

Facilitating & Inhibiting Effects of Comparative & Non-comparative Advertising on Recall of Competing Brands

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ABSTRACT

This research examines the role played by comparative and non comparative advertising formats on recall inhibition of competing brands in a product category. Category characteristics of open (awareness of multiple brands) and closed categories (dominated by an unchallenged leading brand and relatively low salience of competing brands) are taken into account. An experiment in which a total of 156 Norwegian business students participated was conducted. The results show that contrary to previous belief, comparative advertising, relative to non-comparative advertising, is not as potent in inducing recall inhibition of competing brands in a product category. Moreover, the results indicate that if a category possesses a brand which has reached maximum salience, regardless of which brand a subject is cued with, no significant recall inhibition takes place.

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1. INTRODUCTION

Purpose

Extensive research has been done on how comparative advertising influences brand evaluation depending on various moderating factors. However, when choice is memory based, a brand must be retrieved from memory to be evaluated. If a brand is not considered it will not be a candidate for evaluation and, hence, choice. Comparative advertising might facilitate or inhibit the recall of competing brands. If a comparative ad is successful in inhibiting the retrieval of other brands, a sponsored brand could leverage its market position regardless of potential evaluation advantages.

Most likely comparison advertising increases the recall of the comparison brand. However, the basic objective of comparative advertising is to increase the evaluation of the sponsored brand which relatively decreases the evaluation of the comparison brand. If comparative advertising in addition inhibits recall of all other competing brands (besides the comparison brand) then it will increase its competitive position against both compared and non-mentioned brands at the same time.

Until now, it has not yet been studied whether the comparative advertising format inhibits or facilitates the recall of competing brands. Wilkie and Farris (1975) have noted that comparison advertising may actually raise awareness of competitors whilst other researchers such as Alba and Chattopadhyay (1986) noted that inhibition effects actually may occur during comparison advertising. The purpose of this paper is to investigate to what degree comparative advertising influences the recall of competing brands in the same product category.

2. LITERATURE REVIEW

2.1 Comparative Advertising

2.1.1 Background

Since the American Federal Trade Commission encouraged the explicit usage of comparative advertising in the early 1970's (William & Farris 1975, Donthu 1998) the topic received substantial attention from marketing practitioners and researchers (for reviews and consolidated studies see Barry 1993, Grewal et al 1997, Rogers and Williams 1989, Etgar and Goodwin 1978, Pechmann and Esteban 1993 and Turgeon and Barnaby 1988). Prior to the FTC's policy statement competitive brands were only identified as "brand X", as the "leading brand" or "beeped" away with sound techniques (Wilson 1976), instead of naming specific competitors. For instance, in the 1930's the car maker Plymouth encouraged prospective buyers to "Look at all three" major automobiles before making a buying decision (Barry 1993).

Prior to the 1970's, comparative advertising was relatively rare due to fears that naming a competitor might increase its publicity or win public sympathy due to its position as a "victim" of a comparative claim (Rogers and Williams 1989, Barry and Tremblay 1975; Golden 1976, Meyerowitz 1985, Ulanoff, 1975). In general, comparative advertising has been found by academic researchers to be no better than or inferior to non-comparative advertising (Rogers and Williams 1989, Ash and Wee, 1983). Practitioners, however, continue to heavily use comparative advertising in spite of questions on the effectiveness and potential ethical and legal problems associated with its use (Rogers and Williams 1989, Beck-Dudley and Williams 1988). Estimates have indicated that comparative advertising formats in the US account for one third of all advertisements (Ghrewal et al 1997; Neiman 1997; Stewart and Furse 1986) and close to 80% of all US television commercials contained a direct or indirect comparative claim (Barry 1993)

In 1997, an EU Directive covering comparative advertising permitted the usage of indirect comparison and also allows under tight controls direct comparisons between named products (Nye and Shimp 2008). From that point in time, the phenomenon was no longer primarily American, and hence, the topic again received considerable interest from international researchers. For instance Donthu (1998) examined in an exploratory study the cross-cultural

effectiveness of comparative ads. The study found that recall of comparative ads is high, however they should be used with caution in countries where the format is rarely used because attitudes there towards comparative ads are not very positive.

2.1.2 Definition & Expressions

Previous research defines comparative ads using two criteria. First, comparative ads explicitly (Ghrewal et al 1997; Wikie and Farris 1975) or implicitly (Ghrewal et al 1997; Jackson, Brown and Harmon, 1979) compare at least two brands in the same generic product or service class. Second, comparative ads compare the brands on specific product/service attributes (Ghrewal et al 1997; Wilkie and Farris 1975) or market positions (McDougall 1976). Thus brands claiming to be better than their competitors without saying how are not using a comparative format.

For the purpose of this paper, we find it beneficial to also explain several terms related to comparative advertising. In a comparative ad, the “sponsored brand” is the brand that the advertiser is trying to promote. The “comparison brand(s)” is a competing brand against which the sponsored brand is being compared to. “All other brands” are all competing brands in the same product service category which are not named in a comparative advertisement.

2.1.3 Direct vs. Indirect Comparative Advertising

Advertisers make use of either a direct or indirect format to deliver comparative claims. Direct-comparison ads compare the sponsored brand against a named competitor, whilst indirect-comparisons ads do not explicitly identify the comparison brand. Instead they only loosely compare themselves to a “leading” or “other” brand (Nye and Shimp 2008).

A special case of non-direct advertising is ads using indirect comparative claims touting a brand’s superiority over all competitors without naming them specifically, but just referring to “all other brands”. Intuitively one might think that claiming superiority over all competitors might prompt consumers to perceive that this advantage holds for each specific competitor. However, consumers do not necessarily think about a particular brand during processing (Miniard et al (2006). The reason is that the comparative claim is contrasted against such an abstract reference point so that consumers do not process this information. Therefore, Miniard et al (2006) caution against using comparative claims that do not identify specific competitors. Instead, based on the results of their research Miniard et al (2006) advise that the comparative

ad should mention a specific brand in addition to all other brands. For instance, a slogan for a pain killer could be: “Faster acting than all other brands, including Tylenol.” Based on those findings, we exclude any mentioning and consideration of indirect comparative advertising in this paper.

2.1.4 Recall

Whilst results vary (depending on the context and moderators), most studies from the academic community have found comparative advertising to be (overall) no better than or inferior to non comparative advertising (Rogers and Williams 1989). Below, we present findings from previous studies on effects of comparative advertising on brand awareness.

Positive findings

Ghrewal et al (1997) tested whether comparative ads created greater sponsor’s brand awareness (i.e: brand recall; consumers are considered aware of a sponsor’s brand if they can recall the brand name) than non-comparative ads do. Their results showed that comparative ads are more effective at increasing brand name awareness. More precisely, awareness of the sponsored brand is greater for comparative ads when the comparison brand is a follower brand than when it is the market leader. Of course, it remains to be said that it makes very little intuitive sense for a market leader to compare itself to a market follower or a new brand.

Prasad (1976) found comparative advertising to be superior in gaining brand awareness and recall. It has also been found to be more useful for new products (Gorn and Weinberg 1983)¹ and for the recall of unfamiliar brands (Barry 1993).

Even though recall is increased when presenting the brand both verbally and visually in comparative ads, a verbal only presentation is more believable and fosters more positive attitudes (Rogers and Williams 1989; (Grossbart, Muehling and Kangun 1980; Pride Lamb and Pletcher 1977). Overall, messages seem to be better recalled from comparative ads (Rogers and Williams 1989).

¹ As cited in Rogers and Williams (1989)

Neutral findings

A number of research findings show little or no difference between traditional and comparative advertising in terms of brand or product recall (Rogers and Williams 1989; Earl and Pride 1980; Jain and Hackleman 1978; Mazis 1976; Prasad 1976; Pride, Lamb and Pletcher 1977-79).

Jain and Hackleman (1986) on their part found that when measuring for two types of recall, immediate and 24 hour delayed, brand names appearing in comparison ads were recalled better immediately, but not 24 hours later (relative to non comparison ads). Furthermore, their work went on to show that an advertiser's brand was recalled significantly more in a comparison ad than in an individual ad. *But this effect was partially neutralized since their findings also indicate the competitor's brand was also significantly recalled more.* Basically, a comparison ad helps the sponsored brand's recall as much as the competitor's brand.

Negative findings

Comparative advertisements have been shown to be inferior in generating brand preference, and in fact, they may contribute to preference for the named competing brands (Rogers and Williams 1989, Williams, 1978). Turgeon and Barnaby (1988) found that comparative advertising did not seem to generate more sponsored brand name recall than non-comparative advertising.

Wilkie and Farris (1975) speculate that comparison ads attract the consumer's attention and increase awareness of the comparison brand, but do not increase the awareness of the sponsor brand: *"The marketer must be aware of some potentially negative effects that could result from trying to employ the selective operator in this fashion. For example, an advertisement or commercial might simply increase the salience of the competing brand without appreciably improving consumer awareness of the brand sponsoring the message"*. They equally suspect that comparative advertising can lead to information overload which results in a consumer blocking out the ad message.

Practitioners of comparative advertising (i.e. Creative directors at Ad agencies) tend to feel that comparative advertising does not generate brand name recall (Rogers and Williams 1989). Note: They do believe though that attribute recall and message recall are higher with comparative vs. non-comparative advertising.

What advertising practitioners must ask themselves is: Given the many risks comparative advertising pose (ex: Brand misidentification, risk of losing brand credibility, etc) should they continue to give competitors “free” air time and space when the effectiveness of the comparative format is not at all clear? Furthermore, what about the effects on recall of competing brands that weren’t mentioned in the ad? Do theirs increase? Or decrease? This is a reasonable question to pose because depending on the result the effectiveness of comparative advertising will be further judged.

2.2 Memory Based Choice

When consumers engage in decision making and choice processes they basically either face “stimulus-based” or “memory based” choice settings (Lynch and Srull 1982). “Stimulus based” decisions are made when consumers are confronted with all competing brands in a purchasing situation. There is no need to rely on their memory for retrieving alternative brands. In such instances the set of alternatives is clearly defined and stable (Alba & Chattopadhyay 1985). For instance, imagine a consumer who enters a convenience store with the intention to buy a cola. On the shelf he will be confronted with Coca Cola, Pepsi Cola and Red Bull Cola. Depending on his evaluation and relative importance of several product attributes he will choose one of the brands.

On the other hand, consumers often have to make judgments based on information that is not directly present at the time of judgment. In such “memory-based” processing settings a brand must be retrieved from memory before it can be evaluated. Consider for example a consumer who wants to send a package. Most likely, he will not stand in front of a Fedex, UPS and American Postal location at once. Instead, he actively has to scan his memory for a set of viable alternatives. Then, he will choose one of them depending on several evaluations such as price, relative distance to home and previous experiences. If one of the package carrier services is not evoked at the moment of consideration it will not be evaluated for sending the package and has obviously lost a sales opportunity. In such a setting the retrieval set is likely to be unstable and depending on the circumstances when the decision is made. A brand remembered at one point in time may be forgotten in a different situation or even at a similar situation but in a different point in time.

It should be noted that pure stimulus based and memory based processing settings are extreme cases. More frequently consumers have to make “mixed” judgments in which some information is physically present but other relevant information is stored in memory (Lynch and Srull 1982). Lynch and Srull mention a situation in which one visits discount department stores such as J.C. Penney, Sears and K-Mart in shopping for kitchen appliance.

At the level of the individual consumer, a firm’s competition consists of the brands which are included in the consumer’s “evoked set” at a specific point in time (Alba & Chattopadhyay 1985). The evoked set is defined as “those brands which the consumer is aware of and considers for purchase.” (Alba & Chattopadhyay 1985) If a company manages to reduce the amount of retrieved brands and still is included in the evoked set it actively can increase its competitive position without altering its own evaluation. Therefore the question arises, what happens if a company utilizes direct comparative advertising, as at least one competing brand is mentioned. This brand serves as a prime which could facilitate the retrieval of other, similar brands from the consumer’s memory. Alternatively, this brand could contribute to the exclusion of other brands from the evoked set. As a result, comparison advertising could help in excluding competitors which would be considered for purchase. This is especially relevant in instances during which alternatives are not physically present in front of the customers, meaning when choice is memory based. For instance services (e.g. restaurants) and websites (e.g. search engines, price comparison websites for travelling, etc) commonly are subject to consumers making memory based choices. Nevertheless, the act of writing a shopping-list highlights the importance of memory-based choice even for fast moving consumer goods. Also, when the consumer has to know what he is looking for or simply because he lacks the motivation to locate and examine multiple brands (Hoyer 1984) brand retrieval plays a major role (Nedungadi 1990).

For the purpose of this paper we assume similarly to Nedungadi’s (1990) work a two staged memory based choice process. In the first stage the consideration set², which is formally

² Note that the definition and usage of the terms vary across literature. For instance Alba and Chattopadhyay (1985) argue for a distinction of the “knowledge set” and “retrieval set”. The former is defined as all brands known to the consumer whereas the “retrieval set” refers to the portion of the knowledge set recalled at a particular point in time. The “consideration set” ,which identifies all brands a consumer would consider purchasing, is thereby a subset of the knowledge set but not necessarily a subset of the retrieval set . Basically, the “retrieval set” is the same as the “consideration set” if choice is memory based. The consideration set can

defined “as the set of brands brought to mind in a particular choice occasion”, is formed. Then in the second stage, the brand evaluation stage, the consumer will evaluate the brands and make a choice. As we will see later comparative advertising has been extensively researched and its effect on the evaluation stage. Thus, in this paper we focus on the retrieval processes which lead to brands included in the consideration stage. The reason is, as mentioned before, that when choice is memory based a brand only can be evaluated if it is first considered. Comparison advertising could either facilitate or inhibit the recall of other brands in a memory based choice setting.

