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Abstract
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CONSUMERS’ DIFFICULTY WITH LEARNING BY ANALOGY OF REALLY NEW PRODUCTS: SELECTION CRITERIA OF EFFECTIVE ANALOGIES

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ABSTRACT

Research in marketing and consumer behavior has suggested that analogies may be useful to enhance consumer learning of really new products. However, mixed results on the effectiveness of analogies have also been found indicating the risk of communication failure. In this paper several aspects of analogical thought that may negatively influence the use of analogies as learning devices for really new products are identified. For effective use of consumer learning by analogy of really new products several criteria are proposed for the selection of an appropriate analogy. In an exploratory study these criteria are used to find explanation for the ineffective analogy used in previous studies.

INTRODUCTION

Companies launch really new products with the aim to outsmart competition. These really new products, by definition, create entirely new categories (Gregan-Paxton and Roedder John, 1997), such as the personal digital assistant (PDA) at the time of introduction. The difficulties faced by consumers as they attempt to understand what a really new product is and which benefits it offers are a significant barrier to the success of really new products (Hirschman, 1980; Lehmann, 1997). Research in marketing and consumer behavior has suggested that analogies may be useful to enhance consumer learning of really new products (Ait El Houssi et al., 2005; Gregan-Paxton et al., 2002; Moreau et al., 2001a; Roehm and Sternthal, 2001). Analogies are believed to be effective learning aids because they provide consumers with a familiar frame of reference that helps them to comprehend the benefits of the unfamiliar really new product (Gregan-Paxton and Roedder John, 1997).

Indeed, analogies have been found to affect consumers’ knowledge structures (Gregan-Paxton et al., 2002). Specifically, these authors showed that an analogy triggers selective processing of new product information. Consumers who process an analogy focus on the relational structures that exist between the familiar base and the unfamiliar new product (Gregan-Paxton et al., 2002), and these relational structures help consumers to better understand the new product benefits (Ait El Houssi et al., 2005). However, these findings were driven by half of the analogies used in the two studies suggesting that not all analogies are equally effective in explaining (the benefits of) really new products to consumers. A similar result, of communication failure with the use of analogies, was found by Hoeffler (2003). In his study both consumer-generated (i.e., participants who created their own analogy) and marketer-provided analogies (i.e., company provided the analogy to participants) were found ineffective in terms of educating consumers about the really new product and the benefits it offers.

Explanations as to why some analogies were found ineffective for consumer learning of really new products across three different studies may be attributed to the selection of inappropriate analogies. An analogy that highlights relatively unimportant product features instead of the distinct benefits of the really new product and/or offers too much ambiguity is likely to be ineffective for consumers to learn about the new product. Learning by analogy is a complex process and therefore the opportunities for negative effect on consumer learning of really new products are numerous. It is the aim of this paper to identify aspects of analogical thought that may negatively influence the use of analogies as learning devices for really new products. Based on this literature review several criteria are proposed for the selection of an appropriate analogy to manage consumer learning of really new products effectively. In addition, these criteria are used to find explanation for the ineffective analogy used in previous studies in an exploratory study.
ACCESSING AN APPROPRIATE BASE

Prior to discussing the analogical learning process, it is important to establish what is meant by an analogy. An analogy refers to the transfer of knowledge between a familiar domain (base) and a new domain (target) that share a similar explanatory structure (Gentner, 1989; Vosniadou, 1989). Characteristic for an 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). An example of an analogy is the comparison between a secretary (base) and a PDA (target). A PDA and a secretary do not share any surface properties (i.e., there is no transfer of attributes), but transfer of relations does take place (e.g., like a secretary, a PDA manages appointments, address books, and documents).

From the literature on analogy we know several stages must occur for accurate learning of the distinct benefits of really new products. These stages include in sequential order: access, mapping, and transfer (Gentner, 1989). Errors could occur at any of these stages (Ortony, 1975) and these are believed to be more prevalent for really new products due to their inherent newness and degree of complexity. In the first stage, the access stage, a potentially relevant base is activated in the consumer’s working memory and serves as a potential source of information about the target. Access to an appropriate base may occur either spontaneously (Gentner et al., 1993) as in consumer-generated analogies or it may be prompted from an external source, such as a print advertisement (Gregan-Paxton et al. 2002; Moreau et al. 2001a; Moreau, et al., 2001b) as in marketer-provided analogies. With spontaneous access, consumers retrieve a base from memory to generate an analogy to learn about the really new product. Retrieval of a relevant base in the absence of any external guidance as to what information in long-term memory is relevant to learn about a target is not easy (Gick and Holyoak, 1980; Keane, 1987). Consumers must be able to engage in abstract cognitive processes by attending to bases that primarily have a relational structure in common with the to-be-learned target (cf. Clement, 1988). A consistent research finding is that retrieval of a base from memory is mainly determined by attribute similarities between the base and target (Gentner et al., 1993; Gick and Holyoak, 1983; Ross, 1984).

