Placebo Effects of Brands
Von Anja Fell and Martin Eisend

A placebo effect is a physiological effect that arises from receiving a substance that actually has no inherent power to produce this effect (Stewart-Williams/Podd 2004). Placebo effects in marketing refer to variations in efficacies of a product that are not due to the product itself (e.g., its ingredients), but due to extrinsic product attributes (e.g., price, brand). The present study provides an extended replication of the seminal study by Shiv/Carmon/Ariely (2005a) on placebo effects of prices and investigates brand-related factors as drivers of placebo effects in two experiments. The results of the first experiment show that brand familiarity leads to placebo effects, such that a familiar brand of an energy drink enhances test results of a performance test. The results of the second experiment show that brand quality signals also lead to placebo effects. The study adds to previous findings on placebo effects of price variations and shows that further marketing-related features can lead to placebo effects.

1. Introduction
In their seminal article on placebo effects of marketing actions Shiv/Carmon/Ariely (2005a) show that marketing actions can cause behavioral (i.e., placebo) effects among consumers that alter the actual efficacy of a product. The authors demonstrate the occurrence of placebo effects by discounting the price for an energy drink that increases mental acuity. They show that consumers who pay the discounted price for the drink derive less actual benefit from consuming the product – they show diminished ability in solving puzzles in comparison to consumers who consume the same product but pay the regular price.

The newness of the findings and the important conclusions and implications that arise from placebo effects of marketing actions brought the editor of the Journal of Marketing Research to place the article by Shiv/Carmon/Ariely (2005a) as a lead article and to invite several knowledgeable researchers from marketing and medical science to comment on the paper. The high number of citations that the paper has received within the following few years underlines the importance of the topic. Still, the study is unique and has just recently been replicated for the first time (Wright et al. 2012). Further replication and extensions of these findings are mandatory to ensure the confidence of the results (Easley/Madden/Dunn 2000; Evanschitzky et al. 2007; Hunter 2001). One of the directions for further research that Shiv/Carmon/Ariely (2005a) suggest is to demonstrate various situations in which marketing actions or marketing-related features could lead to placebo effects. The authors speculate that marketing decisions ranging from product features to advertising or distribution channels can lead to placebo effects, too. The present study responds to the authors’ call and adds to this stream of research by providing an extended replication of the study by Shiv/Carmon/Ariely (2005a). The study tests placebo effects of marketing actions other than price reductions, namely brand-related factors. By this, the study answers the questions of whether or not placebo effects can arise from two brand-related factors: brand familiarity and brand quality signals.

The research on placebo effects is theoretically relevant, because placebo effects show that marketing actions do not only add some benefit to a product’s core benefit – which is the commonly held belief about the beneficial effects of marketing actions -, but can also alter the core benefit of a product. The findings are relevant for practitioners and provide implications for marketers and public policy. For instance, placebo effects of prices imply that cheaper medication or medical procedures can be less effective due to the reduced price. The same effect can transfer to placebo effects of brands: if brand-related factors can cause placebo effects, branding can influence the effectiveness of medication or medical treatments.
2. Conceptual background

Stewart-Williams/Podd define placebo effects as “a genuine psychological or physiological effect, in a human or other animal, which is attributable to receiving a substance or undergoing a procedure, but is not due to the inherent power of that substance or procedure” (Stewart-Williams/Podd 2004, p. 326). Response expectancy is the major mechanism in order to explain placebo effects that has been supported in several research studies in medicine (Kirsch 1985; Stewart-Williams/Podd 2004). According to response expectancy theory, a placebo produces an effect because the recipient expects it to. This effect is automatic and non-controllable.

Figure 1 illustrates the basic idea of placebo effects in the marketing area and distinguishes between “intrinsic” and “extrinsic” properties of a product. Intrinsic properties refer to the technical configuration and the ingredients of a product. These properties have a direct effect on the product’s performance (e.g., the efficacy of a drug). Extrinsic properties of a product (e.g., price, branding) influence the perception of a product. Both performance and perception of the product affect the evaluation of a product. These effects are well-known. Placebo effects refer to the impact of a product’s extrinsic properties on a product’s performance.

