An Associative Structure of Memory Distortions: Effects of Brand Familiarity and Positive Versus Negative Information

Alicja Grochowska, Warsaw School of Social Sciences and Humanities, Poland
Andrzej Falkowski, Warsaw School of Social Sciences and Humanities, Poland

The research shows the internal mechanisms of creating false memory of the brand, on the basis of associations which are activated by information coming from other sources than the consumers’ previous experience with the brand. Effects of brand familiarity and effects of positive versus negative information are considered.

[to cite]:

[url]:
http://www.acrwebsite.org/volumes/1011183/volumes/ap11/AP-10

[copyright notice]:
This work is copyrighted by The Association for Consumer Research. For permission to copy or use this work in whole or in part, please contact the Copyright Clearance Center at http://www.copyright.com/.
An Associative Structure of Memory Distortions: Effects of Brand Familiarity and Positive versus Negative Information

Alicja Grochowska, Warsaw School of Social Sciences and Humanities, Poland
Andrzej Falkowski, Warsaw School of Social Sciences and Humanities, Poland

ABSTRACT
The research shows the internal mechanisms of creating false memory of the brand, on the basis of associations which are activated by information coming from other sources than the consumers’ previous experience with the brand. Effects of brand familiarity and effects of positive versus negative information are considered.

The aim of the paper is to show the internal mechanisms of creating a false memory of the brand on the basis of associations which are activated by information coming from other sources than consumers’ previous experience with the brand. In the research on the advertisement the memory distortions have been investigated in several studies and refer to creating false memory of evaluations of marketing stimuli (Braun-LaTour and LaTour 2005) and to behavioral effects of memory distortions – consumers’ choices (Braun and Loftus 1998; Braun 1999). Mechanisms of memory distortions have not been investigated in the context of internal, associative structure of the brand so far. The behavioral effects – consumers’ choices – are determined just by these internal mechanisms.

The theoretical basis for our studies are network models of the mind in which encoded information is stored in memory as a network structure, consisting of nodes representing concepts and links representing associations among concepts (Anderson 1983; McClelland 1995). It is assumed that the brand has an associative structure and pieces of information about the brand, coming from different sources, are joined to this structure (Keller 1993; 2008). An associative structure of the brand results from an associative structure of the memory and mind. Therefore, our research on an associative structure of memory distortions of the brand as well is situated in a classical approach to the brand (Keller 1993; 2008) as it broadens former studies on the mechanisms of creating a false memory in the consumers’ mind.

Our research has been conducted in the backward framing paradigm showing that information acquired after an experience can transform the memory of that experience (Braun and Zaltman 1997; Braun-LaTour and LaTour 2005). Effects of brand familiarity and effects of positive versus negative information are considered. An associative network for a familiar brand is better developed and consolidated in the memory than for an unfamiliar brand (Campbell and Keller 2003; Dahlén and Lange 2005). Thus, knowledge about familiar and unfamiliar brands can differ in the susceptibility to memory distortions. On the other hand, positive versus negative information is processed differently in an associative network and this results in their different effects on the strength of memory distortions (Porter et al. 2010; Brainerd et al. 2008). We show in which conditions, negative or positive, information leads to stronger memory distortions.

A 2 (brand familiarity: familiar vs. unfamiliar) x 2 (valence of after-the fact information: positive vs. negative) experimental design was used. Research was designed in the backward framing paradigm. After viewing an advertisement for a familiar versus unfamiliar brand, participants (N=60) generated associations to the brand and evaluated the brand on the scales. Then they were presented with an opinion about the brand (positive versus negative). Further, they recalled their previous associations and evaluations. The opinion acted as a ‘backward frame’, altering how consumers remembered their previous associations and evaluations of the brand. According to the backward framing paradigm, advertisements acted as ‘previous quasi-experience’ with the brand. The Brand Evaluation Scale and a continued associations task were used to establish the strength of memory distortions. All measures were implemented twice: 1) after viewing an advertisement and then 2) after reading an opinion. The second time participants were asked to recall their previous evaluations and associations.

To verify hypotheses, a repeated measures ANOVA was used. Measures of the Brand Evaluation Scale and a ‘valence of associations’ measurement were used as dependent variables (DV1- measurement before the presentation of the opinion, DV2 – measurement after the presentation of the opinion). Brand familiarity and positive/negative information were independent variables.