Given this surface-superiority effect in retrieving a base from memory consumers are more likely to be (mis)guided by attribute similarity resulting in retrieval of a partly similar base (e.g., mobile phone) that is incapable of communicating the full potential of the really new product (e.g., PDA). Such a partly similar base is never optimally suited for consumers to learn about the distinguishing benefits of the target since the base lacks exactly those distinguishing qualities (Ait El Houssi et al., 2005). Indeed, Hoeffler (2003) found that participants naturally evoked an existing product from memory to explain a really new product to a friend who was unaware of its existence but it proved not to help them understand (the benefits of) the really new product. Thus, the tendency for learners to focus on attribute similarities (Chi et al., 1981; Ross, 1987) creates the potential for selection of inefficient mental models to guide elaborative and inferential processes, which, in turn, increases the potential for misrepresentation of the target.

KNOWLEDGE TRANSFER

In order to bypass the difficult stage of accessing an appropriate base from memory, analogies can also be created by the marketer of the really new product. Access then occurs via a prompt from an external source such as a print advertisement (Gregan-Paxton et al., 2002; Hoeffler, 2003; Moreau et al., 2001b) featuring both base and target. In case of marketer-provided analogies, the analogical learning process commences in the second stage, the mapping stage where consumers compare the content and structure of the base with the target. The goal is to uncover and subsequently transfer knowledge associated with the base to the target. Mapping decisions, either positively or negatively, influence the quality of resulting target-domain knowledge. Findings from past research indicate that consumers often fail to notice the potentially valuable relationship existing between a target (really new product) and something already familiar (see, e.g., Gick and Holyoak, 1980;
Gregar-Paxton et al., 2002; Hoeffler, 2003; Reed et al., 1974; Weisberg et al., 1978). Consumers may experience difficulties in deciding which specific aspects of the familiar domain are relevant within the less familiar domain. As Roehm and Sternthal note “finding common structural relations between a base and target in the absence of attribute commonalities can be challenging” (2001, p. 258). This means that consumers may transfer, or map, information across domains inappropriately.

Previous research has provided considerable evidence that base and target with many commonalities also elicit many related differences (Gentner and Markman, 1994; Markman and Gentner, 1993a, 1993b, 1996). Yet, an analogy is suggested to direct consumers’ attention toward the distinct benefits associated with the target and away from the features not participating in the common relational structure in the mapping stage (Gregan-Paxton and Moreau, 2001; Verbrugge and McCarrell, 1977). This is an important requirement for an effective analogy according to Rossiter and Bellman (2005) as posited in the remote conveyer model. This model proposes that an analogy must cause consumers to easily and immediately recognize the key benefit(s) that the marketer wants to strengthen in the product being advertised. A key benefit prompt is especially necessary because the analogy will tend to have multiple associations, so that the consumer has to be guided to the correct one. Indeed, Gregan-Paxton et al. (2001) demonstrated that analogy can effectively direct consumer’s attention to some attributes and away from others. Having said this, the first proposed criteria in selecting an appropriate analogy for effective consumer learning is that the base must be highly associated with the key benefits of the really new product when prompted.

Apart from the high association with the key benefits, the base also has to share the same level of the key benefit with the target. This constitutes the second criteria in selecting an appropriate analogy for consumer learning of the key benefits of really new products. A good example of an analogy that shows correspondence on both type of benefit as level of benefit is the ad by AxioMatic (see Fig. 1). This ad uses the analogical comparison between a rabbit and the diskette duplicator to communicate the product’s key benefit of rapid reproduction. The distinct benefit of the AxioMatic diskette duplicator is reproduction (benefit correspondence) but more precisely rapid reproduction (correspondence on level of benefit). Rabbits are well known for this characteristic and are therefore an effective base par excellence for the diskette duplicator.