Product-related placebo-effects are well-known in the medical domain where product-related features such as the color or the size of pills have already been shown to cause placebo effects (for an overview see De Craen et al. 1996). For instance, Buckalew/Coffield (1982) found that pills are less effective than capsules, although the substance is the same. Furthermore, the effects of pills increase with the size of the pills. Lucchelli/Cattaneo/Zattoni (1978) investigated the effects of the color of sleeping pills on the time needed to fall asleep and on sleeping duration. They found that blue pills have a stronger effect than orange pills. Fries/Horz/Haimerl (2006) provide an example of product-related placebo effects outside of the medical field. They have tested computer-based learning programs with students and told the first group that the program is a test version, while the second group was told that the program is fully developed. After working with the program, the students in the second group achieved better results in a test than the students who were told that the learning program is a test version. A placebo effect of price variations has been shown in the medical area. Waber et al. (2008) were testing pain relievers’ effectiveness by altering the price of the medication. They found that participants who were informed about a discount price of the pain reliever had a lower tolerance for pain (as tested by electro shocks) compared to those who were informed about the regular price of the pain reliever.

Shiv/Carmon/Ariely (2005a; 2005b) have introduced the idea of placebo effects of price variations to the marketing area and applied it to commercial products other than medication. They showed that the price of an energy drink can lead to placebo effects and affect the results of a mental acuity task of participants who have consumed the drink. In line with the expectancy approach in medical research studies, Shiv/Carmon/Ariely (2005a; 2005b) and Irmak/Block/Fitzsimons (2005) have shown that consumers’ beliefs and expectations about a products’ intrinsic properties (e.g., product ingredients) are triggered by extrinsic properties (e.g., product price), leading to placebo effects. For instance, consumers who paid the discounted price for the energy drink in the experiment by Shiv/Carmon/Ariely (2005a) expected a lower product quality and were therefore less successful in solving the puzzle-task than the consumers who paid the regular price. In addition, altering consumers’ expectancies about a product’s intrinsic properties by, for instance, providing strong arguments about the product influenced the size of the placebo effect.

In a recent study, Wright et al. (2012) have provided a first replication of the placebo effect study by Shiv/Carmon/Ariely (2005a), supporting the placebo effect of the price. Furthermore, they tested other non-price related marketing variables that can affect consumers’ expectations about a product and thus lead to placebo effects. They found that set size (i.e., number of ingredients featured in a beverage), product scarcity, unpleasantness of tastes of a memory-enhancing drink as well as package typicality all strengthen the placebo effect of products.

So far, no study has focused on brand-related factors as placebo effect drivers. The current study investigates whether brand-related factors lead to placebo effects. Besides price information, brand-related information is an important cue for consumers’ evaluation of a product (Jacoby/Szybillo/Busato-Schach 1977). Beyond the effect of brands as extrinsic product properties on product evaluation, previous research has already investigated how brands can influence other variables. For instance, brands can restore perceived self-confidence of consumers (Gao/Wheeler/Shiv 2009) or the use of certain brands can result in consumers’ self-perception in line with the brand’s personality (Park/Roedder John 2010). Placebo effects of brands differ from all effects of brands on the evaluation of the product or the self, because placebo effects relate to the influence of brands on the actual performance of the product (see Figure 1).

![Figure 1: Conceptualization of placebo effects in marketing](https://doi.org/10.15358/0344-1369_2013_3_176)
Two important brand-related factors that influence consumer evaluations are brand familiarity and brand quality signals. Brand familiarity is the existence or amount of previous experience with a brand (e.g., Holden/Vanhuele 1999). Consumers are more likely to buy familiar brands rather than non-familiar ones; brand familiarity can even dominate effects of price variations as a determining factor of choice behavior (Monroe 1976). Brand familiarity is an important element of customer based brand equity, that is, “the differential effect of brand knowledge on consumer response to the marketing of the brand. (...) Customer-based brand equity occurs when the consumer is familiar with the brand and holds some favorable, strong, and unique brand associations in memory” (Keller 1993, p. 2). Brand equity may trigger beliefs about the product’s superior quality, thereby leading to placebo effects as described above. Familiarity as measured by prior usage has already been shown to strengthen response expectancies leading to stronger placebo effects in the medical area (Kirsch 1985).

In addition to brand familiarity, the image of a brand is a central element of brand equity. Brand image refers to the “perceptions about a brand, as reflected by the brand associations held in consumer memory” (Keller 1993, p.3). Brand associations are of different types that can vary in terms of favorability, strength, and uniqueness. They can be triggered by external signals about the brand. In this study, we focus on quality signals by a neutral source (a product testing institution). Such signals lead to beliefs and expectations about the product’s superior quality that in turn leads to placebo effects.