Hypothesis 1 stated that knowledge acquired from advertisements for familiar brands is more
resistant to memory distortions than knowledge acquired from ads for unfamiliar brands. It was expected that associations for familiar brands would be less affected by after-the-fact information as compared to unfamiliar brands. As predicted, in the case of an unfamiliar brand the memory of brand evaluation and of associations was distorted by after-the-fact information. These effects did not occur for a familiar brand. Familiar brands have a well developed associative network, well consolidated in memory (Campbell and Keller 2003; Dahlén and Lange 2004). Thus, familiar brands are less affected by competing claims from other brands (Pechmann and Stewart 1990) and more resistant to memory distortions. However, an associative structure of an unfamiliar brand is not well consolidated in memory and is more susceptible to memory distortions. The essential practical implication in regard to the creation of ads, particularly for unfamiliar and new brands, is to strengthen their resistance to memory distortions, for example by creating coherent advertisements. If particular elements of an advertisement provide similar associations, an ad is coherent and resistant to distortions (Grochowska and Falkowski 2010).

According to hypothesis 2, negative after-the-fact information causes stronger memory distortions of an advertisement in an associative network than positive information. ANOVA for repeated measures revealed that it is easier to distort memory with the use of negative rather than positive information. Effects occurred for the unfamiliar but not for the familiar brand. More importantly, the effects of positive information on memory distortions were not significant. This means that (in the case of an unfamiliar brand) negative after-the-fact information facilitates joining new (negative) associations to the memory network. Whereas the memory network is more resistant to positive after-the-fact information. According to the Affect Infusion Model (Forgas 1995) and the Paradoxic Negative Emotion hypothesis (Porter et al. 2008), a negative affect facilitates joining new associations to the memory network, and create a false memory. These effects are particularly dangerous when competitors use negative comparative advertising. Pieces of negative information, as compared to positive, are more easily joined to the memory network and they can depreciate the brand by creating its negative image.

AN ASSOCIATIVE STRUCTURE OF MEMORY DISTORTIONS: EFFECTS OF BRAND FAMILIARITY AND POSITIVE VERSUS NEGATIVE INFORMATION

Consumers receive information about different brands and products from different sources, for example from the internet, the press, other consumers (word-of-mouth), or advertisements. It is important for marketers that their advertisements be well remembered and resistant to memory distortions. In the research on the advertisement the issue of memory distortions has been investigated in several studies and refers to creating false memory of evaluations of marketing stimuli (Braun-LaTour and LaTour 2005) and to behavioral effects of memory distortions – consumers’ choices (Braun and Loftus 1998; Braun 1999).

The aim of this paper is to show the internal mechanisms of creating a false memory of the brand on the basis of associations which are activated by information coming from other sources than consumers’ previous experience with the brand. Mechanisms of memory distortions have not been investigated in the context of internal, associative structure of the brand and the memory so far. Behavioral effects – consumers’ choices – are determined just by these internal mechanisms.

It is assumed that the brand has an associative structure and pieces of information about the brand, coming from different sources, are joined to this structure (Keller 1993; 2008). An associative structure of the brand results from an associative structure of the memory and mind. Therefore, our research on an associative structure of memory distortions of the brand as well is situated in a classical approach to the brand (Keller 1993; 2008) as it broadens former studies on the mechanisms of creating a false memory in the consumers’ mind.

Our research has been conducted in the backward framing paradigm showing that information acquired after an experience can transform the memory of that experience (Braun and Zaltman 1997; Braun-LaTour and LaTour 2005).

Effects of brand familiarity and effects of positive versus negative information are considered. An associative network for a familiar brand is better developed and consolidated in the memory than for an unfamiliar brand (Campbell and Keller 2003; Dahlén and Lange 2005). Thus, knowledge about familiar and unfamiliar brands can differ in the susceptibility to memory distortions. On the other hand, positive
versus negative information is processed differently in an associative network and this results in their different effects on the strength of memory distortions (Porter et al. 2010; Brainer et al. 2008). We show in which conditions negative as compared to positive information leads to stronger memory distortions.