2.2 Retrieval - Psychological Background

When all brands are not physically present, the likelihood of retrieval determines the composition of the consideration set (Nedungadi 1990). Marketing research on brand retrieval has benefited from research from psychology researchers who studied the interaction between the storage and retrieval process in memory. Memory researchers make a fundamental distinction between “availability” and “accessibility” (Tulving & Pearlstone 1966). Once information is properly learned it is stored in memory and made “available”. However, information which has been previously stored in memory is only “accessible” for retrieval under special conditions. The inability to recall learned information does not necessarily mean that the information has been lost (Tulving & Pearlstone 1966). According to Lewis (1979) memory is permanent and therefore always available. As a result, “forgetting” is a retrieval failure rather than a storage failure. The ability to retrieve memories from the brain depends on context. Information that is accessible at one point of time will not necessarily be accessible another time. Whether information is accessible depends on two major factors: First, the amount of competing information that has been learned in the same “content domain”, and second, both self- and externally generated retrieval cues present at the time (Lynch and Srull 1982).

A simple example by Lynch and Srull (1982) serve as an illustration: *“Most people “know” the name of their first grade teacher and have that information “available.” That is, once the*

differ from the retrieval set in stimuli based settings when the consumer encounters brands which were not included in the retrieval set (for a further explanation see Alba and Chattopadhyay 1985). Nevertheless, in order to keep things as simple as possible we use Nedungadi’s reasoning and usage of the term “consideration set”.

information is learned it is probably never "forgotten." However, people learn thousands of names by the time they are adults [= competing information in the same content domain]. Thus adults may not be able to retrieve or spontaneously recall the name of their first grade teacher due to the large number of "competing responses." External retrieval cues will help. If shown old photographs or told the name of other old teachers or class-mates [=externally generated retrieval cues], people are more likely to retrieve the name. Internal retrieval cues will also help. If people pause to reminisce about their old school and continue to think about their teacher and classmates [=self generated retrieval cues], they are also more likely to retrieve the name. But even if they are successful in retrieving the name, it is likely that they will once again "forget" it or be unable to recall it at some later time. In general, any information that a person fully comprehends and encodes into long-term memory will be "available" from that point on, but it will be "accessible" only in a limited set of circumstances."

2.3 Recall Facilitation vs. Inhibition

2.3.1 Recall Facilitation - Evidence from Psychology

In the previous example the provision of classmates' pictures or their names serve as cues which facilitate the retrieval of the teacher's name. In addition it might also be easier to recall the name of other old classmates as soon as one name is mentioned. In a marketing context the provision of a branded cue in the same manner could have facilitative effects on the retrieval of other, similar competing brands. If the consumer prefers any of these competing brands over the originally cued brand it will not be chosen.

Memory research has shown that cues generally help to enhance memory at the time people attempt to recall information (Unnava et al 1994). These cues serve as a reminder of previously learned information. Specifically, the provision of a category name serves as a facilitating cue to recall members of the category (Hudson and Austin 1970, Lewis 1971, Tulving and Pearlstone 1966). Moreover, mentioning a single member of a category can lead to an instant retrieval of the original category and heighten recall for otherwise previously inaccessible members of the category (Hudson and Austin 1970). From a marketing perspective Nedungadi (1990) has shown that a branded cue enhances the probability of other brands being recalled, considered and ultimately chosen.

2.3.2 Recall Facilitation - Marketing Context

According to Nedungadi (1990), advertising cues that help the consumer retrieve and consider a target brand could simultaneously increase the likelihood of considering other (similar) competitors. In his article, he focuses on the brand prime. A brand is primed, or activated, by a direct reference to the brand name. Activation from the priming of one brand will spread to other related brands in the network. Nedugandi's experiment demonstrated that when choice was memory based, cues such as brand primes could indeed differentially activate brands in memory, shape brand retrieval, and thus influence brand choice without any changes in brand evaluation.

2.3.3 Recall Inhibition - Evidence from Psychology

On the other hand, retrieval cues are not universally beneficial for retrieval. In fact, they can suppress information leading to contrary effects on brand recall, evaluation and choice. In psychology this effect is known as "part-list" (Lynch and Srull 1982) "part-set" (Anderson and Neely 1996) or "part-category" cueing inhibition (Alba and Chattopadhyay 1985). Part-list cuing inhibition was first demonstrated by Slamecka (1968). Slamencka provided participants of his research with six common, randomly arranged words belonging to five semantic categories (such as trees, fish, musical instruments, occupations, countries etc.). Afterwards, the participants were asked to recall as many words as possible. One of the groups was given representatives of the different category groups as it was believed that the provision of the representatives would facilitate recall. A control group was given no cues. Surprisingly though, the control group was able to recall more words. The retrieval cues did not facilitate but inhibit the odds for retrieval. This counterintuitive result was replicated and extended in a large number of following experiments (for reviews see Nickerson 1984 or Roediger and Neely 1982). Generally, the more cued items are given to a person at the moment of recall, the smaller is the probability that a person will recall the remaining items (Roediger 1973).

The question is why does the provision of clearly related information suppress, rather than help to recall related items? Rundus' (1973)³ model has received the most attention from researchers. Rundus performed two experiments that examined the decrement in recall resulting from providing various numbers of brands to the subject at the time of test. Both

³ As cited in Anderson and Neely 1996, Alba and Chattopdhyay 1985, Everelles and Horton 1998

studies found a negative relationship between the number of brands given and the recall probability of the remaining brands. Rundus goes further by proposing a model that helps illustrate the memory retrieval process and a rule for terminating recall. According to this model, the inhibition that results from cuing is caused by the combined effects of sampling with replacement and the heightened salience of cued brands. Furthermore, an individual is assumed to terminate memory search once a certain number of consecutive recall attempts produces no previously unrecalled brands.

2.3.4 Recall Inhibition - Marketing Context

In terms of a marketing context several studies have demonstrated that branded cues may not only facilitate but also inhibit recall of other brands (Alba and Chattopadhyay 1985, Alba and Chattopadhyay 1986, Hastak and Mitra 1996, Erevelles and Horton 1998, Miniard et al 1990). In their experiments, Alba and Chattopadhyay (1985) first demonstrated recall inhibition of part-category cues. Furthermore, they also showed that consumer knowledge and market structure influence the inhibition effect: In one of their experiments, men and women were showed a list of 25 shampoo brands and given zero, five or 15 part-category cues. Men showed a significant recall inhibition which increased depending on the amount of cues provided. Women on, the other hand, did not show any recall inhibition effect. For men the part-category cues served as intra-category cues and therefore inhibited recall. For women, on the other hand, who a-priori are more familiar with the shampoo category, the cues served as inter-category cues which reminded them of unrecalled subcategories.

This shows that category structure may be individually different from consumer to consumer. A particular product class may consist of several subcategories (Alba and Chattopdhyay 1985) which may depend even on usage situations. E.g. one consumer might organize the “drinks” category in non-alcoholic and alcoholic subcategories which again are split up into several subcategories such as spirits, beers, wines, lemonades, juices, coffees etc. On the other hand a consumer might develop mental subcategories depending on usage situation. These usage situations could be relaxation, stimulation, party, sports etc. Beer and wine could be found both in the relaxation and party usage situation. Coffee could be found both in stimulation and relaxation categories. Accordingly, providing the same set of recall cues to different consumer segments may result in very different results.

In Alba and Chattopadhyay's (1985) third experiment category structure was taken into account and the effects of cuing on recall of generic competition was studied. Subjects were cued with two brands at the same time. Therefore, this experiment is a very similar setting to a comparative advertising setting in which a sponsor makes a comparison with a single competitor. Specifically, subjects were either cued with two brands from a major category (nasal sprays, deodorant sprays) or a minor subcategory (multisymptom formula products, deodorant soaps). Subjects in the control group, who did not receive any branded primes, recalled 100% of the times at least one deodorant spray and 78% of the times at least one deodorant soap (subjects were given credit for retrieving a category when they recalled at least one brand of a subcategory or mention the actual subcategory). However, subjects who were cued with deodorant sprays managed to recall 78% of the times the deodorant soap category and more strikingly, only 22% of those who were cued with deodorant sprays were able to retrieve the deodorant spray category. The results demonstrate that predisposing a consumer to think in terms of a product class or problem solution can inhibit thinking about its generic competition. This was true even if subjects received instructions to think of other, unmentioned categories. Cuing of only one product subcategory can inhibit recall of other product subcategories.

2.3.5 Salience

In a follow up study Alba and Chattopdhyay (1986) showed that an increase in the salience of *one* brand (note that when the part-set cueing effect was demonstrated before, always multiple cues were provided) can cause an inhibitory effect on the recall of competing brands, including those who would otherwise be candidates for purchase. Salience refers to the "level of activation" of a brand in memory. Salience can be heightened by several factors such as through advertising or usage (Hutchinson 1983). Subjects were given a name of a shampoo or coffee brand and instructed to think about the brand for one minute. Afterwards they were asked to recall other brands from the same category. Those who were instructed to think about a brand name were able to recall about 25% less brands than those who were primed with a brand from an unrelated category. Similar experiments with consistent results were conducted using a mock ad, an actual TV advertising and after 24 hours. Interestingly, no inhibition effect was found when participants were cued with Coca-Cola and asked to recall from the soft-drink category. Alba and Chattopdhyay (1986) assume that the salience of Coca-Cola is raised long-term by continuous advertising and usage of the global soft drink brand and

therefore its salience has reached ceiling. A competing explanation is that most brands in the soft drinks category are highly salient and hence their recall cannot be suppressed.

Miniard et al. (1990) extended Alba and Chattopdhyay's research and demonstrated that recall inhibition can be induced by cuing consumers with an unfamiliar brand name. However, the inhibition effect is weaker than if consumers are cued with a highly familiar brand name. More importantly, they found that recall inhibition does not extend to a brand which is dominant in a product category. (Note that Miniard et al. refer to a "preferred" brand. However we believe that this expression is slightly misleading. A dominant brand might be a better term.) Basically, their experiment probed whether in one category (toothpaste) the market leading brand (Crest) is subject to recall inhibition.

The notion that dominant brands have a constant inhibition effect due to salience receives indirect support by research conducted by Laurent et al (1995). Their work provides us knowledge on the relationship between spontaneous awareness (percentage of consumers/interviewees that are able to name the brand(s), without any prompting, in a certain category) and aided awareness (percentage of consumers/interviewees that are able to indicate which brand(s) they know, when presented with them, in a certain category). *"When the leading brands (leading in terms of awareness) of a market are known (aided awareness) by almost all consumers, it seems that they block the spontaneous recollection of other brands. Inversely, if the leading brands have a relatively low aided awareness (below 50%), they do not block the spontaneous recollection of the other brands."* To diagnose this effect Laurent et al propose using the "saturation index"; this index is simply equal to the average aided awareness of the leading brands in a category. Product or service categories where the saturation index is high (95%) then a non leading brand whose aided awareness is still high (ex: 75%) would nonetheless have a low spontaneous awareness (ex: 13%). Product or service categories where the saturation index is low (50%) then a non leading brand whose aided awareness is still high (ex: 75%) would have a relatively high spontaneous awareness (ex: 44%). The implications of this are very useful when predicting the potential awareness of a new brand in a category that can be considered "locked" (i.e: high saturation index) or "open" (i.e: low saturation index). If the category is locked, it will be relatively difficult to raise the spontaneous awareness of the new brand, and vice-versa if the category is open.

2.3.6 Attitude

In the field of recall inhibition, little attention has been paid to moderators. An exception is when Everelles and Horton (1998) examined to what extent attitude towards a brand influences recall inhibition of other category members. The components of attitude are affect and evaluation. Affect is the emotional response that expresses an individual's degree of preference for an entity, and evaluation is the cognitive evaluation of the entity that constitutes an individual's beliefs about the object. They found that the affective component induces a stronger recall inhibition than the evaluative component. These results may also imply that bands with a dominant affective component are more accessible than brands with dominant evaluative components, since inhibition is related to the salience and accessibility of the brand.

2.3.7 Categorization

The above presented findings can be explained by using an associative network model⁴. In this associative network model individual instances are represented as memory nodes. These nodes are connected by links which show the relationships between the instances. Generally, new experiences relatively to existing memories, as well as brands, are sorted into different categories in memory to allow efficient access and retrieval when appropriate. Figure 1 illustrates how a consumer may have stored several subcategories and brands in the overall category of sport brands.

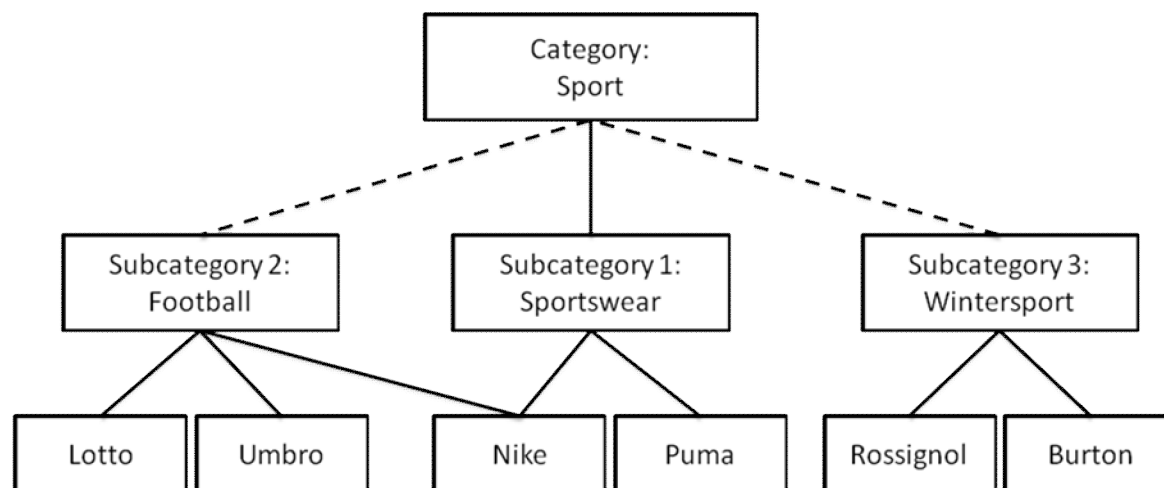


Figure 1. Representation of product category and subcategory information in memory

⁴ This chapter is based on Hastak and Mitra (1996)

For instance, when asked to name all sport brands a person may quickly produce the names of Nike and Puma which are instances of general sportswear manufacturers, a highly accessible mental subcategory in the person's mind. Nike, however, is also linked in the person's memory to football and hence triggers the activation of the mental subcategory football, which allows the subject to recall both Lotto and Umbro. After the person has seemingly exhausted the memory for sport brands, the provision of the category winter-sport or naming of a particular brand such as Burton or Rossignol would result in recall of additional brands in that category since the category would not have been accessible otherwise.