The present study provides two experiments. The first experiment manipulates brand familiarity (i.e., whether consumers are familiar with a brand or not) and tests for the behavioral (or placebo) effects. The second experiment manipulates brand quality signals through product ratings as supplied by a product testing institution and tests whether placebo effects can arise from perceived quality differences.

### 3. Experiment 1

#### 3.1. Method

##### 3.1.1. Overview

The purpose of experiment 1 is to document evidence of the placebo effect as caused by brand familiarity. The experiment further explores whether this placebo effect is independent of a placebo effect caused by variations in price assessments, as demonstrated by Shiv/Carmon/Ariely (2005a). Perceived price provides a rival explanation for the brand familiarity effect, because the placebo effect may be due to varying price assessments of the familiar versus unfamiliar brand that was used in this experiment. We refrained from holding the price constant due to the presumed knowledge of the actual retail price of the familiar brand by the participants.

A total of 44 graduate students at a major German university volunteered to participate in the experiment (59 % female, average age 23.1 years). They are randomly assigned to one of three treatments (familiar brand vs. unfamiliar brand vs. no brand name given) of a between-subjects one-factorial experimental design. Participants consume an energy drink and then take a performance test.

#### 3.1.2. Manipulations

At the beginning of the experiment, the instructor informs the participants that the aim of the study is to test the effectiveness of an energy drink. She also informs them about the ingredients of the energy drink. Caffeine and dextrose are the concentration boosting ingredients of the energy drink. In addition, one group of participants receives information about a familiar energy-drink brand name (the market leader and the most established brand for energy drinks in Germany), the second group receives information about a less familiar brand name and the third group does not receive any brand name. Afterwards, all participants consume the same amount of the same energy drink provided in neutral bottles.

To ensure the validity of the manipulation, 41 student participants had to indicate in a pretest whether they are familiar with the brands. All participants (100 %) in the pretest indicated familiarity with the familiar brand, whereas all but three participants (7.5 %) indicated that they were not familiar with the less familiar brand.

#### 3.1.3. Procedure and measures

Following the procedure by Shiv/Carmon/Ariely (2005a), participants consumed the drink and then watched a movie that was not related to the experiment (i.e., a documentary) before taking the performance test. The instructor told the participants that the time needed to watch the movie is necessary for the ingredients to be effective and that they will have to take a performance test afterwards. After having watched the movie, the participants received a booklet with the performance test and several control variables.

Participants had to take the performance test before answering the control variables. The performance test is an established test for students applying for medical schools in Germany. During the test, participants had four minutes time to identify and to mark a particular symbol out of a list of similar symbols. Performance is measured by the difference between the number of symbols that participants marked correctly and the number of symbols that participants marked incorrectly or forgot to mark. The test is designed to measure participants’ ability to concentrate, to focus on a task, and hence, to measure mental acuity.

In order to control for conditions that can confound the results of the performance test, participants further indicated (in the following order):

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what attitude they hold towards the familiar brand, which was asked prior to the manipulation along with attitudes for several other brands, using a single item seven-point scale each, ranging from negative to positive,

- how they evaluate the drink, measured by four items on seven-point scales (bad/good, useless/useful, unpleasant/pleasant, negative/positive; alpha = .95 for the whole sample),

- whether they had consumed a drink of the particular brand before,

- how often they consume energy drinks, measured on a single item seven-point scale, ranging from never to more than once a day,

- whether they know about the performance test,

- how good they think they could concentrate on the day of the experiment, measured by a single item seven-point scale, ranging from very bad to very good,

- how many hours they had slept the night before the experiment, and

- how many glasses of caffeinated drinks they had consumed on the day of the experiment.

Shiv/Carmon/Ariely (2005a) have shown that price differences can lead to placebo effects. Therefore, an explanation for a placebo effect could be the varying price assessments triggered by the manipulation of brand familiarity that is based on brands with slightly different prices. The familiar brand is more expensive than the unfamiliar one and a placebo effect could be due to different price assessments rather than the familiarity of the brand. To test whether a brand familiarity effect can actually be explained by the perception of the price, participants assessed the price of the consumed drink.

As a manipulation check, participants indicated whether or not they are familiar with either brand (yes/no). Finally, they were asked to indicate their gender and age. After the experiment, participants were thoroughly debriefed.

3.2. Results

All participants (100 %) mention that they are familiar with the familiar brand. Ten out of 44 participants (22.7 %) indicate to be familiar with the unfamiliar brand, though. Therefore, we additionally ran our tests after excluding the participants in the unfamiliar brand condition who indicated to be familiar with this brand.