In the perspective of practical applications the obtained results can provide advertisers with information on which strategy should be adopted for well known brands, and which one for new brands – to minimize distortions of the brand in the consumers’ memory, against positive or negative information coming form different sources. Furthermore, the obtained results show how to effectively cope with the competitors’ comparative ads, and sources of false or negative information about the brand. Such protection is particularly important for unfamiliar or less known brands.

BACKWARD FRAMING IN CONSUMER RESEARCH

One of the most intriguing forms of memory distortion: when the memory of a previous experience with a product is altered by the actual information about the product, has been investigated in the field of consumer research in the backward framing paradigm (e.g. Braun and Zaltman 1997; Braun-LaTour and LaTour 2005). Past studies showed that the advertising following a direct product experience (tasting a bad mixture of orange juice) transformed consumers’ memory of the original experience and resulted in more favorable product evaluation and choices of a better taste (Braun 1999; Braun-LaTour and LaTour 2005). In Braun and Loftus (1998) experiment an advertising misinformation effect was obtained for color memory of a previously seen candy bar wrapper. A choice (hence, a behavioral aspect) of the color of the wrapper was a measure of a memory distortion here. Thus, behavioral (consumers’ choices) and evaluative effects of memory distortions have been examined. However, the internal mechanisms of these distortions, resulting from an associative structure of the memory, have not been analyzed.

Furthermore, research on the memory processes and studies in the backward framing paradigm prove that the better an experience is consolidated in the memory, the less it is distorted by post-experience information (Braun and Loftus 1998; Braun-LaTour et al. 2004; Loftus 2005; Schacter 2001). Advertisements for familiar brands are better elaborated than ads for unfamiliar brands. Thus, after-the-fact information can stronger distort the memory of the ad for an unfamiliar than familiar brand. Gunasti, Baumgartner and Ding (2008) note that consumers’ knowledge (of the brand) is one of the determinants of memory distortions caused by marketing communications.

Moreover, the strength of memory distortions is also influenced by a sort of after-the-fact information. Braun and Zaltman (1997) demonstrated that a positive (negative) critic review affected consumers’ evaluation of a product (trailer of a movie) and a previous evaluation was recalled as more (less) favorable. In addition, effects were not symmetrical: stronger memory distortions were observed when after-the-fact information was rather negative than positive. Thus, in our research we investigate how positive versus negative information can distort the memory of the previous experience, considering brand familiarity.

THEORETICAL BACKGROUND

An Associative Structure of Memory Distortions

The theoretical basis for our studies are network models of the mind in which encoded information is stored in memory as a network structure, consisting of nodes representing concepts and links representing associations among concepts. When new information is acquired or when internal information is retrieved from memory, a node containing this information can be a source of activation for other nodes. Activation can spread from this node to other linked nodes in memory. The stronger associations among nodes, the easier connected pieces of information are retrieved from memory (Anderson 1983; Keller 1993; McClelland 1995; McClelland and Rogers 2003). Processes of acquiring new information of the brand from different sources and mechanisms of memory distortions can be explained in this approach. Consistent with an associative network memory model, brand knowledge is conceptualized as consisting of a brand node in memory to which a variety of associations are linked (Keller 1993).

On the other hand, memory is an active constructive process. The brain’s structure is plastic and dynamic, and can be changed by new experiences, and mental representations of those experiences are also plastic and changing (Braun and Zaltman 1997; LeDoux 1996). According to Edelman (1992), the brain is an active system where shifting is constant, and encoded material is reprocessed and updated continually (see: Braun and Zaltman 1997). Memories
are constructed from fragments of information that are distributed across different brain regions, and depend on influences operating in the present as well as the past. The areas involved in associative learning and memory consolidation are highly dependent on the hippocampal system where associations become ‘glued’ together (Braun and Zaltman 1997; Schacter 1996). This means that pieces of information coming from different sources are joined in the memory and form an associative structure of a given object. It is easier to join newly learned information when the knowledge about the given object is not well consolidated in memory (Schacter 2001). Thus, mental representations of unfamiliar brands (as compared to familiar which are better consolidated in memory) can be more susceptible to memory distortions.