In general, cuing the person with the brand "Puma" produces two effects. On one hand the association between itself and the subcategory is strengthened. As a result the accessibility of other brands in the same subcategory such as Nike or Adidas is reduced and recall inhibition would be found. On the other hand Puma also activates the subcategory node (sportswear) and strengthens its link to the overall category (sport). As a result the cue indirectly also activates the subcategory sportswear which also facilitates the recall of all other brands in that subcategory.

Hastak & Mitra (1996) tried to answer what is the "net effect" of both recall facilitation and recall inhibition. They demonstrated, as expected, that in an accessible subcategory multiple brands have a stronger effect on recall inhibition than a single brand only. However, one of their expectations was also that when a subcategory is cued indirectly that the net facilitative effect of a single brand cue should be larger than that of multiple brand cues. That is if a subcategory is primed indirectly, multiple brands should have an inhibitive effect on recall whilst one brand should facilitate recall. Conversely, they found that the net facilitative effect of multiple brand cues (they prompted subjects with up to three brands) is identical to the net facilitative effect of a single brand cue, when a subcategory is cued indirectly. That is subjects recalled the same amount of brands in a subcategory regardless if they received one or three brands. Their explanation is that the number of cues increases both the facilitative and inhibitive effect. A single, merely familiar brand is not enough to fully activate a subcategory. Multiple brands, however, do so. As a result the net effect is unchanged. They predict that at a certain point facilitation stops (due to a full activation of the subcategory) and adding more cues only increases inhibition. A competing explanation stems from memory research from Cohen (1966) which has been widely overlooked by marketing researchers focusing on recall

facilitation and inhibition. Cohen observed that people tend to recall categories of information in a “some-or-none” fashion. People either fail completely to recall any instances of a verbal category or manage to retrieve on average 6 to 7 instances from a category, regardless if they are provided with lists ranging from 35 to 53 to 70 words. The mean number of instances recalled is constant. If Cohen’s “some-or none” prediction is true in the case of non accessible subcategories then no increased recall inhibition will take place regardless of the amount of cues provided.

3. HYPOTHESES

As discussed before, comparative advertising has been well researched. Depending on different conditions and moderators, comparative advertising is either more, less or as effective as non comparative advertising. However, research has been focused solely on effects on the sponsored and comparison brands. Almost no attention has been paid to the potential effects on all other unmentioned brands (i.e those brands which are neither the comparison or sponsored brands).

In order to answer the question “what happens to the non-mentioned brands in the case of comparative advertising”, we directed our attention in part 2.3 on recall inhibition and recall facilitation. Even though none of the discussed and presented articles focused specifically on comparative advertising it appears that their results very likely can be applied to the context of comparative advertising as well. In summary, a subset of brands can either inhibit or enhance recall of brands in a product category. Retrieval cues will facilitate retrieval if they serve as a reminder of categories which would otherwise be blocked. On the other hand, branded cues will inhibit recall if they represent members of already accessible categories.

However, in the context of comparative advertising multiple brand cues are provided. Thus, the effects on memory will be quite complex. Namely, a comparative ad could increase the accessibility of some brands while simultaneously decreasing the accessibility of other brands (Hastak and Mitra 1996). Nevertheless, multiple brand cues inhibit brand recall more than the provision of a single branded cue as long as the category is primed directly and the cues stem from the same mental subcategory. Therefore, comparative advertising should have a stronger effect on recall inhibition than a non-comparative advertisement in an accessible subcategory.

Putting the above presented findings into the context of comparative advertising would merely be a replication of already existing findings. However, one issue does call for further investigation. As mentioned before, in one of their pre-tests, Alba and Chattopdhyay (1985) found no inhibition effect when participants were cued with Coca-Cola and asked to recall from the soft-drink category. Alba and Chattopdhyay attributed this to a high pre-experimental salience of Coca Cola. Salience is increased by advertising and usage. Coca-Cola is both a dominant player and “pioneering brand” in the soft-drink category and spends a

considerable amount of its budget on advertising. Furthermore, almost every consumer has been exposed to both the product and its advertising in the past. Thus, it is safe to assume that Coca-Cola has a very high salience. Alba and Chattopdhyay's notion is that a brand, such as Coca-Cola, already has such a high salience that it constantly inhibits recall of other competing brands, even if it is not presented. If their notion is not related to mono-operalization, or in other words, specific conditions in the soft-drink category or unique factors attributed to Coca-Cola, brands which are clearly dominant in their category should have a constant inhibition effect on recall which cannot be heightened by priming the brand.

Further insights can be derived from research by Laurent et al's (1995). Their findings explain why it is more difficult in certain categories than in others for a brand to be named in a spontaneous awareness task. Similar to this discussion, they argue that what interferes the most with the memory process for spontaneous brand retrieval is the number of brands in a category that have a large enough aided awareness (= recognition). According to them, when the leading brands of a market are well known by almost all consumers, it seems that they block the spontaneous recollection (= recall) of other brands. In other words, the more aided awareness the leading brands have, the more recall inhibition there would be towards follower brands. Inversely, if the leading brands have a relatively low aided awareness (below 50%), they do not block the spontaneous recollection of the other brands.

In their findings Laurent et al (1995) make a descriptive empirical generalization showing the relationship between aided awareness and spontaneous awareness. They explain this relationship through the "Saturation index". The saturation index is equal to the average aided awareness of the leading brands in a category. In a product or service category where the saturation index is high (95%) then a non leading brand whose aided awareness is still high (ex: 75%) would nonetheless have a low spontaneous awareness (ex: 13%). However, in a product or service category where the saturation index is low (50%) then a non leading brand whose aided awareness is still high (ex: 75%) would have a relatively high spontaneous awareness (ex: 44%).

In plain words, the saturation index measures how high the spontaneous awareness is of the two leading brands in a certain category. It is a predictor in a category for spontaneous awareness based on aided awareness. A high saturation index in a category means that the category is dominated by two leading brands whilst a low saturation index indicates that there

are no clear leading brands. Laurent et al term categories as “locked” when the leaders in a category are well-known (a high Saturation index) and describe categories as “open” when the leaders are not well-known (low Saturation index).

Laurent et al’s findings give us very important insights for this report. Spontaneous recollection of all ‘other brands’ in a category is influenced by the awareness of leading brands. Depending on the level of awareness of the leading brands in each category it is relatively harder or easier for following brands to gain spontaneous awareness. Meaning, recall inhibition is different from category to category. Previous researchers almost freely chose categories to prove inhibition effects. Only Nedungadi (1990) and subsequently Hastak and Mitra (1996) distinguished between minor and major mental subcategories to illustrate facilitation effects. However, no one took specific category characteristics into account and their effects on recall inhibition.

In the present study we aim to shed further light on recall inhibition. In conjunction to previous research we expect that a branded cue will cause recall inhibition on all other brands. However, we build on Lauren et al (1995) findings about leading brands and their inhibitive effect on recall of competitors Alba and Chattopdhyay’s (1985) notion about Coca-Cola to make a distinction between two category types: “open” and closed”. In our paper, a category is considered to be “closed” when consumers will name relatively few brands in a spontaneous awareness task and there is *one* clear dominating brand⁵. This dominating brand is highly salient and as a result this dominating brand is unparalleled leading in top of mind rate and most consumers recall the brand in a spontaneous awareness task. We anticipate that the pre-experimental salience of that brand is at ceiling, having a permanent inhibition affect on its competitors. As a result the average amount of brands recalled is relatively low. On the other hand, a category is considered to be “open” when it does not possess a dominating brand and relatively many brands are recalled on average.

Previous studies (E.g. Alba & Chattopadhyay 1986, Miniard et al. 1990) have demonstrated that having consumers think about a familiar brand can interfere with the mental recollection

⁵A dominating brand is a leading brand in its category. A leading brand though is not necessarily a dominating brand. Dominating brands are unchallenged leaders in their category indicated by extreme high salience.

process of other brands in the same product category. H1, thus, is a replication of results obtained by previous research in a similar setting:

H1: In an open category, priming of the leading brand will inhibit recall of other brands.

In a direct comparative ad format consumers are cued with at least two brands. Psychology research has shown that the more cued items from a mental subcategory are given to a person at the moment of recall, the smaller is the probability that a person will recall the remaining items (e.g. Roediger 1973, Brown⁶ 1968). This “part-list cuing effect” has also been demonstrated in the area of marketing (Alba and Chattopdhyay 1985). Moreover, Hastra and Mitra (1996) showed that multiple brands have a stronger potency on inhibiting recall than a single brand, as long as the subcategory is cued directly. Thus, we expect that in a comparative ad setting, entailing two brands from the same category, recall inhibition effects should be stronger than in a non-comparative ad setting entailing only one brand:

H2: In an open category, a direct comparative ad will inhibit recall more than a single brand.

In extreme cases categories are dominated by a single brand. As mentioned before, dominant brands such as Coca-Cola can serve as an example. Why did Alba and Chattopdhyay (1985) find no inhibition for Coca-Cola in their pre-tests? A possible interpretation is because Coca-Cola can be considered to be a dominant brand since its salience is practically at ceiling thanks to very high levels of advertising and usage. Therefore we expect that a dominant brand has such a high pre-experimental salience that it causes constant recall inhibition and no additional recall inhibition is found when the brand is cued. Therefore,

H3: In a closed category, priming of the dominating brand will cause no significant recall inhibition towards other brands.

Taking this finding one step further one needs to take ceiling effects into account. If the prediction holds that the provision of a dominant brand does not lead to any additional inhibition then this also means that there is a cap, or in other words a maximum ceiling effect on recall inhibition. The question is what happens if a brand with already maximal inhibition

⁶ As cited in Lynch and Srull 1982

is provided and additionally a second brand is made salient. Will there be any additional recall inhibition? In conjunction with Hastak & Mitra's (1996) findings this should be the case.

H4: In a closed category, a direct comparative ad will inhibit recall more than a single brand.

In the present study we shed further light on recall inhibition. Comparative advertising is only the context in which this research takes place in order to have a higher relevance for practitioners and provide a more realistic setting. Our approach provides the opportunity to find out there if there is a cap on recall inhibition. Also we try to answer the question if brands really can reach such a high salience that it constantly suppresses recall. Additionally, we hope to deliver more insights on the relation of salience and recall inhibition: If maximal recall inhibition is caused by one brand, can another brand additionally inhibit more recall?

4. PRE-TESTS

4.1 Design

4.1.1 Objective

Our task in the pre-tests was to identify which and how many brands subjects recall when they are asked to list all the brands they know in a certain product or service category. We chose MP3 players, search engines, cameras and supermarkets as presumptive representatives for closed categories and airlines, beer, perfume and cars representing presumably open categories. The respective categories were chosen based on the assumption that they are repeatedly purchased or used and therefore relevant to the subjects in our sample.

4.1.2 Sample

In order to increase internal validity only Norwegian business students were questioned, as they have similar market knowledge. The male-female ratio was kept at around 50% because a priori males and females have more affinity towards certain categories, and thus would have more (or less) knowledge on the brands in that category. For instance, men presumably know more beer brands than women and women know more perfume brands than men. Moreover, previous research (e.g. Alba and Chattopadhyay 1985) also found it necessary to include gender as a factor. In the case of shampoo brands, women had a more highly differentiated category knowledge than men, and this facilitated their recall of otherwise inaccessible subcategories and respective brands. In order to stimulate participation, a prize from an unrelated product category was raffled.

Since the pre-test group was also intended to function as the control group in the main experiment, increasing the number of subjects in this group ensured a more stable estimate of baseline probabilities (Nedungadi 1990). A total of 44 subjects participated in the pretests. Due to small irregularities we ended up with 39 to 42 subjects (almost evenly spread out in terms of gender) in each product category.

4.1.3 Method

The pre-test was conducted in groups ranging from one to six participants at once. The procedure paralleled Alba and Chattopadhyay's (1986) experiment. Before beginning, the

participants were asked to indicate their gender, age and university on a blank sheet of paper. Afterwards, subjects were given a product or service category and they were then asked to list, on a sheet of paper, all the brands they know of in that respective category. Respondents were made aware that sub-brands or product names (ex: Bon-Aqua Silver, Bon-Aqua Lime etc.) are inappropriate. Wild guesses were discouraged. Furthermore participants were asked not to talk to other participants in the room whilst the experiment was being held, and finally, kindly asked upon leaving the room not to discuss with others what our experiment entails.

Depending on whether a subject was given an open or closed product/service category either two or four minutes were allotted for recall (two minutes for closed categories and four for open categories). The distinction was deemed necessary due to differences in category size and to avoid that respondents might become bored. Past studies (ex: Alba and Chattopadyay 1985, 1986) had indicated that four minutes was more than adequate time to list all the accessible brands in categories that have relatively many brands (Shampoo in their study) and two minutes in categories with fewer brands (Coffee in their study). Moreover, pre-pre-tests with a very small sample showed that two minutes for closed and four minutes are sufficient to list all brands. After 30 seconds had passed (in the brand listing process), the subjects were asked to draw a line under their results and then to quietly continue with the process until the time runs out. The order in which the categories were mentioned was randomized in order to evade potential order and tiring effects.