ANOVA results indicate a marginally significant effect of the three treatments on performance scores (F(2,41) = 2.89, p < .07). The average scores of the performance test in the familiar brand treatment are 120.64, in the unfamiliar brand treatment 102.21, and in the no brand name treatment 114.93. Only the results between the familiar brand treatment and the unfamiliar brand treatment differ significantly (t(26) = 2.46, p = .02, two-sided test). Because the sample size is rather small, we calculate the power of the t-test. The power of the test indicates the probability that the test will reject the null hypothesis when the null hypothesis is false, that is, the probability of not committing a type-II error. Most researchers assess the power of their test using \( \pi = .8 \) as a standard for adequacy, which implies a four-to-one trade-off between the probability of a type-II error and the probability of a type-I error (Ellis 2010). The observed power of the t-test is acceptable with \( \pi = .77 \) (for \( p = .05 \)) and \( \pi = .88 \) (for \( p = .10 \)).

Participants in the no brand name group apparently have different assumptions about the brand they were consuming. When they are asked to guess the brand name of the product they were consuming, seven of them mention the familiar brand name while nine indicate to have consumed a less familiar brand (typically me-too products of the familiar brand). Therefore, we performed an additional analysis and distinguish between four experimental groups by splitting the no brand name group in two groups: a group where participants were assuming to consume the familiar brand versus a group of participants who assumed otherwise. ANOVA results indicate a significant effect of the four treatments on performance scores (F(3,40) = 4.89, p < .01). Table 1 shows the group descriptions and results of the experimental groups for the dependent variable and the control variables.

While the performance scores difference between group 1 (familiar brand, brand name not provided) and group 3 (no brand name provided, but participants assume to have consumed the familiar brand) is not significant, the performance scores between group 1 and group 4 (no brand name provided and participants did not assume to have consumed the familiar brand) show a (marginal) significant difference (t(21) = 2.06, p < .06, two-sided test). The results are in line with the idea of response expectancy that underlies the placebo effect: when participants assume that they have consumed the drink of the familiar brand, their performance scores are higher than the scores of the participants who believe that they have consumed a drink of an unfamiliar brand.

As for the control variables, we found a significant age difference between group 1 and group 2. We therefore ran a regression analysis with group membership (group 1 versus group 2) and age as independent variables and performance scores as dependent variables. The results show that after controlling for age, group membership still shows a marginal significant effect on performance scores (b1 = 16.86, se = 8.52, t = 1.98, p < .06). All other control variables do not differ across groups, except for price assessment, which we discuss later.

Most control variables are not related to the dependent variable, either. Prior brand attitudes, the evaluation of the drink, the average consumption of energy drinks, hours of sleep the night before, the consumption of caffeinated drinks on the day of the experiment, self-assess-
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(1) we regress performance scores on brand familiarity; (2) we regress price assessments on brand familiarity; (3) we regress performance scores on price assessments; and (4) we regress performance scores on both brand familiarity and price assessments. The first regression model shows that the direct effect of brand familiarity on performance scores is significant (b₁ = 18.43, se = 7.48, t = 2.46, p = .02). The second regression model reveals that the effect of familiarity on the mediator price assessment is marginally significant (b₁ = .46, se = .23, t = 1.98, p < .06). The third model shows that the effect from the mediator to performance scores is significant (b₁ = 12.48, se = 7.91, t = 1.50, p < .06). The fourth regression model reveal that the direct effect from brand familiarity to performance scores remains marginally significant (b₁ = 14.59, se = 7.91, t = 1.85, p < .08), but price assessments (the mediator variable) has no longer an effect on performance scores (b₁ = 8.33, se = 7.91, t = 1.34, p > .19). These results show that price assessment does not mediate the relationship between brand familiarity and performance scores. Accordingly, the Sobel test indicates a non-significant mediation path (z = 1.02, p = .31) as do the bootstrapping results that reveal a 95 %-confidence interval that includes zero (lower CI = -14.12, upper CI = 1.16).

