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The Placebo Effect in Marketing: Sometimes You Just Have to Want It to Work

In their article, Shiv, Carmon, and Ariely (2005, hereinafter SCA) document for the first time that nonconscious expectations about the relationship between price and quality can influence consumers in a placebo-like manner. Even when the price paid for a good has absolutely no relationship to its actual quality, consumers' nonconscious beliefs about the price–quality relationship change their actual experience with the good. As Berns (2005) notes, performance is enhanced beyond the baseline by drawing attention to the marketing claims surrounding the product.

Broadly speaking, a placebo has been defined in the medical literature as "a substance or procedure that has no inherent power to produce an effect that is sought or expected" (Stewart-Williams and Podd 2004). In more colloquial terms, a placebo is essentially a "sugar pill." Such placebo effects have been observed in numerous medical settings, from relatively benign maladies, such as warts and the common cold, to more serious diseases, such as diabetes, angina, and cancer (Kirsch 1997). Across multiple medical domains, the placebo effect has been shown to be enduring and even capable of reversing the effects of active medications (Kirsch 1997). In marketing, a placebo of this form might be a brand that claims to have certain properties that it does not actually possess and, through such claims, changes the consumer's behavior.

In their work, SCA demonstrate that expectations play an important role in marketing placebo effects. Indeed, support for the efficacy of expectations goes back more than 1700 years: "He cures most in whom most are confident" (Galen, qtd. in Jensen and Karoly 1991).

In the study we report herein, we extend SCA's results by demonstrating the importance of motivation—a person's desire to experience the product's purported benefits—as a driver of marketing placebo effects. Motivation has also been shown to play a strong role in medical placebo studies such that when people want the physical symptoms, a placebo effect more likely will manifest (Jensen and Karoly 1991; Vase et al. 2003).

We also extend and support SCA's findings by documenting for the first time a sugar pill placebo effect for everyday consumer products. In our study, consumers drink an energy drink, a placebo drink, or water (control condition). We find that the placebo effect manifests only for consumers who desire (high-motivation consumers) the arousing effects of an energy drink. Such consumers experience identical physiological and subjective behavioral changes as those who actually consume the energy drink.

METHOD

Participants

A total of 106 undergraduate students participated in the study in partial fulfillment of course requirements. Participants were informed that they should not drink any caffeinated drinks for at least two hours before the experiment.

Design

In this experiment, we used a 2 (drink consumed: energy drink versus placebo) × 2 (motivation: high versus low, measured) between-subjects design with an additional control group.

Procedure

Participants were led to a private cubicle that contained a personal computer and a prepoured beverage. Participants were randomly assigned to one of three conditions: In the energy drink condition, this beverage was an actual energy drink, New York Minute (active ingredient is caffeine);[1] in the placebo condition, the glasses were filled with a diet, decaffeinated beverage that was pretested to appear and taste like New York Minute (Diet Dr. Brown); in the control condition, the glasses contained water. For both the energy drink and the placebo conditions, an empty can of New York Minute was placed beside the glass.

Participants in all conditions were informed that the purpose of the study was to evaluate an energy drink, and they were instructed to consume the entire glass after completing some preconsumption measures (both the energy drink and the placebo conditions groups were told that the glass contained New York Minute). The session began with verbal instructions that the experimenter would measure participants' blood pressure with an Omron HEM-609 electronic monitor that automatically inflates and measures diastolic

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[1]Smit and Rogers (2002) report that because little is known about the putative effects of taurine, it is reasonable to assume that the main effects of energy drinks should derive from their carbohydrate and/or caffeine content.

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and systolic blood pressures from the wrist. Blood pressure data were entered on each participant's computer. Then, they were told to continue answering questions on their computers, including an arousal measure, a physical reflex test, and a mental alertness task.

After completing these preconsumption measures, participants read information about the New York Minute, purportedly excerpted from *The New York Times* but actually modified from *The New York Times* (Lowry 2004; see the Appendix), answered questions about their motivation levels and their expectations for the drink, and were instructed to drink the energy drink (or glass of water for the control participants) in its entirety. Following consumption of the drink, all participants completed an unrelated filler task for 25 minutes (a simple video game) to allow for sufficient absorption time (Alford, Cox, and Wescott 2001; Kirsch and Weixel 1988). On concluding the filler task, the experimenter again measured participants' blood pressure, and participants completed the same arousal measure, physical reflex test, and mental alertness tasks administered before consuming the drink. A series of self-reported arousal measures concluded the survey.

Measures

Motivation. After energy drink and placebo participants read the information about the energy drink but before they consumed the drink, they completed three motivation questions: "How much would you like New York Minute to increase your mental (physical) performance?" and "How much would you like to have the benefits of New York Minute?" Participants responded to these questions on five-point scales anchored by "not at all" (1) and "very much" (5). We averaged these items (Cronbach's $\alpha = .87$) and used a median split to divide the energy drink and placebo conditions into low- and high-motivation groups.