AN ASSOCIATIVE STRUCTURE OF THE BRAND

An associative structure of the brand, proposed by Keller (1993) is a part of an associative structure of memory. Consistent with an associative network memory model, brand knowledge is conceptualized as consisting of a brand node in memory to which a variety of associations are linked. A process of building brand image in consumers’ minds is based on forming the knowledge of the brand. This knowledge comes from different media and from consumers’ own experiences with the product or brand. This knowledge, stored in the memory, consists of a set of nodes and links. Nodes are stored information connected by links that vary in strength. Thus, a structure of this knowledge is associative.

However, a crucial property of brand associations is their emotional valence. Not only brand equity is determined by a structure of positive, negative or emotionally neutral associations in a consumer’s mind (Keller, 1993; 2008) – but also the nature of positively versus negatively valenced associations influences how well a brand image is consolidated in memory and is resistant to memory distortions. This results from functions of positive versus negative affect, which are described in the following paragraphs.

Since an associative structure of the brand is formed from consumer’s experiences with the brand and information from different sources, it becomes obvious that through appropriately designed marketing communication marketers can elicit, weaken or strengthen, or even change a previous consumer’s experience with the brand.

BRAND FAMILIARITY AND RESISTANCE TO MEMORY DISTORTIONS

Familiar and unfamiliar brands differ in terms of the knowledge regarding the brand that a consumer has stored in memory. Familiar brands elicit more associations and more personal associations (Dahlén and Lange 2005; Low and Lamb 2000). Consumers tend to have a variety of different types of associations for familiar brands - but not for unfamiliar brands because they have not had any experiences with them. Consumers have well-established brand schemas for familiar brands, which lead them to expect a certain kind of communication from the brand. Familiar brands have a well developed brand schema, are cognitively available and activate a wide area of an associative network, in contrast to unfamiliar brands (Campbell and Keller 2003; Dahlén and Lange 2004). Moreover, familiar brands are less affected by competing claims from other brands (Kent and Allen 1994; Pechmann and Stewart 1990) and have a more persuasive power of sources of claims (Snyder 1989). Thus, the strength of memory distortion can be determined by brand familiarity. An associative structure of an unfamiliar brand is not well consolidated in memory and more susceptible to memory distortions than an associative structure for a familiar brand.

In our research previous knowledge about the brand acquired from an advertisement is distorted by after-the-fact information coming from a newspaper article. On the basis of theories of an associative structure of memory and brand, as well as research on brand familiarity, we can put forward hypothesis 1.

H1: Knowledge acquired from advertisements for familiar brands is more resistant to memory distortions than knowledge acquired from ads for unfamiliar brands: Associations for familiar brands are less affected by after-the-fact information as compared to unfamiliar brands.

POSITIVE VERSUS NEGATIVE INFORMATION IN MEMORY DISTORTIONS

Effects of positive versus negative information on memory distortions have been examined in several empirical studies. Porter and colleagues (2010) found that relative to positive pictorial information, negative information was associated with a greater susceptibility to false memories. In another experiment,
false memory was higher for negative materials (remembering negative events) and lower for positive materials (Brainerd et al. 2008). Porter, Taylor and Ten Brinke (2008) showed that participants recalled a greater number of false negative as compared to false positive events. Negative events, in general, were associated with more detailed memories and false negative event memories were more detailed than false positive event memories. Porter and coworkers (2008) explain these effects with the Paradoxical Negative Emotion (PNE) hypothesis according to which negative emotion generally facilitates memory but also heightens susceptibility to false memories.

According to Clark and Isen (1982), a positive affect reduces and negative affect increases the processes of intellectual effort. Similarly, Bless and Fiedler (2006) claim that positive affect supports schematic processes of thinking (assimilation), whereas negative affect facilitates attentional strategies (accommodation). One can also refer here to the Affect Infusion Model by Forgas (1995, 2010): The analytical information processing is more likely to be ‘infused’ by the affect. Negative information is processed more thoroughly, analytically, thus it is more susceptible to infusion.

In the consumer research area Braun and Zaltman (1997) demonstrated that a negative critic review affected consumers’ memory of the evaluation of a product (trailer of a movie) and a previous evaluation was recalled as less favorable. Moreover, there were stronger memory distortions after negative than positive information. Similarly, LaTour and LaTour (2009) found that consumers in a negative (as compared to positive) mood are less likely to notice the false information in the advertising.