3.3. Discussion

The results show that brand familiarity can lead to placebo effects, as evidenced by performance scores in a mental acuity test. The results even replicate within the no brand name condition and depend on participants’ assumption of having experience with brands varying in familiarity. The results hold after controlling for possible

<table>
<thead>
<tr>
<th>Group 1: familiar brand, brand name provided (n = 14)</th>
<th>Group 2: unfamiliar brand, brand name provided (n = 14)</th>
<th>Group 3: no brand name provided, but participants did assume to have consumed the familiar brand (n = 7)</th>
<th>Group 4: no brand name provided, participants did not assume to have consumed the familiar brand (n = 9)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance scores</td>
<td>Prior brand attitude</td>
<td>Evaluation of drink</td>
<td>Frequency of consumption of energy drinks</td>
</tr>
<tr>
<td>120.64 (19.33)</td>
<td>4.64 (2.27)</td>
<td>4.50 (1.83)</td>
<td>1.00 (.88)</td>
</tr>
<tr>
<td>102.21 (20.26)</td>
<td>4.14 (2.38)</td>
<td>3.57 (1.79)</td>
<td>.86 (1.10)</td>
</tr>
<tr>
<td>130.29 (13.07)</td>
<td>4.29 (2.29)</td>
<td>3.86 (1.77)</td>
<td>1.14 (1.22)</td>
</tr>
<tr>
<td>103.00 (21.17)</td>
<td>4.89 (1.36)</td>
<td>4.22 (1.09)</td>
<td>1.00 (.87)</td>
</tr>
<tr>
<td>Prior brand attitude</td>
<td>Evaluation of drink</td>
<td>Frequency of consumption of energy drinks</td>
<td>Hours of sleep</td>
</tr>
<tr>
<td>5.93 (.87)</td>
<td>6.64 (1.42)</td>
<td>.71 (.91)</td>
<td>5.93 (.87)</td>
</tr>
<tr>
<td>6.14 (.85)</td>
<td>6.14 (.85)</td>
<td>1.14 (1.46)</td>
<td>6.14 (.85)</td>
</tr>
<tr>
<td>6.06 (.63)</td>
<td>6.06 (.63)</td>
<td>1.00 (1.50)</td>
<td>6.06 (.63)</td>
</tr>
<tr>
<td>Consumption of caffeinated drinks</td>
<td>Self-assessment of concentration ability</td>
<td>Price assessment</td>
<td>Age</td>
</tr>
<tr>
<td>3.93 (1.27)</td>
<td>3.86 (1.41)</td>
<td>1.72 (.62)</td>
<td>24.00 (2.25)</td>
</tr>
<tr>
<td>4.14 (1.21)</td>
<td>4.14 (1.21)</td>
<td>1.26 (.61)</td>
<td>22.29 (1.07)</td>
</tr>
<tr>
<td>4.00 (1.41)</td>
<td>4.00 (1.41)</td>
<td>1.50 (.47)</td>
<td>23.43 (3.26)</td>
</tr>
<tr>
<td>22.89 (2.85)</td>
<td>22.89 (2.85)</td>
<td>1.26 (.44)</td>
<td>23.43 (3.26)</td>
</tr>
<tr>
<td>Prior consumption (% who had experience)</td>
<td>Knowing familiar brand (% who know)</td>
<td>Knowing unfamiliar brand (% who know)</td>
<td>Knowing of performance test (% who know)</td>
</tr>
<tr>
<td>85.7</td>
<td>100</td>
<td>7.1</td>
<td>0</td>
</tr>
<tr>
<td>0</td>
<td>100</td>
<td>28.6</td>
<td>0</td>
</tr>
<tr>
<td>-</td>
<td>100</td>
<td>28.6</td>
<td>0</td>
</tr>
<tr>
<td>-</td>
<td>100</td>
<td>33.3</td>
<td>11.1</td>
</tr>
<tr>
<td>Gender (% women)</td>
<td>Age</td>
<td>Consumption of caffeinated drinks</td>
<td>Performance scores</td>
</tr>
<tr>
<td>71.4</td>
<td>24.00 (2.25)</td>
<td>1.14 (1.22)</td>
<td>120.64 (19.33)</td>
</tr>
<tr>
<td>71.4</td>
<td>22.29 (1.07)</td>
<td>1.00 (1.50)</td>
<td>102.21 (20.26)</td>
</tr>
<tr>
<td>57.1</td>
<td>5.93 (.87)</td>
<td>1.00 (1.50)</td>
<td>130.29 (13.07)</td>
</tr>
<tr>
<td>66.7</td>
<td>6.64 (1.42)</td>
<td>1.00 (1.50)</td>
<td>103.00 (21.17)</td>
</tr>
</tbody>
</table>

Means and standard deviations (in brackets) are given, except for prior consumption, knowing the brand, knowing of performance test and gender where percentages are provided. Prior consumption was not asked in the control group, since participants were not told which brand they were consuming.