4.1.4 Analysis

The results were coded in a manner where the order could be traced. This permitted us to identify which brands are mentioned most often, but also to spot which brands are mentioned first (=top of mind), second, third, fourth and fifth.. A brand was given credit when a subject managed to recall a brand name even if they misspelled it (just as long as the brand was recognizable). Product names were not allowed, however an exception was the MP3-player category in which product names can function as synonyms (for instance Walkman was recorded as mentioning Sony, Apple was given credit when respondents listed iPod). An extensive search on wikipedia.com, wikipedia.no, the brand's official website, price comparison websites (price comparison websites often still feature discontinued products which cannot be found on a firm's website anymore) and google.com was undertaken if brands were mentioned which were unfamiliar to the researcher or when it was unclear

whether they cater to the respective category. In the case of the airline category, bankrupt or discontinued airlines were not given credit as this service cannot be used anymore whereas discontinued products could still be owned or bought second-hand. Generally, apart from the supermarket category, very little incorrect brand names were listed.

Aside from recording brands and their respective order, the average amount of brands that were mentioned per category, the standard deviation, median, the minimum and maximum number of brands ever mentioned by the respondents, as well as the total number of brands listed were analyzed. These statistics were then divided in terms of sex in order for us to see the differences in category recall between men and women.

4.2 Results: Category Selection

4.2.1 Open categories

An open category is a category in which relatively many brands are recalled and which is not dominated by a single brand. Based on the results of our pre-tests we decided to move forward with cars and perfumes in the open categories for the experiment stage. Detailed Overview tables and tables featuring the top then brands can be reviewed in the appendix (1.1).

Specifically, in the car category, a large number of brands was recalled (20.6 on average, 73 in total) with many brands relatively strong; Males mentioned on average 23.4 brands and women listed on average 17.6 brands. There was no clear leader, leaving the category open; in total 6 brands were recalled by more than 75% and 14 brands were recalled over 50% of the time (with Mercedes, Toyota and Volvo at the top garnering 93% recall and Porsche at 14th place with 53% recall). A total of 31 brands were mentioned at least by 25% of the respondents. Whilst brands like Mercedes and Toyota collected an impressive amount of recall, they were only mentioned around 15% of the time as the first brand. BMW on the other hand received 32% top of mind with an 88% recall rate.

In the perfume category no brand is clearly leading. Only three brands generated over 50% recall and the two brands which were recalled the most were Hugo Boss and Chanel both

mentioned only in 62% of the cases. 17 brands generated a minimum of 25% recall, and a total of 86 different brands were mentioned by the respondents. Chanel scored the highest top of mind rate in this category with only 15%. Note that the gender differences were strong. Women recalled on average 14 brands whilst men listed only 7.4 brands.

The beer category did not qualify for the experiment stage, even though it looked promising with six brands recalled by over 70% of the respondents (11.7 brands on average, males recalled 13.3 and females 10.1 beer brands). The problem is that Hansa (which is the strongest brand with 98% recall and 51% top of mind) has a fervent usage among the students at the business school we conducted the pre-tests at. This is due to the fact that it sponsors the school's bar and is very robust in the Bergen region, where the business school is located. The experiment was intended to be conducted at other business schools and the disparities in Hansa's position will most likely show up in those places. Results would thus go into a different direction mainly because other areas/establishments have other more prominent "local beers".

Finally, "Airlines" is a very interesting category; however it seems neither to be open or closed but somewhere in between. SAS and Norwegian are relatively and equally strong: 100% recall and mentioned in the top five 98% of the time, both scoring 38% top of mind. Even though the average (12.9) and total amount (82) of airlines recalled was quite high; the category's top two players are simply too strong for the category to be considered open. This category is, in other words, hard to define and falls neither into open or closed.

4.2.2 Closed categories

In the closed categories we were looking for a dominating brand with high salience and a small amount of brands recalled on average. Again, a detailed overview including tables with the top five brands can be reviewed in the appendix (1.2). Based on the results Mp3 players and search engines were chosen for the experiment. It needs to be noted that the category of supermarkets was too loosely defined and answers showed that respondents mentioned too many sub-brands, foreign supermarkets, department stores and at times even completely off-base answers (ex: naming shopping malls).

Google clearly dominates the search engine category with a recall rate of 100% and is the first brand to be mentioned (i.e. top of mind) almost 95% of the time. Kvasir is in a distant second

place even though it still manages a respectable 74% recall it is only ever mentioned first 2% of the time. 4.2 brands were recalled on average with males listing 4.5 and women 3.8 brands.

Although not as clear cut as the previous category, in the category of mp3 players, Apple dominates with a recall rate of 98% and is the first brand to be mentioned (i.e. top of mind) 79% of the time. Second place goes to Sony as it manages 81% recall but is only ever mentioned first 16% of the time. In the mp3-player category respondents named with 3.4 listed brands the fewest brands on average (males 3.5, women 3.2).

The camera category was promising, but was not as clear cut as the categories of mp3 players and search engines. Canon scored a recall rate of 88% and its top of mind is at 47%. Sony showed a recall of 77% with 9% top of mind and Nikon mentioned by only 65% of the respondents was however mentioned by 33%. Both genders recalled almost equally on average 4.5 brands.

5. EXPERIMENT

5.1 Design

5.1.1 Objective

As developed in our hypothesis section, we want to measure whether:

- Recall inhibition occurs when our respondents are primed with a brand (i.e. through a non comparative ad) in open categories.
- Recall inhibition occurs when our respondents are primed with two brands (i.e. through a comparative ad) in open categories.
- Significant recall inhibition occurs when our respondents are primed with a brand (i.e. through a non comparative ad) in closed categories.
- Recall inhibition occurs when our respondents are primed with two brands (i.e. through a comparative ad) in closed categories.

The red line here is to find out what “happens to all other brands” in the mind of the respondent, the ones that are not mentioned in the brand, depending on different categories.

5.1.2 Brand selection

In order to investigate our hypotheses we used similarly as Alba and Chattopadhyay (1986) an extreme case by inducing a large increment in salience. Specifically, in order to induce inhibition subjects were cued in our research with a leading brand, a follower brand, or both brands at once.

The leading brands in each respective category (cars, perfumes, mp3-players and search engines) were chosen based on the results of the pre-tests which helped to identify the most salient brand in each category. This does, however, not automatically mean that the leading brand both has the highest recall and top of mind rate. Brands which have the highest activation in memory will be mentioned first and less salient brands will be listed later. As a result we paid close attention to the order in which brands were mentioned. In the car category we selected BMW as the leading brand, even though with 88% recall it was 5% behind Mercedes, Toyota and Volvo which all had 93% recall. The reason is that BMW was named by 32% of the respondents first, whereas the competitors were only 12% to 17% top of

mind. Moreover, including subjects which listed BMW not only first but also second showed that BMW is more salient as 56% of the subjects did so. On the other hand Toyota, Volvo and Mercedes were mentioned first and second by only 22% to 27% of the pre-test subjects. In the perfume category both Chanel and Hugo Boss were recalled by 62% of the subjects. Chanel is the leader with 15% top of mind versus Hugo Boss scoring only 8%. In the closed category it was very clear which brands were dominating: Google was recalled by all respondents and named by 93% subjects first. Apple (iPod) was evoked by 98% of the subjects and had 79% top of mind.

The followers were chosen both on their respective position in each category and also so that a comparative advertisement with the leader is realistic and hence perceived credible. Moreover, to maximize inhibition the counteracting effects of inter-category cuing must be limited to the greatest possible extent. That is the sponsoring brand (here: the follower brand) must be in the same mental subcategory and market segment as the comparison brand (here: leading brand). Mercedes Benz was useful in this regard because it comes primarily from the same subcategory as BMW, namely, German premium cars. Audi also would have been a natural choice, but was, however, only recalled by 71% of the pre-test subjects. In the perfume category Dior (44% recall, 5% top of mind) was chosen over Hugo Boss (62% recall, 8% top of mind) and Armani (56% recall, 8% top of mind). Hugo Boss and Armani primarily are perceived as male brands whereas Dior has a similar female connotation like Chanel. In the closed categories the followers were Kvasir (a Norwegian search engine) and Sony (Walkman) both being clear number two players.

5.1.3 Sample

Similar to the pre-test stage only Norwegian students were recruited for the experiment. However, this time the experiment was not only held at NHH in Bergen, but also at BI in Oslo. Respondents who already participated in the pre-test stage were not permitted to take part. A total of 112 subjects participated in the experiment. A prize from an unrelated product category was raffled to stimulate participation.

5.1.4 Method

Again, much of the instructions used in our research were very similar to those used by Alba and Chattopadhyay (1985, 1986) in their studies, and conditions were the same as in the pre-tests. Similarly to the pre-test stage, the experiment was conducted in groups consisting of one to six people at once. Before the start of the experiment, each participant was given a pen and sheets of blank paper at his/her disposal. The subjects were then informed that they would be shown a print of a certain brand (with its logo) and that they have to concentrate on it. Before the print was displayed to them, it was made clear that they could repeat the name of the brand to themselves, think of its product(s), or focus on advertisements they may have seen for the brand. These instructions were also printed on the sheet of paper where the brand was depicted. They were asked to focus on the ad until we told them to stop. Whilst the participants were never informed on how long they would have to perform this task, they were consistently given 40 seconds to do so. Note that Alba and Chattopadhyay (1986) asked their respondents to concentrate on the brand for one minute; however we felt that this might be too long and assumed that the mind might start to wonder off past 40 seconds.

Once the 40 seconds had passed the sheets with the brands were removed and then participants were asked to list all brands⁷ they know in that category on one of the blank sheets' of paper they have at their disposal. Similarly to the pre-test stage, if the category was either cars or perfume (open categories) respondents were given 4 minutes to complete this task, and 2 minutes if the category was either search engines or MP3 players (closed categories).

When presented with a comparative ad, the participants were given relatively the same instructions: "Please look at the advertisement below. Read the tagline. Focus on the depicted brands. Do so until you are told to stop". The mock ads were basic, only consisting of the logo and name of the sponsored brand, comparison brand and a tagline. The tagline in all three ads always read: "A survey has shown that Brand X's owners/users are more

⁷ In conjunction to the pre-tests the respondents were also informed that he/she is not permitted to mention any sub-brands and to talk to other participants in the area whilst the experiment is being held. However, we no longer required our participants to draw a line after 30 seconds because we were no longer interested in which brands were mentioned first but only on the total amount of brands recalled.

satisfied with their product/service than Brand Y's owners/users. For instance, the tagline used in the Sony vs. Apple comparative ad was: A survey has shown that owners of a Sony-Walkman are more satisfied with their mp3-player than owners of an Apple iPod. 'Satisfaction' was chosen as the value in the comparative claim since it is neutral, does not evoke unmentioned competitors and can be used in every category. For instance using a fuel efficiency comparative claim in the car category most likely would have indirectly cued cars or manufacturer brands with either high or low fuel efficiency such as Hummer or Toyota Prius.

This procedure was repeated a total of three times with each respondent. A participant would be subject to two different non-comparative ads from different categories. These ads could stem from the brands: Mercedes or BMW; Chanel or Dior; Google or Kvasir; Apple or Sony. Subjects would also be cued with one comparative ad, either: Mercedes vs. BMW; Dior vs. Chanel; Kvasir vs. Google; Sony vs. Apple.

Under is a matrix to help illustrate which brands were used and how the experiment was conducted:

Table 1: Experimental set-up

Category type	Leading Brand	Follower Brand	Comparative Ad
Open	BMW	Mercedes	Mercedes vs BMW
	Chanel	Dior	Dior vs Chanel
Closed	Google	Kvasir	Kvasir vs Google
	Apple	Sony	Sony vs Apple

Categories and order were randomized to eliminate possible order or learning effects. For instance, a participant could first go through the non-comparative ad for BMW, then the non-comparative ad for Sony, and finally the comparative ad for Dior vs. Chanel. Subjects were told to always use a new sheet of paper for each category. Once the experiment was done the respondents were asked to indicate their gender, age and the name of the institution. Furthermore, upon leaving the area subjects were requested not to discuss with others what the experiment entails.

5.1.5 Analysis

The results gathered from our respondents were then saved onto excel spreadsheets where special coding was used. This time, we did not however pay attention to the order of the brands mentioned because we were now pre-occupied with the total number of brands listed and not which brands were the most mentioned.

We then proceeded by working out the average amount of brands that were mentioned per category, the standard deviation, median, the minimum and maximum number of brands ever mentioned by our respondents. These statistics were then divided in terms of sex in order for us to see the differences in category recall between men and women.

To find out whether the averages worked out were significantly different from the ones in the control group, we tested the total amount of brands generated in our experiment versus those of the control group through independent t-tests (one sided). We of course had to correct them by appropriately reducing the total amount of brands generated when needed. For instance, when performing the t-tests comparing the control group for cars and those primed with BMW, we had to “eliminate” BMW as a brand mentioned in both the control and primed group. Likewise in the comparative setting both the comparison and sponsored brand needed to be eliminated from both the primed and control setting.

Once the means were calculated, they gave a relatively good indication as to whether priming affected recall. Naturally though, we had to statistically test the results we measured between the control group and the primed groups. Statistical testing permits us to certify whether the noted differences in means are significant or not. If no significance is detected, then we conclude that priming has no affect on recall. On the other hand, if significance is detected, we not only conclude that priming has an effect on recall, but also report on whether the recall was inhibitive or facilitative.

5.2 Results

One sided independent t-tests were used to test H1, H2, H3 and H4. The mean scores are displayed in table 2 (also see appendix 2 for the results of the t-tests). The dependent variable in this study is “the total amount of brands our subjects recall” and the independent variable is the “priming”.