Thus, negative associations, as compared to positive, are more sensitive and it is easier not only to activate them in an associative network but also they can bring on stronger memory distortions. On the basis of the assumptions presented above and according to the backward framing schema used in our research, we can hypothesize that:

**H2:** Negative after-the-fact information causes stronger memory distortions of the knowledge required from the advertisement than positive information.

**METHOD**

**Design of the Experiment**

A 2 (brand familiarity: familiar vs. unfamiliar) x 2 (valence of after-the-fact information: positive vs. negative) experimental design was used. Research was designed in the backward framing paradigm (Braun et al. 1997, 2005). After viewing an advertisement for a familiar versus an unfamiliar brand, participants generated associations to the brand and evaluated the brand on the scales. Then they were presented with an opinion about the brand (positive versus negative). Further, they recalled their previous associations and evaluations. The opinion acted as a ‘backward frame’, altering how consumers remembered their previous associations and evaluations of the brand.

**Participants**

Sixty undergraduates, aged 21-27, participated in the experiment.

**Stimuli**

**Print advertisements.** According to the backward framing paradigm, advertisements acted as ‘previous quasi-experience’ with the brand. Advertisements for travel agency Orbis (familiar brand) and El Paradiso (unfamiliar brand) were prepared for the purpose of the experiment. Brand names have been selected in a pilot study. Ads included a photograph (a young woman and man at the sea shore), brand name (Orbis or El Paradiso), and a headline ‘Orbis/El Paradiso… and nothing to worry about’.

**Information about the brand.** A newspaper article about the brand Orbis or El Pardiso acted as after-the-fact information. Each text consisted of about 260 words. A positive version of the article included such statements as: ‘Exclusively for our readers, we have prepared a ranking of the best of travel agencies (…). Orbis/El Paradiso gained the most positive opinions. (…) Clients especially value its reliability, a wide range of offered trips, and a high quality of hotels (…). Here is an opinion of one of our clients: ‘I have been traveling with Orbis/El Paradiso several times and I much appreciate their reliability. Every time they provided good care for me. They always offer very attractive trips and comfortable hotels. With Orbis/El Paradiso I could enjoy the calmness in my holidays’. In a negative version the article stated that: ‘Orbis/El Paradiso (…) has disappointed their clients. (…) Catalogs included information contrary to real conditions prevailing at hotels and resorts. (…) Room standards were far worse than presented in brochures. (…) Clients were exposed to many unpleasant situations and disappointments. (…) A client says: ‘I have traveled with many travel
agencies but this time I was outraged and disgusted after seeing the conditions in the hotel. In addition, I have not been informed about extra payments before (...)’.

Measurement of Dependent Variables

The Brand Evaluation Scale and a continued associations task were used to establish the strength of memory distortions. All measures were implemented twice: 1) after viewing an advertisement and then 2) after reading an article which acted as a backward frame. The second time participants were asked to recall their previous evaluations and associations.

Associations to the brand. Participants were asked to generate associations, in order that first came to their mind. Five independent judges coded associations to evaluate their emotional valence on the 3-point scale (-1 negative, 0 neutral, +1 positive). Judges’ evaluations (positive, negative or neutral) were established for each association.

These associations which first come to mind are the most readily available in memory and the most important for a subject. Since participants’ first responses are assumed to be more dominant (i.e. salient), each response was assigned a dominance score that was a measure of its relative salience. These scores were assigned according to Szalay and Deese’s (1978) procedure which allowed to establish the strength of the associations. Therefore, 6 was assigned to the first response produced by a participant, 5 to the second response, 4 to the third response, 3 to the fourth through seventh responses, 2 to the eighth and ninth responses, and 1 to each subsequent response. Then, values of positive, negative and neutral associations were calculated for each participant. An example of calculated scores is presented in table 1.

Then, a variable ‘valence of associations’ was calculated: a sum of dominance scores for positive associations minus a sum of dominance scores for negative associations, for example, for participant 1 it was: 18-0=18 and 9-12=-3 (see table 1). This variable was used in statistical analyses. Neutral associations have not been considered in analyses because they occurred only in a few cases.