Tab. 1: Experiment 1 – Results of dependent variable and control variables by experimental groups

mnt of concentration on the day of the experiment, gender, or age do not correlate with the performance scores. None of the participants indicate to know the performance test. As mentioned above, four participants in the unfamiliar brand treatment indicate to know this brand, although they have never consumed the brand before. These participants do not differ from the rest of the same treatment group in terms of performance scores. Two of the participants in the high familiar brand group indicate that they have not consumed the brand before. They do not differ from the rest of the treatment group in terms of performance scores. After excluding these cases from the analysis, the results of the experiment remain stable.

The assessment of the price, though, shows a marginal significant difference between group 1 and group 2 (t(26) = 1.98, p < .06, two-sided test) and is significantly correlated with performance scores (r = .38, p < .05). The result is not surprising given the findings by Shiv/Carmon/ Ariely (2005a) who have shown that price differences can lead to placebo effects. Therefore, an alternative explanation for the placebo effect in this study could be the varying price assessments triggered by the manipulation of brand familiarity that is based on brands with slightly different prices (the familiar brand is more expensive than the unfamiliar one). To investigate this alternative explanation, we perform a mediation analysis (Preacher/ Hayes 2008; Zhao/Lynch/Chen 2010). We test whether the effect of brand familiarity on performance scores is mediated by price assessments (using only participants in treatments in which brand familiarity is manipulated). For this purpose, we performed four regression models: (1) we regress performance scores on brand familiarity;
confounds. Furthermore, a mediation analysis shows that
the effect of brand familiarity is a direct one and not me-
diated by variations in price assessments of brands with
low versus high familiarity. The results add to the place-
bo effect study by Shiv/Carmon/Ariely (2005a) by dem-
onstrating that apart from price variations, brand-related
factors such as brand familiarity can lead to placebo ef-
effects. The results of the no brand name group in the ex-
periment underline the idea of the placebo effect mecha-
nism, because mere assumptions and expectations (here:
regarding the familiarity of the consumed brand) caused
placebo effects (Shiv/Carmon/Ariely 2005a; Stewart-Williams/Podd 2004).

4. Experiment 2

4.1. Method

4.1.1. Overview

The purpose of experiment 2 is to document evidence of
a placebo effect caused by brand quality signals as pro-
vided by an external and neutral source. All participants
are given the same brand (newly introduced into the mar-
et) in order to control for confounding effects caused by
brand awareness or brand familiarity, as evidenced in ex-
periment 1.

Forty graduate students at a German university voluntee-
red to participate in the experiment (62.5 % female, aver-
age age 23.5 years). They are randomly assigned to one
of two treatments (signal of high quality product provid-
ed vs. not provided) of a between-subjects one-factorial
experimental design. The procedure and manipulation
follows the procedure of experiment 1. In this experi-
ment, participants consume half of a power bar that has
been introduced to the market just a few days before the
day of the experiment.

4.1.2. Manipulation

The instructor tells the participants that the experiment
tests the effectiveness of a new power bar. She informs
them about the ingredients, the dietary functions, and the
concentration boosting ability of the power bar. Caffeine
and dextrose are the concentration boosting ingredients
of the power bar. In addition, she briefs one group of par-
ticipants that the product received the grade 1.1 (very
good) and ranked first amongst 14 power bars in a recent
“Stiftung Warentest” review. “Stiftung Warentest” is the
leading product testing foundation in Germany. The in-
structor does not inform the second group about the
product test result. In a pretest, 45 student participants
rated the perceived quality of the product accompanied
by a good test result as higher on a seven-point scale than
the quality of the same product without a test result (M =
5.09 vs. 3.41; t(43) = 4.97, p < .01, two-sided test).

4.2. Results

The average performance test score is 143.15 in the
group who was informed about the test result, and 122.65
in the other experimental group. The difference is signifi-
cant (t(38) = 2.09, p < .05, two-sided test). The observed
power of the test is acceptable: \( \pi = .66 \) (for \( p = .05 \)) and
\( \pi = .79 \) (for \( p = .10 \)). All results for the dependent vari-
able and the control variables are presented in Table 2.