Table 2: Overall Results of the Experiment⁸

Prime		BMW			Mercedes			Comparative Ad			
	Control	Prime	N	Control	Prime	N	Control	Prime	N	N Control	
Total	19,8	16,6 ^b	26	19,7	15,3 ^a	24	18,9	18,0	27	41	
Male	22,7	19,5 ^c	13	22,6	17,9 ^a	13	21,7	22,6	14	21	
Female	16,8	14,5 ^c	13	16,8	12,9 ^a	11	15,9	13,1 ^c	13	20	
Prime		Chanel			Dior			Comparative Ad			
	Control	Prime	N	Control	Prime	N	Control	Prime	N	N Control	
Total	10,1	9,8	29	10,3	10,4	27	9,7	9,6	27	39	
Male	6,8	9,0 ^c	13	7,2	9,9 ^b	14	6,6	8,2	13	19	
Female	13,3	10,4 ^b	16	13,3	10,9 ^c	13	12,6	10,9	14	20	
Prime		Google			Kvasir			Comparative Ad			
	Control	Prime	N	Control	Prime	N	Control	Prime	N	N Control	
Total	3,2	3,1	28	3,4	3,4	29	2,4	2,3	26	42	
Male	3,5	3,8	16	3,7	3,4	13	2,7	2,5	12	21	
Female	2,8	2,25 ^c	12	3,1	3,4	16	2,1	2,1	14	21	
Prime		Apple (Ipod)			Sony (Walkman)			Comparative Ad			
	Control	Prime	N	Control	Prime	N	Control	Prime	N	N Control	
Total	2,4	2,1	24	2,6	2,5	24	1,6	1,4	24	42	
Male	2,5	2,5	12	2,7	3,1	11	1,7	1,4	12	21	
Female	2,3	1,7 ^c	12	2,4	1,9 ^c	13	1,5	1,4	12	21	

^a $P < .01$ ^b $p < .05$ ^c $p < .10$

H1 predicted that in an open category, priming of the leading brand will inhibit recall of other brands. The difference in mean amount of brands recalled between the control group and primed groups are statistically significant for “BMW” ($t(1.67) = 1.89, p < 0.05$). They are however not statistically significant for “Chanel” ($t(1.29) = 0.27, n.s.$).

⁸ The table displays the effects of priming. One can compare the mean amount of brands recalled by the control group (“control”) and the experimental groups primed with the brand indicated above (“prime”). The means are presented in a manner that we are able to compare them between: The males in the control group with the males in the primed groups (“male”); the females in the control group with the females in the primed groups (“female”); and the males + females in the control group with the males + females in the primed groups (“total”). The table also displays the number of subjects that participated in the primed groups (“N”) and the control group (“N control”). Finally, when the difference between the means is statistically significant they are signaled by a lettered subscript. Subscript “a” means that the differences are statistically significant at the 1% level, subscript “b” at the 5% level, and subscript “c” at the 10% confidence level.

The results though, do become more revealing when the control and primed groups are divided into gender. Both the difference in mean amount of brands recalled between the control group and primed groups are statistically significant for male subjects in “BMW” ($t(1.31) = 1.55, p < 0.1$), female subjects in “BMW” ($t(1.31) = 1.40, p < 0.1$) and “Chanel” ($t(1.69) = 1.79, p < 0.05$).

The difference in the mean amount of brands recalled between the control group and primed groups are also statistically significant for male subjects in the open category of perfumes, but instead of recall inhibition, we notice that recall facilitation takes place: Chanel ($t(1.31) = -1.42, p < 0.1$).

Consequently, H1 is supported by the data but only to a certain extent. Priming with the leader brand in the open category of cars clearly leads to a significant level of recall inhibition, for both genders, while the same can be noticed in the category of perfumes, albeit only on women. Interestingly, the opposite effect takes place on men in the perfume category.

In the open categories, Mercedes and Dior are the follower brands. The results generated from the priming of the follower brands very much resemble the results we reported for the leading brands.

The difference in mean amount of brands recalled between the control group and primed groups are statistically significant for “Mercedes” ($t(1.67) = 3.05, p < 0.01$). They are however not statistically significant for “Dior” ($t(1.30) = -0.05, n.s.$).

Again, the results become more revealing when the control and primed groups are divided into gender. Both the difference in mean amount of brands recalled between the control group and primed groups are statistically significant for male subjects in “Mercedes” ($t(1.70) = 2.63, p < 0.01$), female subjects in “Mercedes” ($t(1.70) = 2.54, p < 0.01$) and “Dior” ($t(1.31) = 1.35, p < 0.1$).

The difference in the mean amount of brands recalled between the control group and primed groups are also statistically significant for male subjects primed with Dior, and yet again, instead of recall inhibition, we notice that recall facilitation takes place: Dior ($t(1.70) = -1.89, p < 0.05$).

H2 predicted that in an open category, a direct comparative ad will inhibit recall more than a single brand. The difference in mean amount of brands recalled between the control group and primed groups are not statistically significant for “Mercedes vs. BMW” ($t(1.29) = 0.55$, n.s.) and “Dior vs. Chanel” ($t(1.29) = 0.10$, n.s.).

The same results are reflected when the control and primed groups are divided into gender. Both the difference in mean amount of brands recalled between the control group and primed groups are not statistically significant for male subjects in “BMW vs. Mercedes” ($t(1.31) = -0.54$, n.s.), “Dior vs. Chanel” ($t(1.31) = -1.15$, n.s.) and female subjects in “Dior vs. Chanel” ($t(1.31) = 1.00$, n.s.).

A contradiction does take place however for women in the open category of cars:

The priming of “BMW vs. Mercedes” ($t(1.31) = 1.54$, $p < 0.1$) on female subjects leads to a significant amount of recall inhibition.

Consequently, H2 is not supported by the data. Meaning that in an open category, a direct comparative ad will not inhibit recall more than the ad of a single brand.

In the closed category, Kvasir and Sony are our follower brands. Again, it is interesting to note that the results generated from the priming of the follower brands very much resemble the results we reported for the dominant brands.

The difference in mean amount of brands recalled between the control group and primed groups are not statistically significant for “Kvasir” ($t(1.29) = 0.16$, n.s.) and “Sony” ($t(1.29) = 0.29$, n.s.).

When divided into gender, both the difference in mean amount of brands recalled between the control group and primed groups are not statistically significant for male subjects in “Kvasir” ($t(1.31) = 0.72$, n.s.) and “Sony” ($t(1.31) = -0.66$, n.s.), as well as female subjects in “Kvasir” ($t(1.31) = -0.86$, n.s.). But, they are significant for female subjects in “Sony” ($t(1.30) = 1.40$, $p < 0.1$)

H3 predicted that in a closed category, priming of the dominating brand will cause no detectable recall inhibition towards other brands. The difference in mean amount of brands

recalled between the control group and primed groups are not statistically significant for “Google” ($t(1.29) = 0.26$, n.s.) and “Apple” ($t(1.29) = 0.97$, n.s.).

Again, the results do reveal more when the control and primed groups are divided into gender. Both the difference in mean amount of brands recalled between the control group and primed groups are not statistically significant for male subjects in “Google” ($t(1.30) = -0.29$, n.s.) and “Apple” ($t(1.31) = 0.04$, n.s.). But, they are significant for female subjects in both “Google” ($t(1.31) = 1.53$, $p < 0.1$) and “Apple” ($t(1.31) = 1.61$, $p < 0.1$). This means that when women are primed with the leading brand in the closed categories of search engines and MP3 players, a significant amount of recall inhibition takes place.

Consequently, H3 is only partially supported by the data. Priming with the dominating brand in the closed categories of search engines and MP3 players does not cause any detectable recall inhibition on men towards other brands. Interestingly, the opposite effect takes place on women in the same categories.

H4 predicted that in a closed category, a direct comparative ad will inhibit recall more than a single brand. The difference in mean amount of brands recalled between the control group and primed groups are not statistically significant for “Kvasir vs. Google” ($t(1.29) = 0.34$, n.s.) and “Sony vs. Apple” ($t(1.29) = 0.50$, n.s.).

The same results are reflected when the control and primed groups are divided into gender. Both the difference in mean amount of brands recalled between the control group and primed groups are not statistically significant for male subjects in “Kvasir vs. Google” ($t(1.31) = 0.48$, n.s.), “Sony vs. Apple” ($t(1.31) = 0.52$, n.s.), female subjects in “Kvasir vs. Google” ($t(1.31) = -0.11$, n.s.) and “Sony vs. Apple” ($t(1.31) = 0.11$, n.s.).

Consequently, H4 is not supported by the data. Meaning that in a closed category, a direct comparative ad will not inhibit recall more than the ad of a single brand.

6. LIMITATIONS

This paper focuses on the retrieval processes which lead to brands being included in the consideration stage. More specifically we wanted to determine whether comparison advertising could either facilitate or inhibit the recall of other brands in a memory based choice setting. If a brand is not recalled in a memory based choice setting it will not be considered for purchase and ultimately cannot be chosen. However, in our experiment we chose product categories that do not necessarily have to be in a consumer's memory in order to be considered. For instance, a consumer is most likely going to be at an electronics retailer when contemplating which MP3 player to purchase or at a perfume store when deciding on which new fragrance to buy. There are some situations though where memory, or retrieval of the brand, is essential for consideration. An example would be a consumer checking prices of different cars or MP3 players on comparison websites; he/she will have to type in the name of the brand. The choice of which search engines to use though does qualify as memory based. Another category that could be considered ill suited for our study is the one of perfumes. Chanel and Dior are generally considered to be luxury brands that would never engage in any form of comparative advertising.

External validity is an issue that needs to be raised; the effect of recall inhibition is to an extent situation specific or product/service specific. Unfortunately, the design of our study limits our findings to effects on brand recall. We are not able to measure what these effects then have on brand consideration and choice.

Furthermore, it is unlikely that the effect will occur equally strong regardless of the non-comparative ad. In our experiments, the fact that our subjects were exposed to ads that clearly presented the sponsored brand and the conditions that they were "artificially" put-in meant that salience of the brand really was raised to a maximum. Furthermore, using ads or comparative claims with evaluative or affective components would have induced different strengths in recall inhibition (Everelles and Horton 1998). Specifically, it has been shown that the affective component of overall brand attitudes is more potent in inducing recall inhibition than the evaluative component. It is though, an impossible task to locate real ads containing equal strengths in affective and evaluative components. Also, there are no existing comparative ads for Dior versus Chanel, Kvasir versus Google, etc. Therefore, by not using

realistic ads our experimental setup and design were very clear and simple which allowed a high level of control. Unfortunately, this simplicity also makes the ads and experiment less realistic. In essence, the ads we used were too simple and our subjects were instructed to focus on them, these two attributes alone clearly demonstrate that we are somewhat distant from real world settings where ads are “richer” and subjects are more relaxed. In order to continue expanding the knowledge we have on comparative advertising, future research could benefit from the study of more real world audiences; the study of more media types such as internet and television; the use of more exposures to the advertising campaigns through time; and the use of more consumer durables, consumer and business services, as well as more industrial products.

Whilst our experiment is relatively high on internal validity due to the fact that both our sample and the group assignments were chosen/held at random, there are some other issues that require mentioning. The experiment was conducted roughly three weeks after the pretests. The data derived from the pretests also served as data for the control setting. During the time that elapsed between the pre-test and the experimental cells, events such as national advertising campaigns, introductions of new products/services in the market, positive/negative consumer reports all might have affected participants’ attitudes and behaviors. If this were the case, then any change on the number of brands recalled might have more to do with the external event than with the actual priming.

One more factor to mention is that our subjects might have been conditioned to know what it is they are being tested on due to the fact that the experimental cells were repeatedly primed three times and were given the same or very similar instructions each time. As such, there is a learning effect that partly could have installed itself.

Reliability was kept to a maximum by actively correcting and double-checking for participation error as well as observation error. Furthermore, the instructions were kept relatively simple and repeated when necessary.

Whilst the significant differences that emerged with our relatively low sample sizes only go to show that the noticed effects are strong, still, our study could have profited from a larger sample. A larger sample could have probably given us findings with a larger statistical power

and results that more easily capture small effects. This would have gone further in showing whether the apparent relationship in the data reflects a true relationship in the population. The fact that some of our findings were only partially supported may be directly associated to the fact that a not large enough sample size led to inadequate statistical power. Also, our study could have further minimized error variance by conducting our entire data collection one subject at a time.

Future research that uses large samples and procedures designed to maximize effect sizes (example: powerful cues) and minimize error variance (example: one on one data collection, only using one prime per subject, etc) might be necessary to better address the important issue of cuing.

7. DISCUSSION

This research contributes to the existing body of brand recall, and how priming (by either a leading/follower brand) influences their retrieval, both through non-comparative and comparative advertising, in open and closed product/service categories. Based on the results of the experiments hypothesis 1 was supported to some extent. Hypothesis 3 was only partly supported and both hypotheses 2 and 4 were rejected. The reasons and theoretical implications are discussed in this part.

7.1 Open Categories

In the car category inducing a large increment of salience in a single brand fully caused the anticipated effects of H1. Priming with either BMW or Mercedes led to significant recall inhibition. The fact that significant differences emerged with such a low sample size, even on a gender basis, shows that the effects are strong. As Hastak and Mitra (1996) noted, a consistent finding in the research of brand cuing has been that *“when the study is homogeneous, external cues have an inhibitory effect on recall of non-cued items. At the same time, other studies have shown that external cues may actually facilitate recall when the list is heterogeneous. Moreover, this facilitation seems to occur primarily because subjects recall items from a larger number of categories in the list. Thus, cuing increases the likelihood that otherwise inaccessible categories will be accessed and items from this category retrieved”*. Our study is no exception to the above mentioned facts. Our subjects clearly perceived subcategories within the large category (Alba and Chattopadhyay, 1985) that they were presented with. In the perfume category, we did not take gender differences into account when hypothesis 1 was developed. Cuing females with either Dior or Chanel decreased the accessibility of other perfume brands and, hence, leading to inhibition. For men, however, these cues increased the accessibility of a previously relatively inaccessible subcategory, namely designer fragrances in the luxury segment. The brand names of Chanel and Dior served as cues to expand the retrieval set and ended up stimulating recall of even more brands. Nedugandi (1990) observed similar results; the probability of other brands being recalled was enhanced in his subjects after they had been primed with a branded cue. For women though,

part-category cuing was evident because they were primed with brands from the sub-category (female designer fragrances) that is already accessible to them.

An analysis on a brand basis revealed that males recalled luxury brands more often (see table 3.1 in the appendix). On the other hand, slight inhibition was found for non-luxury brands which sell fragrances in the premium and lower segment. Brands such as Axe, Adidas, Davidoff and David Beckham were recalled less than by the control group. Yet, the inhibition effects were far weaker resulting in a facilitative net effect. As a result it can be concluded that predisposing a consumer to think in terms of a product class can not only inhibit (as demonstrated by Alba & Chattopadhyay 1985) but also facilitate thinking about its generic competition.