Furthermore, a qualitative analysis of associations was carried out. For each participant all new associations, which occurred after after-the-fact information (a newspaper article), were counted up. Then, for each participant, dominance scores for these new associations were summed up, independently on their valence. A variable ‘new associations’ was used in analyses.

The Brand Evaluation Scale. Brand evaluation was assessed on four seven-point semantic differential scales (e.g. favorable-unfavorable, good quality–bad quality). The four measures were summed up to form overall measures of brand, Cronbach-alpha was .88 (first measurement) and .92 (second measurement).

Distraction tasks. In order to eliminate the short-term memory effect, after the presentation of an advertisement, participants completed a distraction task. They were asked to solve a labyrinth-type puzzle. The average time for solving the task was 2-3 minutes. The second distraction task was applied after reading an article (backward frame). It was a Sudoku Puzzle. The average time of solving the task was about 3-5 minutes.

Procedure

<table>
<thead>
<tr>
<th>Participant</th>
<th>Associations 1</th>
<th>Valence</th>
<th>Dominance score</th>
<th>Associations 2</th>
<th>Valence</th>
<th>Dominance score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>A rest</td>
<td>+</td>
<td>6</td>
<td>A rest</td>
<td>+</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Quietness</td>
<td>+</td>
<td>5</td>
<td>Low quality</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>The sun</td>
<td>+</td>
<td>4</td>
<td>A lie</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Holidays</td>
<td>+</td>
<td>3</td>
<td>The sun</td>
<td>+</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Uninteresting</td>
<td>-</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A sum of dominance scores: positive 18</td>
<td>A sum of dominance scores: positive 9 neutral 12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Holidays</td>
<td>+</td>
<td>6</td>
<td>Holidays</td>
<td>+</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>The sun</td>
<td>+</td>
<td>5</td>
<td>A bakery</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>A bakery</td>
<td>0</td>
<td>4</td>
<td>A pack of lies</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>A seashore</td>
<td>+</td>
<td>3</td>
<td>A seashore</td>
<td>+</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Egypt</td>
<td>+</td>
<td>3</td>
<td>Fraudsiers</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Stress</td>
<td>-</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A sum of dominance scores: positive 17 neutral 4</td>
<td>A sum of dominance scores: positive 9 neutral 5 negative 10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Participants were randomly assigned to one of the four experimental groups (Orbis/positive article, Orbis/negative article, El Paradiso/positive article, El Paradiso/negative article). After viewing an advertisement (for 40 seconds), they generated associations to the brand and evaluated the brand on the Brand Evaluation Scale. Then the distraction task ‘labyrinth’ was implemented. Next, they were presented with a newspaper article. They had one minute for reading the article. The article acted as a backward frame, altering how they remembered their own associations and evaluations. To eliminate short-term memory effects, the distraction task ‘Sudoku’ was used. After that, they were asked to recall their previous associations and evaluations on scales. At the end of the experiment participants were debriefed and informed about the aim of the research.

RESULTS

The memory distortion effects can be modified through different types of measurement. Manning and colleagues (2001) note that regarding the advertising associative effect, using unstructured, open-ended measures of memory is reasonable. Furthermore, these measures possess greater correspondence to the representations residing in long-term memory. On the other hand, using structured measures (anchored scales) for assessing memory distortion effects explore a more superficial nonsemantic level. Thus, one can expect that the effects of memory distortions will be more visible at an associative level than measured with anchored scales. In our analyses two kinds of measures were used: ‘valence of associations’ and ‘new associations’ as associative measures (obtained from continued associations) and the Brand Evaluation Scale as an anchored scale.

To verify hypotheses, a repeated measures ANOVA was used. Measures of the Brand Evaluation Scale and a ‘valence of associations’ measurement were used as dependent variables (DV1 - evaluation and valence of associations before the presentation of the newspaper article, DV2 – memory of evaluation and associations, after the presentation of the newspaper article). Brand familiarity and positive/negative information were independent variables. Additionally, a two-way ANOVA was carried out for independent variables: brand (familiar vs. unfamiliar) and information (positive vs. negative), and a dependent variable ‘new associations’ (i.e. associations which occurred after after-the-fact information).