As for the control variables, only hours of sleep shows a
marginal significant difference between both experimen-
tal groups (t(38) = 1.89, p < .08, two-sided test), all other
variables do not differ between the experimental groups.
If we perform a multivariate regression model with
group membership and hours of sleep as independent
variable and performance scores as dependent variable,
the effect of the experimental treatments (group member-
ship) on performance scores becomes smaller, but re-
mains marginally significant (b1 = 18.37, se = 10.30, t =
1.78, p < .09), while the effect of hours of sleep is not
significant (b2 = -2.19, se = 3.09, t = .71, p > .48)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group 1: Quality signal not provided (n = 20)</th>
<th>Group 2: Quality signal provided (n = 20)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance scores</td>
<td>122.65 (33.04)</td>
<td>143.15 (28.68)</td>
</tr>
<tr>
<td>Prior brand attitude</td>
<td>1.82 ( .96)</td>
<td>1.78 (1.29)</td>
</tr>
<tr>
<td>Evaluation of bar</td>
<td>5.70 (1.38)</td>
<td>6.00 (1.34)</td>
</tr>
<tr>
<td>Frequency of consumption of power bars</td>
<td>.40 (.60)</td>
<td>.40 (.60)</td>
</tr>
<tr>
<td>Hours of sleep</td>
<td>7.33 (.78)</td>
<td>6.35 (2.18)</td>
</tr>
<tr>
<td>Consumption of caffeinated drinks</td>
<td>1.35 (1.27)</td>
<td>1.15 (1.23)</td>
</tr>
<tr>
<td>Self-assessment of concentration ability</td>
<td>4.15 (1.04)</td>
<td>4.20 (1.44)</td>
</tr>
<tr>
<td>Price assessment</td>
<td>1.61 (.75)</td>
<td>1.34 (.49)</td>
</tr>
<tr>
<td>Age</td>
<td>23.35 (2.03)</td>
<td>23.65 (2.64)</td>
</tr>
</tbody>
</table>

Means and standard deviations (in brackets) are given, except for knowing the brand,
knowing of performance test and gender for which percentages are provided.
As for the relationship of the control variables with performance scores, prior brand attitudes, evaluation of the product, and age do not correlate with the performance scores. None of the participants indicated to know the performance test. However, male participants achieve higher performance scores than female participants ($t(38) = 2.47, p < .02$). Adding hours of sleep as an additional independent variable that was related to the treatment (as describe above) maintains the significant effect of the experimental treatment ($b_i = 17.69, se = 9.06, t = 1.95, p < .06$). Furthermore, four participants indicate to know the power bar. After their exclusion, the effect of the experimental treatment on the performance scores changes only slightly ($t(34) = 2.02, p < .06$, two-sided test).

The assessment of the price does not correlate with performance scores ($r = .13, p > .43$). The prices assessed for the power bar show low variation and a very dense distribution curve with 25% of the participants indicating the same price of 1.50 EUR. Such small variation explains the weak relationship of price assessments with performance scores. Similar price assessments in both experimental groups further show that participants do not assume a higher price for brands when the test result of an independent consumer organization signals high product quality. While product quality can indeed lead to higher price assessments (Noël/Hanna 1996), the particular results in this study can be explained by experiences of German consumers with consumer reports published by “Stiftung Warentest”. These reports have oftentimes shown that low-priced products can be of high quality and vice versa. In fact, consumer reports are far from supporting a positive relationship between price and (objective) product quality (Gerstner 1985).

4.3. Discussion

The results show that variations in brand quality signals as supplied by an external and neutral source can lead to placebo effects as evidenced by performance scores in a test. The results remain stable after controlling for possible confounds. The effect neither depends on brand familiarity, nor on variations in price assessments. These results support and extend the placebo effects of marketing actions demonstrated by Shiv/Caron/Ariely (2005a) and show that brand-related factors can lead to placebo effects.

5. General discussion

The present study adds to the findings of a study by Shiv/Caron/Ariely (2005a) by showing that brand-related factors can lead to placebo effects; that is, brand-related factors can influence the actual efficacy of a marketed product. Shiv/Caron/Ariely (2005a) show that a discounted price of an energy drink worsens the performance of consumers on a puzzle-solving task. In two experiments, this study shows that brand familiarity and brand quality signals lead to similar effects; in the first experiment, the energy drink of a familiar brand enhances performance of consumers who take a concentration test, and in the second experiment, presence of a brand quality signal boosts performance. The results are not confounded by extraneous factors. The study contributes to placebo effect research in marketing by showing that there are further extrinsic product features besides price that can lead to placebo effects.