Unintentionally, we discovered an additional insight. In the perfume category subjects were instructed to concentrate on Dior and Chanel. In accordance to Alba and Chattopadhyay (1986) subjects were told that they could repeat the name of the brand to themselves, think of its product(s), or focus on advertisements they may have seen for the brand. Only after subjects were done with concentrating on the brands they were told to list all perfumes. Dior and Chanel, however, do not only market perfumes but are strong players in other product categories. In particular, Chanel is famous for women cosmetics products, or more specifically lipsticks, and both Chanel and Dior are well-known for prêt-a-porter and haute couture fashion. Interestingly, even though female individuals may have thought about other product categories other than perfumes or no specific product category at all, both brands still became salient and led to recall inhibition. Recent research has shown that cuing with a brand from an unrelated category does not result in inhibition effects (Alba & Chattopadhyay 1986). Our results do not challenge that, they do however state an exception: Brands which are credible players in several categories could cause inhibition effects in one of these categories even if subjects are cued with a product from an unrelated category. Further research could clarify this issue.

Taking the existing body of literature into account (e.g. Hastak and Mitra 1996), it is surprising that the comparative ad setting did not induce more recall inhibition than a single brand in an open category, resulting in a rejection of H2. Our data confirms Alba and Chattopadhyay's (1986) demonstrations proving that *"it is not necessary to cue consumers with multiple brands in order to achieve recall inhibition. The effect can be obtained by*

raising salience of a single brand". As a matter of fact, our results indicate that raising salience of a single brand tends to be much more effective at achieving recall inhibition in marketing practice than through the cuing of two brands; it is hard to imagine other relevant cases in which several brands are made salient besides comparison advertising⁹. In order to maximize inhibition we chose both the sponsored and comparison brand from the same mental subcategory. Yet, the inhibition (and facilitation) effect was weaker than in the non-comparative setting. Note, however, that this does not mean that comparison advertising does not lead to recall inhibition (or facilitation) at all. Instead, it seems like that comparison advertisement can both lower or heighten awareness of unmentioned competitors. Significance at a confidence level of under 10% was reached only when females were exposed to the comparison ad in the car category. Nevertheless, both the male ($t(1.31) = -1.15, p = 0.13$) and female ($t(1.31) = 1.00, p = 0.16$) groups in the perfume category could have reached significance with a larger sample. Yet, the effect is undoubtedly weaker than in the non-comparative advertising setting. Therefore, it is safe to conclude that comparative advertisement is not as potent as non-comparative advertising in inducing both recall facilitation and inhibition.

A likely explanation is that the viewer devotes his/her attention to the comparative claim to evaluate the tagline. As a result the brands do not become as salient as if they were mentioned on their own. In our experiment the only manipulation in the comparative setting versus the non-comparative setting was that we added a comparative claim. We presume that mental capacity is used to check whether the claim is believable. The mind is preoccupied with mentally processing the statement and attention is taken away from both the sponsored and comparison brand making them less salient than previously anticipated. Alternatively, it could be that inhibition is exponentially related to cuing time. In other words the marginal inhibition effect grows with every second a subject is exposed to a branded cue of a single brand. As a result two brands with a heightened salience of 20 seconds each do not cause as much inhibition as one brand which is made salient through cuing subjects for 40 seconds. Future research could clarify this issue.

Based on our results we can refute concerns raised by researchers such as Wilkie and Farris (1975) that comparison advertising may actually raise awareness of competitors. Indeed, in

⁹ Brand alliances are another case, which occur though seldom.

our experiment it appears that the comparison advertising of Chanel and Dior can stimulate recall facilitation for males in the perfume category. Nevertheless, our results show that the brands have greater facilitation potential on their own than in the comparative setting. Nevertheless, Wilkie and Farris's (1975) warnings should be kept in mind when choosing a comparison brand. We demonstrated that predisposing a consumer to think in terms of a product class can also facilitate thinking about its generic competition. Additionally, if a comparison is made across subcategories the effects on recall facilitation and inhibition will be complex. Intra-category cuing could activate otherwise non accessible subcategories leading to recall of unmentioned competitors. Even though marketers may create such an ad unintentionally, one needs to keep in mind that subcategories are often mentally formed depending on consumer knowledge (Alba and Chattopadhyay 1985). Providing the same set of recall cues to different consumer segments may result in very different results as their mental structure and knowledge of subcategories vary. Hence, a comparison across subcategories unintentionally could happen when a target group with heterogeneous category knowledge is exposed to comparison advertising, resulting in unwanted recall facilitation of competitors.

7.2 Closed Categories

Alba and Chattopadhyay (1986) hypothesized that “*salience also may be raised over the long term through continuous advertising*”, so obviously, repeated and regular usage of a particular service or product (illustrations in our study are: Google and Apple iPod) would only further enhance their salience in the consumer's mind. Coca-Cola's salience for instance was argued to be at “ceiling level” due to its very high levels of advertising and usage which is why when used as cue in the category of soft drinks it did not produce any inhibition effect (Alba and Chattopadhyay, 1986). Our tests have come to show the same results when male subjects were cued with Google and Apple iPod, thus cementing Alba and Chattopadhyay's suggestion that the salience of certain brands in a particular category can reach a ceiling point. When this ceiling point is reached, no further recall inhibition takes place. As a result, H3 which predicted that in a closed category, priming of the dominating brand will cause no detectable recall inhibition towards other brands was supported for males.

Moreover, our study demonstrates that when a dominating brand has reached maximum salience, a subject can be cued with another following brand in the category (illustrations in our study are: Kvasir and Sony) and still no significant recall inhibition occurs. Meaning, that if a category possesses a brand that has reached maximum salience, regardless of which brand a subject is cued with, no significant recall inhibition will take place. Alba and Chattopadhyay (1986) find two possible explanations for the failure to find an effect on recall inhibition. First, product classes such as the soft drink, mp3 player or search engine category may be differentially sensitive to manipulations of salience because only a few well-known brands are found these categories. Second, it may be that most brands in the category are highly salient. Taking the small size of the categories as well as the weak recall rates of the follower brands in the control groups into account our results support the former argument.

The differences in results of the primed groups in the closed categories further indicate that the effects of part-category cuing seem to vary as a function of consumer knowledge. We believe that men have a greater expertise about search engines and MP3 players explaining why males and females are affected differently by cuing. The superior recall by men in the control groups relative to women was a primary indicator of that (see table 1.2.1 in the appendix). In the same vein we conclude that women are not as interested in the categories and their respective brands. As a result we conclude that the pre-experimental salience of Google and iPod (Apple) was for men at ceiling whereas the pre-experimental salience for women was lower. Therefore, an additional effect on recall inhibition was found when women were cued with the leading brand. Likewise, the effects on recall inhibition were significant when females were cued with Sony Walkman, the follower in the mp3 player category. On the other hand, priming women with Kvasir did not result in significant effects. In fact, it appears that an inhibition effect was offset by facilitation when females were primed with Kvasir. Specifically, sol.no¹⁰ was recalled in the prime condition by 69% of the women, whereas in the control setting sol.no was only mentioned by 38% (see appendix 3.2) . Sol.no is similarly to kvasir.no a Norwegian search website. Priming female subjects with Kvasir

¹⁰ Sol.no is not a 'pure' search engine such as kvasir.no or google.com but is a Norwegian news website similar to yahoo.com. Sol.no uses a kvasir endorsed search bar to provide search results. Therefore sol.no is actually not a search *engine* per se but a general search *website*. In our experiment we gave credit to sol.no and similar websites if they could provide search results in a similar way as pure search engines. When asking test subjects we found that users are actually not aware that these search websites make use of search engines to provide search results.

most likely made the 'Norwegian search engine' subcategory accessible reminding them of sol.no. Moreover, sol.no is not a pure search engine but also a news-website, which actually uses a Kvasir endorsed search bar to provide search results. By seeing the logo subjects might have been reminded of this.

Finally, considering that H2 is not supported it is obvious that H4 is not supported either. H4 predicted that a direct comparative ad will inhibit recall more than a single brand. The reasons are the same as discussed before. In comparison, however, it appears that in the closed categories cuing did not produce any effects on recall at all (the p values stemming from the t-tests were between 0.30 and 0.48). Effects might be hard to detect though due to small category size. Nevertheless, also in closed categories, comparative advertising results in weaker effects on recall than non-comparative advertising.

8. MANAGERIAL IMPLICATIONS

In this paper we artificially heightened salience to an extremely high level, which in reality might be unrealistic and purposely hard to achieve by practitioners. Nevertheless, we believe, contrary to Hastra and Mitra (1996) that cuing effects on memory are not only valuable to academic researchers but also very relevant for practitioners.

Still, Hastra and Mitra's (1996) concerns are legitimate: In addition to studying the effects of cuing on recall they also included consideration and choice stages in their research. In a more realistic setting, than used by us and other previous researchers, they found that cuing did not produce parallel effects on consideration and choice. Moreover, taking into account that salience is heightened by advertising and usage over long term could lead us to question whether marketers can harness recall inhibition intentionally by crafting for instance a marketing campaign specifically designed to achieve recall inhibition of competing brands. Coca-Cola, Google and Apple (iPod) have been very successful in the market place for a long time and are amongst the most valuable brands in the world (Interbrand 2009). Potential sustainable effects on recall inhibition may therefore just be a result of strong market success and superior brand building over long term by a few players.

Yet, we believe that marketers should be very careful regarding recall facilitation as a result of cuing. In our research it took us by surprise that male subjects recalled more competitors when cued with Chanel or Dior. Even though the effects were unanticipated they were not unpredictable. If we would have studied the available data more carefully on a gender basis the effects would have been foreseeable. The dangers come apparent if this case is taken into reality. Specifically in the female perfume product category, the end-consumer is not necessarily the purchase decision maker. At Valentine's Day, Christmas and Mother's day, men buy perfume as presents for their beloved ones. An advertising campaign during that time of the year could drive business to the competitors as a result of recall facilitation, producing counterproductive results for the advertised brand.

On the other hand, as demonstrated in our research, if the ad is able to reach targeted females, beneficial recall inhibition could be achieved. Providing the same set of recall cues to different consumer segments may lead to very different results as their mental structure and

knowledge of subcategories vary. It is dangerous for a brand manager to assume that consumers hold the same mental categorization as him/her-self. This is yet another reason brand managers are urged to spend resources on market research in order to see through the eyes of consumers and understand their consumers' mental categorization.

Also, as reasoned in the discussion part, practitioners need to carefully select the comparison brand(s) for a comparative advertising. We demonstrated that predisposing a consumer to think in terms of a product class can also facilitate thinking about its generic competition. Furthermore, a comparison across subcategories could produce recall facilitation due to intra-category cuing. In order to prevent unwanted recall facilitation of competitors, the comparison brand must stem from the same mental subcategory as the sponsored brand.

When deciding on how to expand into new product categories marketers face the decision whether to create a new individual brand or launch a brand-extension under an established umbrella brand. Our results seem to indicate that a primed brand still produces inhibition effects when consumers are exposed to the brands' products in another category. Thus, a strong brand could carry over its salience and potential inhibition effects on competitors into new categories, supporting the argument to choose umbrella brands or brand endorsers over new individual product brands.

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APPENDIX

1. Pretest Results

1.1 Open Categories

1.1.1 Category Overview

Category	Beer	Cars	Airlines	Perfume
Sample Size	41	41	42	39
Average	11,7	20,6	12,9	10,7
Standard Deviation	4,9	5,7	5,2	6,1
Median	11	20	12	9
Min	3	9	6	2
Max	23	32	32	27
Total No of Brands	95	73	82	86
Males	Beer	Cars	Airlines	Perfume
Sample Size	20	21	21	19
Average	13,3	23,4	14,2	7,4
Standard Deviation	5,0	4,8	6,3	4,2
Median	13	24	13	6
Min	5	15	6	2
Max	23	32	32	15
Females	Beer	Cars	Airlines	Perfume
Sample Size	21	20	21	20
Average	10,1	17,6	11,7	14,0
Standard Deviation	4,3	5,1	3,6	5,9
Median	9	17,5	11	15
Min	3	9	7	5
Max	20	27	20	27

1.1.2 Top 10 Brands Car Category

Brand	Mercedes	Toyota	Volvo	BMW	VW	Ford	Audi	Peugeot	Opel	Fiat
Recall	93%	93%	93%	88%	83%	78%	71%	63%	63%	61%
Top of mind	12%	17%	12%	32%	0%	12%	7%	0%	2%	0%
+2	27%	24%	22%	54%	15%	17%	12%	0%	7%	0%
+3	39%	29%	34%	56%	32%	27%	15%	5%	12%	5%
+4	46%	41%	49%	61%	37%	34%	20%	10%	15%	10%
+5	54%	46%	51%	63%	41%	41%	22%	17%	22%	17%

+2 indicates how often the brand was mentioned first and second, +3 first, second and third, etc.