Brand Familiarity and Memory Distortions

Hypothesis 1 stated that knowledge acquired from advertisements for familiar brands is more resistant to memory distortions than knowledge acquired from ads for unfamiliar brands. It was expected that associations for familiar brands would be less affected by after-the fact information as compared to unfamiliar brands. Effects of brand familiarity and memory distortions, for associative and non-associative measures, are presented in figure 1.

FIGURE 1. BRAND FAMILIARITY AND MEMORY DISTORTIONS

ANOVA for repeated measures has shown the effects of after-the-fact information (newspaper article) on the memory distortion of brand evaluation (figure 1 A) and the ‘valence of associations’ measurement (figure 1 B). As predicted, in the case of an unfamiliar brand the memory of brand evaluation and of associations was distorted by after-the fact information; effects did not occur for a familiar brand. So, the main effect for the Brand Evaluation Scale $[F(1, 58) = 1.988; p = .164]$, and for ‘valence of associations’ $[F(1, 58) = 3.166; p = .080]$ were not significant. But, as predicted, effects were statistically significant for an unfamiliar brand: $F(1, 58) = 4.951, p = .030$ for the Brand Evaluation Scale; and, more importantly, effects were stronger for the ‘valence of associations’ measurement $[F(1, 58) = 12.195, p = .0009]$. Thus, effects of memory distortions were more visible in the case of associative measures than anchored measures. In further analyses positive versus negative after-the-fact information has been taken into consideration. A repeated measures ANOVA has been carried out to establish effects of brand familiarity on memory distortions, separately under conditions of negative or positive information. It has been found that in the conditions of negative information there are stronger memory distortions for an unfamiliar brand $[F(1, 56) = 15.631; p = .0002]$ as compared to familiar brand $[F(1, 56) = 1.660; p = .203]$ for the Brand Evaluation Scale and, respectively, $F(1, 56) = 51.861; p <$
.0000001 and $F(1, 56) = 3.214; p = .078$, for the ‘valence of associations’ measurement. Evaluations as well as associations were recalled to be more negative. Hence, negative associations were joined to the memory and determined (distorted) a recall of previous evaluations. However, effects for positive after-the-fact information were not significant, both for the Brand Evaluation Scale and for the ‘valence of associations’ measurement. Moreover, it can be observed that the effects of memory distortions were stronger in the case of associative measures than anchored scales.

Familiar brands have a well developed associative network, well consolidated in memory (Campbell and Keller 2003; Dahlen and Lange 2004). Thus, familiar brands are less affected by competing claims from other brands (Pechmann and Stewart 1990) and more resistant to memory distortions. However, an associative structure of an unfamiliar brand is not well consolidated in memory and more susceptible to memory distortions. Schacter (1996; 2001) found that a process of consolidation of new information in memory can take days or even weeks. And until new information is not well consolidated in an associative network in memory, it is easy to create a false memory. Therefore, an associative network for a familiar brand is particularly susceptible to false information coming from different sources.

Positive versus Negative Information and Memory

**DISTORTIONS**

According to hypothesis 2, negative after-the-fact information causes stronger memory distortions of an advertisement in an associative network than positive information. ANOVA for repeated measures revealed that it is easier to distort memory with the use of negative rather than positive information. Results are shown in figure 2. The main effect for positive versus negative information and the Brand Evaluation Scale (DV1 before and DV2 after after-the-fact information) was $F(1, 58) = 10.941; p = .002$ (figure 2A). The effect of information on the ‘valence of associations’ measurement was much stronger: $F(1, 58) = 20.638; p = .00003$ (figure 2B). More importantly, the effects of positive information on memory distortions were not significant. However, they were statistically significant in negative information conditions: in the case of the Brand Evaluation Scale, brand evaluation was distorted to be more negative after after-the-fact information than before: $F(1, 58) = 13.363; p = .0006$. The effect was much stronger for the ‘valence of associations’ measurement: $F(1, 58) = 33.009; p < .0000001$.