Expectations. To assess participants' expectations, we asked them to complete the following items immediately before consuming the beverage: "How likely is it that New York Minute will, in general, have the effects it claims to?" and "How likely is it that New York Minute will increase your mental performance (physical performance/blood pressure) if you were to drink it now?" We measured items on five-point scales anchored by "very unlikely" (1) and "very likely" (5) and averaged the responses to provide an overall expectations index (Cronbach's $\alpha = .77$).

Arousal. Participants completed a subset of Thayer's (1989) arousal scale twice, once before consumption and once approximately 30 minutes after consumption of the beverage. Items included participants' feelings of how energetic, lively, sleepy, tired, and quiet (we reversed scored the latter three) they felt on a four-point scale labeled "definitely/slightly/cannot decide/definitely do not."

Test of physical reflexes. Participants were asked to hold down the space bar until they received computer-driven instructions to release it and press a specified key on the keyboard as quickly as possible. The time between stimulus exposure and key pressing was recorded. Participants were asked to do this task consecutively for ten different randomly presented keys; they completed the task twice, once before and once after consuming the drink.

Mental alertness. We used Wechsler's (1958) digit span test to assess participants' mental alertness level. They were provided a series of numbers on the computer screen. Each number was shown for approximately half a second on the screen, and participants were asked to reproduce the digits immediately after exposure in the precise order they had seen them on the screen (forward span test). The number of digits presented started at five and increased to eight; in total, participants were exposed to eight different number sequences. Next, participants were shown another series of numbers in the same way as the forward span test, but this time, they were asked to reproduce the digits backward (backward span test). Because the backward span test is inherently more difficult, the number of digits started at four and increased to six; in total, respondents were exposed to six different number sequences. As with the arousal and physical reflex measures, mental alertness was measured both before and after the participants consumed the beverage.

RESULTS

Thirteen participants were unable to consume the beverage and complete the study for a variety of health reasons (e.g., baseline systolic blood pressure above 160; baseline diastolic blood pressure below 60). The analysis was performed on the remaining 93 participants, of whom 66 were in the treatment conditions (either energy drink or placebo) and 27 were in the control condition.

The results across the five objective measures of physiological change and the subjective self-report of arousal appear in Table 1. We ran two basic analyses for each

Table 1

PLACEBO EFFECTS ON OBJECTIVE AND SUBJECTIVE MEASURES OF ENERGY CHANGE

	Energy Drink/ High Motivation	*Energy Drink/ Low Motivation*	*Placebo/High Motivation*	*Placebo/Low Motivation*	*Control*
Diastolic blood pressure (log normal mmHg)	.044[a]	.041[a]	.097[a]	–.074[b]	–.06[b]
Systolic blood pressure (log normal mmHg)	.017[a]	.016[a]	.035[a]	–.021[ab]	–.048[b]
Improvement in pressing time (milliseconds)	462[cd]	1127[c]	1233[c]	478[cd]	304[d]
Improvement in entering time (forward span, milliseconds)	432[cd]	1259[cd]	1377[c]	816[cd]	404[d]
Improvement in entering time (backward span, milliseconds)	498[ab]	1020[a]	651[ab]	201[b]	300[b]
Change in self-reported arousal (average of five items on 1–4 scale)	.46[c]	.45[cd]	.52[c]	.07[d]	–.04[d]

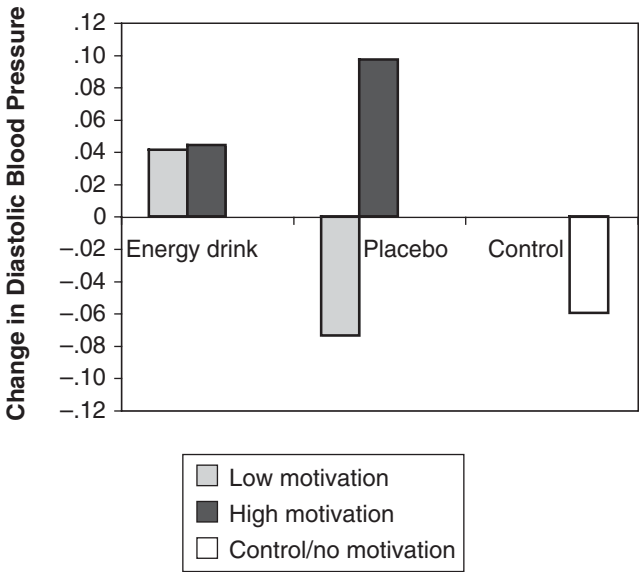
Notes: Significance levels (across rows only; cells with the same superscript are not significantly different from one another): Cells labeled a and b are significantly different from each other at $p < .05$ (two-tailed test), and cells labeled c and d are significantly different from each other at $p < .10$ (two-tailed test).