1.1.3 Top 10 Brands Beer Category

Brand	Hansa	Ringnes	Heineken	Tuborg	Carlsberg	Corona	Budw.	Guinness	Grans	Aas
Recall	98%	95%	85%	83%	76%	71%	49%	44%	39%	39%
Top of mind	51%	15%	0%	10%	2%	0%	0%	0%	2%	7%
+2	61%	41%	2%	41%	12%	0%	0%	0%	2%	10%
+3	78%	54%	15%	51%	17%	5%	2%	5%	7%	12%
+4	83%	61%	37%	59%	29%	10%	5%	5%	12%	20%
+5	90%	76%	56%	59%	37%	15%	10%	10%	15%	22%

1.1.4 Top 10 Brands Airline Category

Brandname	SAS	Norwegian	Wideroe	BA	KLM	Ryanair	Lufthansa	A.France	Finn Air	Sing. A.
Recall	100%	100%	83%	79%	76%	67%	60%	50%	45%	36%
Top of mind	38%	38%	0%	0%	7%	2%	2%	2%	0%	0%
+2	79%	62%	5%	2%	10%	5%	14%	2%	0%	5%
+3	86%	83%	24%	12%	17%	17%	26%	7%	0%	5%
+4	93%	93%	38%	31%	26%	21%	29%	14%	0%	5%
+5	98%	98%	40%	33%	38%	31%	31%	19%	5%	5%

1.1.5 Top 10 Brands Perfume Category

Brandname	Hugo Boss	Chanel	Armani	Dior	CK	Lacoste	Ralph L.	Gucci	Davidoff	Britney S.
Recall	62%	62%	56%	44%	44%	38%	41%	36%	36%	28%
Top of mind	8%	15%	8%	5%	5%	3%	3%	10%	0%	0%
+2	18%	21%	18%	13%	13%	5%	10%	18%	3%	0%
+3	31%	23%	26%	21%	15%	10%	13%	18%	10%	5%
+4	36%	28%	38%	21%	18%	15%	18%	21%	18%	5%
+5	38%	36%	44%	21%	21%	15%	21%	21%	21%	10%

1.2 Closed Categories

1.2.1 Category Overview

Category	Cameras	Search Engines	MP3 Players
Sample Size	43	42	43
Average	4,5	4,2	3,4
Standart Deviation	1,8	1,5	1,4
Median	5	4	3
Min	2	1	1
Max	11	10	9
Total No of Brands	20	17	23
Male	Cameras	Search Engines	MP3 Players
Sample Size	21	21	21
Average	4,6	4,5	3,5
Standart Deviation	2,0	1,7	1,7
Median	4	4	3
Min	2	2	1
Max	11	10	9
Female	Cameras	Search Engines	MP3 Players
Sample Size	22	21	22
Average	4,5	3,8	3,2
Standart Deviation	1,6	1,0	1,2
Median	5	4	3
Min	2	1	2
Max	7	5	6

1.2.2 Top 5 Brands Mp3 Player Category

Brand	Apple (iPod)	Sony (Walkman)	Creative (Zen)	Samsung (YP)	Phillips (Active)
Recall	98%	81%	40%	26%	23%
Top of mind	79%	16%	0%	2%	2%
+2	88%	53%	26%	9%	7%
+3	95%	74%	37%	16%	16%
+4	98%	81%	40%	19%	21%
+5	98%	81%	40%	23%	23%

1.2.3 Top 5 Brands Search Engine Category

Bran	Google	Kvasir	Yahoo	Bing	Altavista
Recall	100%	74%	71%	48%	33%
Top of mind	93%	2%	2%	0%	0%
+2	98%	36%	33%	12%	5%
+3	100%	60%	50%	21%	14%
+4	100%	69%	67%	31%	26%
+5	100%	74%	71%	45%	29%

1.2.4 Top 5 Brands Camera Category

Brand	Canon	Sony	Nikon	Olympus	Samsung
Recall	88%	77%	65%	30%	28%
Top of mind	47%	9%	33%	2%	0%
+2	70%	30%	49%	12%	0%
+3	74%	44%	53%	23%	7%
+4	81%	51%	63%	30%	19%
+5	86%	67%	65%	30%	23%

2. Statistical testing for significance of experiment results

2.1 Open categories

2.1.1 BMW

BMW, Male & Female,

t-Test: To utvalg med antatt like varianser 5% Significant

	<i>Control Group (-BMW)</i>	<i>BMW Ad</i>
Gjennomsnitt	19.7804878	17.03846154
Varians	32.32560976	35.23846154
Observasjoner	41	26
Gruppevarians	33.44593736	
Antatt avvik mellom gjennomsnittene	0	
Fg	65	
t-Stat	1.891215966	
P(T<=t) ensidig	0.031526555	
T-kritisk, ensidig	1.668635976	
P(T<=t) tosidig	0.06305311	
T-kritisk, tosidig	1.997137887	

t-Test: To utvalg med antatt like varianser BMW, Male, 10% Significant

	<i>Control Group (-BMW)</i>	<i>BMW Ad</i>
Gjennomsnitt	22.66666667	19.53846154
Varians	23.33333333	47.93589744
Observasjoner	21	13
Gruppevarians	32.55929487	
Antatt avvik mellom gjennomsnittene	0	
Fg	32	
t-Stat	1.553458276	
P(T<=t) ensidig	0.065074598	
T-kritisk, ensidig	1.308572793	
P(T<=t) tosidig	0.130149196	
T-kritisk, tosidig	1.693888703	

t-Test: To utvalg med antatt like varianser BMW, Female, 10% Significant

	<i>Control Group (-BMW)</i>	<i>BMW Ad</i>
Gjennomsnitt	16.75	14.53846154
Varians	24.61842105	11.93589744
Observasjoner	20	13
Gruppevarians	19.70905707	
Antatt avvik mellom gjennomsnittene	0	
Fg	31	
t-Stat	1.398270764	
P(T<=t) ensidig	0.085978042	
T-kritisk, ensidig	1.309463549	
P(T<=t) tosidig	0.171956083	
T-kritisk, tosidig	1.695518742	

2.1.2 Mercedes

t-Test: To utvalg med antatt like varianser Mercedes, Male & Female, 5% Significant

	<i>Control Group (-Mercedes)</i>	<i>Mercedes Ad</i>
Gjennomsnitt	19.73170732	15.33333333
Varians	31.85121951	30.57971014
Observasjoner	41	24
Gruppevarians	31.38701768	
Antatt avvik mellom gjennomsnittene	0	
Fg	63	
t-Stat	3.05462568	
P(T<=t) ensidig	0.001650434	
T-kritisk, ensidig	1.669402222	
P(T<=t) tosidig	0.003300868	
T-kritisk, tosidig	1.998340522	

t-Test: To utvalg med antatt like varianser Mercedes, Male, 5% Significant

	<i>Control Group (-Mercedes)</i>	<i>Mercedes Ad</i>
Gjennomsnitt	22.57142857	17.92307692
Varians	23.35714286	27.74358974
Observasjoner	21	13
Gruppevarians	25.00206044	
Antatt avvik mellom gjennomsnittene	0	
Fg	32	
t-Stat	2.63422544	
P(T<=t) ensidig	0.006442974	
T-kritisk, ensidig	1.693888703	
P(T<=t) tosidig	0.012885948	
T-kritisk, tosidig	2.036933334	

t-Test: To utvalg med antatt like varianser Mercedes, Female, 5% Significant

	<i>Control Group (-Mercedes)</i>	<i>Mercedes Ad</i>
Gjennomsnitt	16.75	12.27272727
Varians	24.19736842	18.01818182
Observasjoner	20	11
Gruppevarians	22.06661442	
Antatt avvik mellom gjennomsnittene	0	
Fg	29	
t-Stat	2.539078862	
P(T<=t) ensidig	0.008368887	
T-kritisk, ensidig	1.699126996	
P(T<=t) tosidig	0.016737774	
T-kritisk, tosidig	2.045229611	

2.1.3 Mercedes vs. BMW

t-Test: To utvalg med antatt like varianser Mercedes vs. BMW, Male & Female Not significant

	<i>Control Group (-Merc&BMW)</i>	<i>Mercedes vs. BMW ad</i>
Gjennomsnitt	18.85365854	18
Varians	31.82804878	48.92307692
Observasjoner	41	27
Gruppevarians	38.56245381	
Antatt avvik mellom gjennomsnittene	0	
fg	66	
t-Stat	0.554652802	
P(T<=t) ensidig	0.290503487	
T-kritisk, ensidig	1.294510568	
P(T<=t) tosidig	0.581006974	
T-kritisk, tosidig	1.668270515	

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t-Test: To utvalg med antatt like varianser Mercedes vs. BMW, Male, 10% Significant

	<i>Control Group (-Merc&BMW)</i>	<i>Mercedes vs. BMW</i>
Gjennomsnitt	21.66666667	22.57142857
Varians	23.33333333	24.10989011
Observasjoner	21	14
Gruppevarians	23.63924964	
Antatt avvik mellom gjennomsnittene	0	
fg	33	
t-Stat	-0.539333139	
P(T<=t) ensidig	0.296638799	
T-kritisk, ensidig	1.307737124	
P(T<=t) tosidig	0.593277598	
T-kritisk, tosidig	1.692360258	

t-Test: To utvalg med antatt like varianser Mercedes vs. BMW, Female, 10% Significant

	<i>Control Group (-Merc&BMW)</i>	<i>Mercedes vs. BMW</i>
Gjennomsnitt	15.9	13.07692308
Varians	24.51578947	29.24358974
Observasjoner	20	13
Gruppevarians	26.34590571	
Antatt avvik mellom gjennomsnittene	0	
fg	31	
t-Stat	1.543817108	
P(T<=t) ensidig	0.06639039	
T-kritisk, ensidig	1.309463549	
P(T<=t) tosidig	0.13278078	
T-kritisk, tosidig	1.695518742	

2.1.4 Chanel

t-Test: To utvalg med antatt like varianser Chanel, Male & Female, 10% Not Significant

	<i>Control Group (-Chanel)</i>	<i>Chanel Ad</i>
Gjennomsnitt	10.12820513	9.793103448
Varians	34.43049933	13.66995074
Observasjoner	39	29
Gruppevarians	25.62299386	
Antatt avvik mellom gjennomsnittene	0	
Fg	66	
t-Stat	0.269984303	
P(T<=t) ensidig	0.394007364	
T-kritisk, ensidig	1.294510568	
P(T<=t) tosidig	0.788014729	
T-kritisk, tosidig	1.668270515	

t-Test: To utvalg med antatt like varianser Chanel, Male, 10% Significant

	<i>Control Group (-Chanel)</i>	<i>Chanel Ad</i>
Gjennomsnitt	6.842105263	9
Varians	16.80701754	19
Observasjoner	19	13
Gruppevarians	17.68421053	
Antatt avvik mellom gjennomsnittene	0	
fg	30	
t-Stat	-1.425643391	
P(T<=t) ensidig	0.08214706	
T-kritisk, ensidig	1.310415025	
P(T<=t) tosidig	0.164294121	
T-kritisk, tosidig	1.697260851	

t-Test: To utvalg med antatt like varianser Chanel, Female, 5% Significant

	<i>Control Group (-Chanel)</i>	<i>Chanel Ad</i>
Gjennomsnitt	13.25	10.4375
Varians	31.88157895	9.329166667
Observasjoner	20	16
Gruppevarians	21.93198529	
Antatt avvik mellom gjennomsnittene	0	
fg	34	
t-Stat	1.790512251	
P(T<=t) ensidig	0.041139902	
T-kritisk, ensidig	1.690924198	
P(T<=t) tosidig	0.082279804	
T-kritisk, tosidig	2.032244498	

2.1.5 Dior

t-Test: To utvalg med antatt like varianser Dior, Male & Female, 10% Not Significant

	<i>Control Group (-Dior)</i>	<i>Dior Ad</i>
Gjennomsnitt	10.30769231	10.37037037
Varians	34.4291498	12.62678063
Observasjoner	39	27
Gruppevarians	25.57193732	
Antatt avvik mellom gjennomsnittene	0	
fg	64	
t-Stat	-0.049508067	
P(T<=t) ensidig	0.480334297	
T-kritisk, ensidig	1.29491982	
P(T<=t) tosidig	0.960668593	
T-kritisk, tosidig	1.669013026	

t-Test: To utvalg med antatt like varianser Dior, Male, 5% Significant

	<i>Control Group (-Dior)</i>	<i>Dior Ad</i>
Gjennomsnitt	7.157894737	9.857142857
Varians	17.91812865	14.43956044
Observasjoner	19	14
Gruppevarians	16.45937424	
Antatt avvik mellom gjennomsnittene	0	
fg	31	
t-Stat	-1.888947971	
P(T<=t) ensidig	0.034142813	
T-kritisk, ensidig	1.695518742	
P(T<=t) tosidig	0.068285627	
T-kritisk, tosidig	2.039513438	

t-Test: To utvalg med antatt like varianser Dior, Female, 10% Significant

	<i>Control Group (-Dior)</i>	<i>Dior Ad</i>
Gjennomsnitt	13.3	10.92307692
Varians	32.53684211	11.07692308
Observasjoner	20	13
Gruppevarians	24.22977667	
Antatt avvik mellom gjennomsnittene	0	
fg	31	
t-Stat	1.355408252	
P(T<=t) ensidig	0.092540713	
T-kritisk, ensidig	1.309463549	
P(T<=t) tosidig	0.185081426	
T-kritisk, tosidig	1.695518742	

2.1.6 Dior vs. Chanel

t-Test: To utvalg med antatt like varianser Dior vs. Chanel, Male & Female, 10% Not Significant

	<i>Control Group (-Dior vs Chanel)</i>	<i>Dior vs Chanel Ad</i>
Gjennomsnitt	9.692307692	9.555555556
Varians	32.11336032	14.94871795
Observasjoner	39	27
Gruppevarians	25.14022436	
Antatt avvik mellom gjennomsnittene	0	
Fg	64	
t-Stat	0.108941102	
P(T<=t) ensidig	0.456795029	
T-kritisk, ensidig	1.29491982	
P(T<=t) tosidig	0.913590058	
T-kritisk, tosidig	1.669013026	

t-Test: To utvalg med antatt like varianser Dior vs. Chanel, Male, 10% Not Significant

	<i>Control Group (-Dior vs Chanel)</i>	<i>Dior vs Chanel Ad</i>
Gjennomsnitt	6.631578947	8.153846154
Varians	16.9122807	8.474358974
Observasjoner	19	13
Gruppevarians	13.53711201	
Antatt avvik mellom gjennomsnittene	0	
Fg	30	
t-Stat	-1.149479864	
P(T<=t) ensidig	0.129719977	
T-kritisk, ensidig	1.310415025	
P(T<=t) tosidig	0.259439954	
T-kritisk, tosidig	1.697260851	

t-Test: To utvalg med antatt like varianser Dior vs. Chanel, Female, 10% Not Significant