**FIGURE 2. POSITIVE VERSUS NEGATIVE INFORMATION AND MEMORY DISTORTIONS**

In further analyses a familiar versus an unfamiliar brand has been taken into consideration. A repeated measures ANOVA has been carried out to establish effects of positive versus negative information on memory distortions, separately under conditions of familiar or unfamiliar brands. Results were not significant for the familiar brand. However, in the case of the unfamiliar brand the main effect of positive versus negative information on memory distortions for the Brand Evaluation Scale was: $F(1, 56) = 5.850; p = .019$. Moreover, in the case of the unfamiliar brand, negative information distorted memory of evaluation [$F(1, 56) = 15.631; p = .0002$] more strongly than positive information (n.s.). The evaluation was recalled to be more negative than before reading negative information (newspaper article). The effects were much stronger for the ‘valence of associations’ measurement. The main effect of information (positive vs. negative) on memory distortion for the unfamiliar brand was: $F(1, 56) = 19.212; p = .00005$. However, the effect of negative information on memory distortion was significant [$F(1, 56) = 51.861; p < .0000001$], whereas the effect of positive information was not significant. This means that (in the case of an unfamiliar brand) negative after-the-fact information facilitates joining new (negative) associations to the memory network. Whereas the memory network is more resistant to positive after-the-fact information. These results can be explained in the light of the Affect Infusion Model (Forgas 1995; 2010). Negative information is processed more analytically, thus it is more susceptible to infusion. One can also refer here to the Paradoxical Negative Emotion (PNE) hypothesis according to which negative emotion generally facilitates memory but also heightens susceptibility to false memories (Porter et al. 2008).
Qualitative Analysis of New Associations

Additionally, a qualitative analysis of associations has been carried out. A dependent variable ‘new associations’ (i.e. associations which occurred after reading a newspaper article - after-the-fact information) and independent variables: brand (familiar vs. unfamiliar) and information (positive vs. negative), were used in a two-way ANOVA (figure 3).

**FIGURE 3. POSITIVE VERSUS NEGATIVE INFORMATION AND MEMORY DISTORTIONS, FOR FAMILIAR AND UNFAMILIAR BRAND**

Results have shown that more new associations were joined to the memory for an unfamiliar than a familiar brand \[F(1, 56) = 4.705; p = .034\], after reading a negative newspaper article. A positive article did not distort the memory of any previous experience (of the advertisement). Analysis of variance has also shown that in the case of the unfamiliar brand, more new associations were joined to the memory after reading the negative than positive newspaper article (after-the-fact information) \[F(1, 56) = 2.905; p = .094\]. This means that it is easier to create false memory using negative as compared to positive information, but only for an unfamiliar brand, which has a weakly consolidated associative network in memory.

**CONCLUSIONS**

The research has shown the internal mechanisms of creating false memory of the brand, on the basis of associations which are activated by information coming from other sources than the consumers’ previous experience with the brand. These mechanisms have not been investigated in previous studies on creating a false memory of marketing stimuli. It has been found that it is easier to implant into memory new associations for an unfamiliar than familiar brand. The ads of familiar brands appeared to be considerably more resistant than those of unfamiliar brands. This is a result of an associative structure of the brand: an associative structure for an unfamiliar brand is not well consolidated in memory (Keller, 2008; Campbell, Keller 2003). Hence, knowledge of new brands can be easily distorted by pieces of information coming from different sources, which are joined to the knowledge of a brand. The essential, practical implication in regard to the creation of ads, particularly for unfamiliar and new brands, is to strengthen their resistance to memory distortions, for example by creating coherent advertisements. If particular elements of an advertisement provide similar associations, an ad is coherent and resistant to distortions. To protect the ad’s coherence is important, initially, to effectively cope with the competitors. Such protection is particularly important for unfamiliar or less known brands (Grochowska and Falkowski 2010).

Our research has also shown that it is easier to distort the memory of an advertisement with negative rather than positive information. According to the Affect Infusion Model (Forgas 1995) and the Paradoxical Negative Emotion hypothesis (Porter et al. 2008), a negative affect facilitates joining new associations to the memory network, and create a false memory. These effects are particularly dangerous when competitors use negative comparative advertising. Pieces of negative information, as compared to positive, are more easily joined to the memory network and they can create a negative brand image.

**REFERENCES**

Journal of Consumer Research, 25 (4), 319-34.
Pechmann, Cornelia and David W. Stewart (1990), “The Effects of Comparative Advertising on Attention, Memory, and Purchase Intentions,” Journal of Consumer Research, 17 (September),