As mentioned before, analogies are known for their tendency to evoke multiple associations (see, e.g., Rossiter and Bellman, 2005). Some of these associations may be unnecessary to profit from the analogical comparison. Only a subset of information associated with a particular base will be appropriate, or compatible with, any given target (Gentner and Gentner, 1983; Ortony, 1975). For example, only a subset of the relationships in the domain of a secretary is representative of the domain of a PDA. When excessive information is overextended to the target domain, inaccurate inferences may be generated (Spiro et al., 1989). The inaccurate inferences generated from the mapping process may actually undermine the intended explanatory function of the analogy. If consumers would transfer all associations and values of the base to the target, the analogy would be useless (Gentner, 2003) because not all associations are relevant to learn about the target. Some associations may be conflicting that is the association is negative or contradictory (Rossiter and Bellman, 2005). Take for example the print advertisement of Toyota’s Sportivo Coupe concept car in Fig. 2. In this print advertisement, the fingerprint is used as a base to emphasize the benefits of identification and authentication of the product advertised. Although the fingerprint is presumed to be carefully selected as a base for this new product, a fingerprint may evoke several negative associations related to police, crime, and criminals, for instance. Obviously, marketers do not want to have negative characteristics associated with their really new product. Nor do they want the base to have contradictory associations, such as “low tech” when the really new product is “high tech”. Thus, an analogy must be able to trigger selective processing of new product information by highlighting the key benefits of the really new product but at the same time leave its weak (i.e., irrelevant and conflicting) associations in the background (Rossiter and Bellman, 2005). A base that lacks conflicting associations when prompted is the third proposed criteria in selecting an appropriate analogy with the aim to educate consumers about the distinct benefits of really new products.
A key aspect of really new products is that they often offer multiple benefits to the consumer in a single offering. Hence, the marketer must generate an analogy that is capable of eliciting multiple salient benefits of a really new product with the use of a single base. Based on the arguments presented previously, it is suggested that marketer-provided analogies are better capable of helping consumers more consistently and accurately evoke relevant knowledge from a familiar base to learn about the distinct benefits of a really new product.

To manage consumer learning of really new products there are four important criteria that an analogy has to meet to be considered effective. The analogy has (1) to elicit high associations of the key benefits (2) and level when prompted, (3) to be capable of communicating multiple key benefits of one product, and (4) to have no high-incipidence of negative or contradictory associations.

To examine whether these proposed criteria offer explanation as to why previously used analogy (e.g., Gregan-Paxton et al., 2002) was found ineffective in enhancing consumers’ understanding of the benefits of a really new product an exploratory study was conducted.

METHOD

The sample consisted of 189, both graduate and undergraduate, students in marketing from a large university. Participants ranged in age from 18 to 64 years ($M = 21.5$) and approximately 58% was female. They were recruited during class and participation was voluntary.

Each participant was asked to answer two free-association questions regarding two different bases out of a pool of eight bases in total. The order of the bases was rotated to avoid order effects. The base examined in this paper is that of the secretary for the target product PDA because this analogy (i.e., “a PDA is like a secretary”) was used as stimuli in two previous studies that provided inconclusive evidence on the impact of analogy on benefit comprehension of really new products (Gregan-Paxton et al., 2002)\(^1\).

Participants were instructed to first take a few minutes to think about the base before answering two questions. The first question asked the participants “When you think of a secretary, what things immediately come to mind?”. Answers to this question were used to identify all possible, including negative and contradictory, associations of the base. They were also asked: “what does a secretary do”. With this question, the extent to which the key benefits of the PDA are highly associated with the obvious characteristics of a secretary was examined. This question should also answer whether the base is capable of conveying multiple strong associations with the key benefits of the really new product. The two key benefits that consumers should have understood from the analogy “A PDA is like a secretary” are; “receiving assistance in office related tasks” and “staying organised”. Participants were instructed to use a separate line for each thought and were given as much time as they desired. The whole procedure took approximately 15 minutes.

The written protocols of all participants were coded by three independent coders (all undergraduate students in marketing) who were unaware of the objectives of the study. The coders were provided detailed training for classifying the written protocols into one of the following categories: statements reflecting the key benefit of assistance in office tasks (e.g., “to help the manager arrange their routine work”), statements reflecting the key benefit of “keeping organized” (e.g., “organized”, “you will be organized”), statements reflecting “stereotype and image” of a secretary (e.g., “neat clothes”, “glasses”, “female”), statements reflecting “office equipment and stationary” (e.g., “desk”, “pens and paper”, “intercome”) and statements reflecting “harassment and sexual fantasies” (e.g., “free sex”, “having affair with managers”). Coders were instructed to record each response with 1 if it corresponded with one of the categories and with 0 if there was no correspondence. The average intercoder reliability as per Rust and Cooil (1994) was approximately 91%.