	<i>Control Group (-Dior vs Chanel)</i>	<i>Dior vs Chanel Ad</i>
Gjennomsnitt	12.6	10.85714286
Varians	29.93684211	18.28571429
Observasjoner	20	14
Gruppevarians	25.20357143	
Antatt avvik mellom gjennomsnittene	0	
Fg	32	
t-Stat	0.99625452	
P(T<=t) ensidig	0.163300346	
T-kritisk, ensidig	1.308572793	
P(T<=t) tosidig	0.326600693	
T-kritisk, tosidig	1.693888703	

2.2 Closed Categories

2.2.1 Google

t-Test: To utvalg med antatt like varianser Google, Male & Female, 10% Not Significant

	<i>Control Group (-Google)</i>	<i>Google Ad</i>
Gjennomsnitt	3.166666667	3.071428571
Varians	2.142276423	2.439153439
Observasjoner	42	28
Gruppevarians	2.260154062	
Antatt avvik mellom gjennomsnittene	0	
Fg	68	
t-Stat	0.259654779	
P(T<=t) ensidig	0.397957303	
T-kritisk, ensidig	1.294125629	
P(T<=t) tosidig	0.795914606	
T-kritisk, tosidig	1.667572281	

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t-Test: To utvalg med antatt like varianser Google, Male, 10% Not Significant

	<i>Control Group (-Google)</i>	<i>Google Ad</i>
Gjennomsnitt	3.523809524	3.6875
Varians	2.961904762	2.895833333
Observasjoner	21	16
Gruppevarians	2.933588435	
Antatt avvik mellom gjennomsnittene	0	
Fg	35	
t-Stat	-0.288000072	
P(T<=t) ensidig	0.387522644	
T-kritisk, ensidig	1.306211802	
P(T<=t) tosidig	0.775045289	
T-kritisk, tosidig	1.68957244	

t-Test: To utvalg med antatt like varianser Google, Female, 10% Significant

	<i>Control Group (-Google)</i>	<i>Google Ad</i>
Gjennomsnitt	2.80952381	2.25
Varians	1.161904762	0.75
Observasjoner	21	12
Gruppevarians	1.015745008	
Antatt avvik mellom gjennomsnittene	0	
Fg	31	
t-Stat	1.534156004	
P(T<=t) ensidig	0.067567567	
T-kritisk, ensidig	1.309463549	
P(T<=t) tosidig	0.135135134	
T-kritisk, tosidig	1.695518742	

2.2.2 Kvasir

t-Test: To utvalg med antatt like varianser Kvasir, Male & Female, 10% Not Significant

	<i>Control Group (-Kvasir)</i>	<i>Kvasir Ad</i>
Gjennomsnitt	3.428571429	3.379310345
Varians	1.958188153	1.02955665
Observasjoner	42	29
Gruppevarians	1.581352181	
Antatt avvik mellom gjennomsnittene	0	
Fg	69	
t-Stat	0.162249785	
P(T<=t) ensidig	0.435791681	
T-kritisk, ensidig	1.293941609	
P(T<=t) tosidig	0.871583363	
T-kritisk, tosidig	1.667238549	

t-Test: To utvalg med antatt like varianser Kvasir, Male, 10% Not Significant

	<i>Control Group (-Kvasir)</i>	<i>Kvasir Ad</i>
Gjennomsnitt	3.761904762	3.384615385
Varians	2.49047619	1.756410256
Observasjoner	21	13
Gruppevarians	2.215201465	
Antatt avvik mellom gjennomsnittene	0	
Fg	32	
t-Stat	0.718306552	
P(T<=t) ensidig	0.238890227	
T-kritisk, ensidig	1.308572793	
P(T<=t) tosidig	0.477780455	
T-kritisk, tosidig	1.693888703	

t-Test: To utvalg med antatt like varianser Kvasir, Female, 10% Not Significant

	<i>Control Group (-Kvasir)</i>	<i>Kvasir Ad</i>
Gjennomsnitt	3.095238095	3.375
Varians	1.29047619	0.516666667
Observasjoner	21	16
Gruppevarians	0.958843537	
Antatt avvik mellom gjennomsnittene	0	
Fg	35	
t-Stat	-0.860961002	
P(T<=t) ensidig	0.197559731	
T-kritisk, ensidig	1.306211802	
P(T<=t) tosidig	0.395119462	
T-kritisk, tosidig	1.68957244	

2.2.3 Kvasir vs. Google

Kvasir vs. Google, Male & Female,
t-Test: To utvalg med antatt like varianser 10% Not Significant

	<i>Control Group (-Kvasir & Google)</i>	<i>Kvasir vs Google Ad</i>
Gjennomsnitt	2.428571429	2.307692308
Varians	1.958188153	1.981538462
Observasjoner	42	26
Gruppevarians	1.967032967	
Antatt avvik mellom gjennomsnittene	0	
fg	66	
t-Stat	0.345384097	
P(T<=t) ensidig	0.365452013	
T-kritisk, ensidig	1.294510568	
P(T<=t) tosidig	0.730904026	
T-kritisk, tosidig	1.668270515	

Facilitating and Inhibiting Effects of Comparative and Non-comparative Advertising on Recall of Competing Brands

t-Test: To utvalg med antatt like varianser Kvasir vs. Google, Male, 10% Not Significant

	<i>Control Group (-Kvasir & Google)</i>	<i>Kvasir vs Google Ad</i>
Gjennomsnitt	2.761904762	2.5
Varians	2.49047619	1.909090909
Observasjoner	21	12
Gruppevarians	2.284178187	
Antatt avvik mellom gjennomsnittene	0	
fg	31	
t-Stat	0.478874493	
P(T<=t) ensidig	0.317694268	
T-kritisk, ensidig	1.309463549	
P(T<=t) tosidig	0.635388536	
T-kritisk, tosidig	1.695518742	

t-Test: To utvalg med antatt like varianser Kvasir vs. Google, Female, 10% Not Significant

	<i>Control Group (-Kvasir & Google)</i>	<i>Kvasir vs Google Ad</i>
Gjennomsnitt	2.095238095	2.142857143
Varians	1.29047619	2.131868132
Observasjoner	21	14
Gruppevarians	1.621933622	
Antatt avvik mellom gjennomsnittene	0	
fg	33	
t-Stat	-0.108368687	
P(T<=t) ensidig	0.457179743	
T-kritisk, ensidig	1.307737124	
P(T<=t) tosidig	0.914359486	
T-kritisk, tosidig	1.692360258	

2.2.4 Apple

t-Test: To utvalg med antatt like varianser Apple, Male & Female, 10% Not Significant

	<i>Control Group (-Apple ad)</i>	<i>Apple Ad</i>
Gjennomsnitt	2.395348837	2.083333333
Varians	1.959025471	0.949275362
Observasjoner	43	24
Gruppevarians	1.601729278	
Antatt avvik mellom gjennomsnittene	0	
Fg	65	
t-Stat	0.967573721	
P(T<=t) ensidig	0.168421888	
T-kritisk, ensidig	1.294712013	
P(T<=t) tosidig	0.336843777	
T-kritisk, tosidig	1.668635976	

t-Test: To utvalg med antatt like varianser Apple, Male, 10% Not Significant

	<i>Control Group (-Apple ad)</i>	<i>Apple Ad</i>
Gjennomsnitt	2.523809524	2.5
Varians	2.761904762	0.818181818
Observasjoner	21	12
Gruppevarians	2.072196621	
Antatt avvik mellom gjennomsnittene	0	
Fg	31	
t-Stat	0.045706559	
P(T<=t) ensidig	0.481918654	
T-kritisk, ensidig	1.309463549	
P(T<=t) tosidig	0.963837308	
T-kritisk, tosidig	1.695518742	

t-Test: To utvalg med antatt like varianser Apple, Female, 10% Significant

	<i>Control Group (-Apple ad)</i>	<i>Apple Ad</i>
Gjennomsnitt	2.272727273	1.666666667
Varians	1.255411255	0.787878788
Observasjoner	22	12
Gruppevarians	1.09469697	
Antatt avvik mellom gjennomsnittene	0	
Fg	32	
t-Stat	1.614104331	
P(T<=t) ensidig	0.058162002	
T-kritisk, ensidig	1.308572793	
P(T<=t) tosidig	0.116324004	
T-kritisk, tosidig	1.693888703	

2.2.5 Sony

t-Test: To utvalg med antatt like varianser Sony, Male & Female, Not
10% Significant

	<i>Control Group (-Sony)</i>	<i>Sony Ad</i>
Gjennomsnitt	2.558139535	2.458333333
Varians	1.966777409	1.302536232
Observasjoner	43	24
Gruppevarians	1.731738223	
Antatt avvik mellom gjennomsnittene	0	
Fg	65	
t-Stat	0.297658887	
P(T<=t) ensidig	0.383456414	
T-kritisk, ensidig	1.294712013	
P(T<=t) tosidig	0.766912828	
T-kritisk, tosidig	1.668635976	

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t-Test: To utvalg med antatt like varianser Sony, Male, 10% Not Significant

	<i>Control Group (-Sony ad)</i>	<i>Sony Ad</i>
Gjennomsnitt	2.714285714	3.090909091
Varians	2.914285714	1.290909091
Observasjoner	21	11
Gruppevarians	2.373160173	
Antatt avvik mellom gjennomsnittene	0	
Fg	30	
t-Stat	-0.656862922	
P(T<=t) ensidig	0.258138415	
T-kritisk, ensidig	1.310415025	
P(T<=t) tosidig	0.516276829	
T-kritisk, tosidig	1.697260851	

t-Test: To utvalg med antatt like varianser Sony, Female, 10 % Significant

	<i>Control Group (-Sony ad)</i>	<i>Sony Ad</i>
Gjennomsnitt	2.409090909	1.923076923
Varians	1.11038961	0.743589744
Observasjoner	22	13
Gruppevarians	0.977007841	
Antatt avvik mellom gjennomsnittene	0	
fg	33	
t-Stat	1.405557889	
P(T<=t) ensidig	0.084600455	
T-kritisk, ensidig	1.307737124	
P(T<=t) tosidig	0.16920091	
T-kritisk, tosidig	1.692360258	

2.2.6 Sony vs. Apple

t-Test: To utvalg med antatt like varianser Sony vs. Apple, Male & Female, 10% Not Significant

	<i>Control Group (-Sony & Apple)</i>	<i>Sony vs Apple Ad</i>
Gjennomsnitt	1.581395349	1.416666667
Varians	1.915836102	1.123188406
Observasjoner	43	24
Gruppevarians	1.635360763	
Antatt avvik mellom gjennomsnittene	0	
fg	65	
t-Stat	0.505550896	
P(T<=t) ensidig	0.307441037	
T-kritisk, ensidig	1.294712013	
P(T<=t) tosidig	0.614882073	
T-kritisk, tosidig	1.668635976	

t-Test: To utvalg med antatt like varianser Sony vs. Apple, Male, 10% Not Significant

	<i>Control Group (-Sony & Apple)</i>	<i>Sony vs Apple Ad</i>
Gjennomsnitt	1.714285714	1.416666667
Varians	2.914285714	1.71969697
Observasjoner	21	12
Gruppevarians	2.490399386	
Antatt avvik mellom gjennomsnittene	0	
fg	31	
t-Stat	0.521158137	
P(T<=t) ensidig	0.302979964	
T-kritisk, ensidig	1.309463549	
P(T<=t) tosidig	0.605959929	
T-kritisk, tosidig	1.695518742	

Facilitating and Inhibiting Effects of Comparative and Non-comparative Advertising on Recall of Competing Brands

t-Test: To utvalg med antatt like varianser Sony vs. Apple, Female, 10% Not Significant

	<i>Control Group (-Sony & Apple)</i>	<i>Sony vs Apple Ad</i>
Gjennomsnitt	1.454545455	1.416666667
Varians	1.021645022	0.628787879
Observasjoner	22	12
Gruppevarians	0.886600379	
Antatt avvik mellom gjennomsnittene	0	
fg	32	
t-Stat	0.112097163	
P(T<=t) ensidig	0.455723297	
T-kritisk, ensidig	1.308572793	
P(T<=t) tosidig	0.911446595	
T-kritisk, tosidig	1.693888703	

3. Experiment Results Split Up on Brand Basis

3.1 Perfume Category, Males

Brand	H. Boss	Armani	Chanel	CK	Axe	T. Hilfiger	Davidoff	R. L	D. Beckh.	Lacoste	Adidas	Dior	D&G	J.P. Gault.	Gucci	Versace
Control Group	63%	63%	53%	53%	47%	42%	42%	37%	32%	32%	32%	21%	21%	21%	16%	16%
Prime: Chanel	77%	69%	./.	38%	31%	46%	31%	54%	8%	62%	23%	46%	38%	31%	23%	23%
Prime: Dior	100%	71%	71%	43%	36%	21%	29%	71%	21%	57%	7%	./.	21%	50%	21%	29%
Comparative Ad	77%	54%	./.	54%	31%	38%	23%	62%	38%	69%	23%	./.	54%	46%	8%	15%

Brand	B. Spears	J. Lopez	YSL	Prada	Diesel	D. Karen	Burberry	Lancome	Escada	B. Banani	I. Miyake	E. Arden	Bulgari	...
Control Group	11%	11%	11%	11%	11%	5%	5%	5%	5%	5%	5%	0%	0%	
Prime: Chanel	15%	8%	8%	23%	8%	15%	23%	0%	8%	8%	15%	8%	8%	
Prime: Dior	7%	7%	36%	7%	29%	21%	14%	14%	0%	29%	7%	7%	14%	
Comparative Ad	8%	0%	31%	8%	38%	8%	23%	0%	0%	8%	0%	8%	0%	

3.2 Search Engine Category, Females

Brand	Google	Kvasir	Yahoo	Bing	Altavista	Sol (uses kvasir)	startsiden.no (multi)	MSN (uses bing)	ask.com	ABC.net
Control Group	100%	71%	67%	33%	19%	38%	29%	14%	5%	5%
Prime: Kvasir	100%	./.	50%	44%	31%	69%	25%	13%	0%	6%