, 325-338.
- McQuarrie, E.F., Mick, D.G., 1999. Visual rhetoric in advertising: Text-interpretive, experimental, and reader-response analyses. *Journal of Consumer Research* 26, 37-54.
- Moreau, C.P., Lehmann, D.R., Markman, A.B., 2001a. Entrenched knowledge structures and consumer responses to new products. *Journal of Marketing Research* 38, 14-29.
- Moreau, C.P., Markman, A.B., Lehmann, D.R., 2001b. "What is it?" Categorization flexibility and consumers' response to really new products. *Journal of Consumer Research* 27, 489-498.
- Morgan, S.E., Reichert, T., 1999. The message is in the metaphor: Assessing the comprehension of metaphors in advertisements. *Journal of Advertising* 28, 1-12.
- Roehm, M.L., Boone, D.S., Roehm, Jr., H.A., 1999. Analogical reasoning about new product introductions by experts and novices. *European Advances in Consumer Research* 4, 161-165.
- Roehm, M.L., Sternthal, B., 2001. The moderating effect of knowledge and resources on the persuasive impact of analogies. *Journal of Consumer Research* 28, 257-272.
- Vosniadou, S., Ortony, A. 1983. The influence of analogy in children's acquisition of new information from text: An exploratory study. In: Niles, P.A., Harris, L.A. (Eds.), *Searches for Meaning, in Reading: Language Processing and Instruction*. National Reading Conference, Clemson, SC, pp. 71-79.