RESULTS

To examine whether significant differences exist in the occurrence of different type of association(s) a secretary elicited among participants a paired samples t-test was performed. The

\(^1\) To facilitate the double-blind review process, reference to the paper in which the results of the other study is reported is available only upon request.
test revealed that significantly more statements reflected the benefit of “receiving assistance in office tasks” \( (M= .70) \) than the benefit of “staying organized” \( (M= .34; \ t \ (46)= 4.10, \ p<.01) \). The results also showed that significantly more statements reflected the benefit of “receiving assistance in office tasks” \( (M= .70) \) compared to statements classified as “harassment and sexual fantasies” \( (M= .13; \ t \ (46)= 7.27, \ p<.01) \). The difference between the benefit category of “receiving assistance in office tasks” \( (M= .70) \) and the category “stereotype and image” \( (M= .66; \ t \ (46)= .42, \ p= .68) \) was nonsignificant and marginally significant with the category of “office equipment and stationary” \( (M= .51; \ t \ (46)= 1.85, \ p= .07) \). The number of statements recorded as the benefit of “staying organized” \( (M= .34) \) significantly differed from the number of statements classified as “harassment and sexual fantasies” \( (M= .13; \ t \ (46)= 2.66, \ p<.05) \). Furthermore, participants’ responses were significantly less often identified as statements reflecting the benefit of “staying organized” \( (M= .34) \) compared to statements in the category of “stereotype and image” \( (M= .66; \ t \ (46)= -2.90, \ p<.01) \) and the difference was marginally significant with statements on “office equipment and stationary” \( (M= .51; \ t \ (46)= -1.83, \ p= .07) \).

**CONCLUSION AND DISCUSSION**

Analogical learning is a complex process and therefore the opportunities for negative effect on consumer learning are numerous. Empirical evidence from the literature showed that both retrieval and mapping processes are responsible for particular difficulties in analogical reasoning. Consumers can profit from self-generated analogies provided that an appropriate base can be retrieved from memory (Clement, 1988; Hoeffler, 2003). Spontaneous access to an appropriate base, however, depends upon consumers’ abilities to engage in abstract cognitive processes. The surface-superiority effect, where individuals tend to focus on superficial features (Chi et al., 1981; Ross, 1987), creates the potential for selection of inefficient mental models to guide elaborate and inferential processes, which, in turn, increases the potential for misrepresentation of the really new product. With marketer-provided analogies the problem of base selection already has been solved by the marketer. Consumers who encounter marketer-provided analogies may experience difficulties in deciding which aspects of the familiar domain are relevant within the less familiar domain. This means that consumers may transfer or map information across domains inappropriately.

Managers are advised to exercise caution in selecting an analogy with the aim to teach consumers the distinct benefits of really new products. An analogy that is capable of highlighting multiple key benefits of a really new product with the appropriate benefit level is suggested to effectively contribute to consumers’ understanding of the new product. The results show that the secretary as a base is able to communicate the two benefits of a PDA: “staying organised” and “receiving assistance in office related tasks”. However, it seems that the latter benefit is more prevalent in consumers’ associations of a secretary. Recall that a really new product often possess multiple benefits to the consumers. An analogy that lacks this ability to convey multiple benefits is one possible explanation as to why previous studies have failed to demonstrate that the analogy “A PDA is like a secretary” positively affects consumers’ comprehension of the key benefits of a PDA.

Another possible explanation stems from the criteria of no high-incidence of conflicting associations. Participants’ associations of a secretary reflected significantly more stereotype and images of a secretary compared to the key benefit of receiving assistance in tasks related to the office. These multiple associations, common to analogies, may have been negative and or conflicting hindering the consumer to be guided by the correct one(s) that explains the distinct benefits of the really new product. Further examination of the associations of a base together with the target rather than the base separately would contribute significantly to our understanding of the pitfalls in the analogical learning process for really new products.

There is some indication that proposed criteria may prove useful to select appropriate analogies that explain the advertised new product’s benefits while simultaneously amplifying them in order to install a positive impression of the product in consumers’ minds. We hope that these criteria will
spur greater interest to empirically test the validity of the four criteria that are believed to be the four criteria that need to be met for an analogy to be considered effective.

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REFERENCES


Fig. 1. Axiomatic diskette duplicator ad containing an analogy
Fig. 2. Print advertisement of the Sportivo Coupe concept car by Toyota