From a theoretical perspective, placebo effects question well-established knowledge in the marketing literature. Marketing researchers assume that an extrinsic property such as a brand adds some benefit to a product’s core benefit, that is, the benefits gained from technical (intrinsic) properties of a product. The existence of a placebo effect implies that the core benefit of a product alters due to the product’s branding. The theoretical and empirical implications from this finding add to established relationships that explain marketing performance. For instance, the relationship between price and perceived (subjective) quality can explain the success of products. This price-quality relationship has to consider the relationship of price and objective quality or performance of a product as well, because the performance of a product influences its success on the market (Rao 2005): The variation in the objective quality of a product (i.e., its actual performance) contributes to the overall success of a product by increasing satisfaction with a product, loyalty, etc., and provides an additional explanatory path for the effects of marketing actions such as branding on marketing performance next to the direct effect of branding on evaluation of the product. The influence of placebo effects occurs non-consciously which has important implications for researchers, too (Irnak/Block/Fitzsimons 2005). Researchers interested in the overall effects on marketing performance need to take into account that placebo effects cannot be measured by common methods that require conscious processing of respondents.

Placebo effects have broad implications for customers, marketers, and public policy. For instance, slimming products with the same ingredients may lead to different effects in terms of weight loss depending on the familiarity of the brand. The more familiar customers are with a brand, the stronger the effects on weight loss, independent of the actual ingredient in the brand. While the implication of this result is mainly one that affects customers (i.e., efficacy of weight loss) and marketers (i.e., customer satisfaction with a product), the importance of pla-
Placebo effects of brands for public policy becomes quite obvious with regard to generic drugs. Generic drugs may lead to lower performance due to their branding. In some countries, health insurance companies try to lower their costs by refunding only the prices of generic drugs (if available) but not the original patent brand. Although they may lower their costs at first sight, they may actually slow down recovery of patients, which eventually increases health insurance costs. At the same time, the results show that providing a quality signal by external sources does not only influence perceptions of product quality, but also increases the efficacy of products. This sheds new light on the importance of product ratings for companies: if these ratings enhance the actual performance of products, they will lead to higher satisfaction with the product and increase repurchases, word-of-mouth, and patronage. In addition, consumer rating institutions’ responsibility increases, as their product ratings do not only influence consumer choice, but also the performance of the products used by consumers.

A major limitation of both experiments in this paper is the small sample size (44 participants in experiment 1 and 40 participants in experiment 2). The power analysis indicates an acceptable power of the main test procedures applied in the studies. Because we performed a series of tests for the control variables, there is a chance of wrong test results. Although we cannot rule out the probability of type-1 and type-2 errors, we linked the control variables to both the manipulations (i.e., the independent variable) and the performance scores (i.e., the dependent variable). The non-significant results we found for most of the relationships makes it very unlikely that the effect of the independent variable on the dependent variable can fully be explained by one of the control variables. Nevertheless, further replications of our findings with larger sample sizes are recommended for future research. Further studies are mandatory in order to find out whether placebo effects in marketing are generalizable over different kinds of marketing-related factors. Additional marketing-related factors may influence the physical effectiveness of a product, such as packaging, distribution channels, and advertising messages. Research might also focus on interactions of placebo drivers (e.g., price and boundary conditions of the effects in marketing) have shown that beliefs, expectations, and motivations are the underlying mechanisms of placebo effects which work similar to placebo effects as demonstrated in research studies in the medical field (Stewart-Williams/Podil 2004). However, the nature of the effect and boundary conditions of the effects in marketing have not been investigated so far and thus seem to be a promising area for further research. For instance, what is the relationship between marketing-related factors and the size of the placebo effect? Is there a curvilinear relationship or even a ceiling effect? Is the placebo effect diminishing with increasing intensity of marketing-related factors such as price increases? Furthermore, consumer demographics and psychographics provide another abundant area for research: Consumers’ susceptibility to marketing differs across a variety of variables such as age, education, or consumer knowledge (Campbell/Kirmani 2008). Are these variables related to placebo effects that are unconscious? If so, how do these factors moderate the placebo effect of marketing-related factors?

References

Wissen, auf was es ankommt

Mehr verkaufte Produkte, ein besseres Suchmaschinen-Ranking oder höhere Besucherzahlen auf Websites – all das können gute Texte erreichen. Der Ratgeber bietet jedem Website-Betreiber eine leicht lesbare Mischung aus fundiertem Wissen und praktischen, sofort anwendbaren Anleitungen und Beispielen für optimale Internet-Texte:

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Keywords
placebo; placebo effect; brand familiarity; brand quality signal

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