dependent measure. The first was a 2 (drink consumed: energy drink versus placebo) × 2 (motivation: high versus low) analysis of variance, with expectations as a covariate in the analysis. Expectations, both as a continuous variable and as a median split, did not interact either with drink consumed or with motivation, but it did account for significant error variance in several cases; thus, we included it as a continuous covariate in each analysis of variance. In addition, for each dependent variable we ran a series of planned contrasts between each of the four treatment conditions and the hanging control (energy drink/high motivation, energy drink/low motivation, placebo/high motivation, placebo/low motivation, and control). Because the pattern replicates across the dependent variables, we discuss only the diastolic blood pressure analyses in depth (see Figure 1).

As we hypothesized, motivation plays a key role in changing response to a brand placebo at a physiological level. We observed a significant two-way interaction between drink consumed and motivation ($F(1, 62) = 4.49$, $p < .05$). This interaction can be best interpreted by examining the mean change in diastolic blood pressure for the four treatment conditions versus the control condition.[2] When participants consumed an actual energy drink, we observed a significant increase in their diastolic blood pressure compared with the control group that consumed water, regardless of the participants' motivation level. Participants in the energy drink/high-motivation condition had a mean change in diastolic blood pressure of .04 mmHg (log normalized) and participants in the energy drink/low-motivation condition had a mean change of .04 mmHg versus control participants (–.06 mmHg, $F(1, 91) = 5.39$, $p < .05$, and $F(1, 91) = 4.10$, $p < .05$, respectively). In contrast, participants in the placebo conditions had very different results by motivation level. Participants in the placebo/low-motivation condition (mean change = –.07 mmHg) were no different from participants in the control condition (–.06 mmHg, $F(1, 91) = .09$, $p = .77$). Participants in the placebo/high-motivation condition (mean change = .09 mmHg) showed significantly greater increases in diastolic blood pressure than participants in the control condition (–.06 mmHg, $F(1, 91) = 9.61$, $p < .01$) and, though directionally higher, were not statistically separable from either energy drink motivation condition (both ps > .30). This pattern of results holds for systolic blood pressure, physical reflex tasks, mental alertness, and subjective arousal (see Table 1).

[2]The results do not change meaningfully if the data are analyzed using blood pressure after beverage consumption as the dependent variable and blood pressure before beverage consumption as a covariate in the analyses; similarly, we observe no meaningful changes for parallel analyses on the other dependent variables.

Figure 1
PLACEBO EFFECTS ON DIASTOLIC BLOOD PRESSURE



DISCUSSION

Taken together, our study results and SCA's study results provide compelling evidence that marketing activities can lead to substantial placebo effects. As in SCA's research, the placebo effect that we observed led to changes in the participants' experience with the efficacy of the product. The placebo energy drink was capable of raising blood pressure, increasing physical reflexes, enhancing mental alertness, and raising the self-reported arousal level for the participants. Notably, these placebo effects were only observed for highly motivated participants. When participants reported a high degree of desire for the increased energetic boost from an energy drink, we found that the placebo beverage led to the same levels of performance and physiological change that an actual energy drink containing caffeine and taurine provided. However, when participants had low levels of motivation, consumption of the energy beverage led to the same effects as a glass of water. In addition to the important role that expectations play in marketing placebo effects, these data suggest that motivation also plays an important role. It is possible in some situations that these two constructs interact in interesting ways. For example, in some situations, highly motivated people might change their expectations, thus leading to a placebo effect. However, our data do not support such a mediating role in the scenario we investigated. Our investigation suggests that sometimes consumers do not necessarily have to expect a product to work, they just have to want it to work.

Although the medical literature reveals that the focus of investigations is on positive or beneficial effects of placebos, SCA clearly demonstrate that there can be substantial negative effects of placebos in marketing contexts. The physiological placebo effects we observe in this study also suggest that caution should be taken when making claims about products that seem harmless. We carefully screened participants who could be harmed by increases in blood pressure in this study, but no such screening would occur in the marketplace.

An interesting aspect of SCA's work is the demonstration that marketing placebo effects can occur largely nonconsciously. Whereas the motivation that drove the placebo effect we observed in our study was conscious, it seems highly likely that the mechanism through which it operated may also have been nonconscious. Further work in this domain should prove extremely interesting both to marketers and to public policy makers. Once again, we find that seemingly innocuous marketing activities do far more than meets the eye.

Appendix

ENERGY DRINKS ARE THE FASTEST GROWING CATEGORY IN THE BEVERAGE BUSINESS (FEBRUARY 4, 2005)

Once the province of young extreme athletes and the nightclub crowd, energy drinks have gone mainstream. Sleepy college students drink it because they like the buzz; weekend athletes vouch for the energy lift.

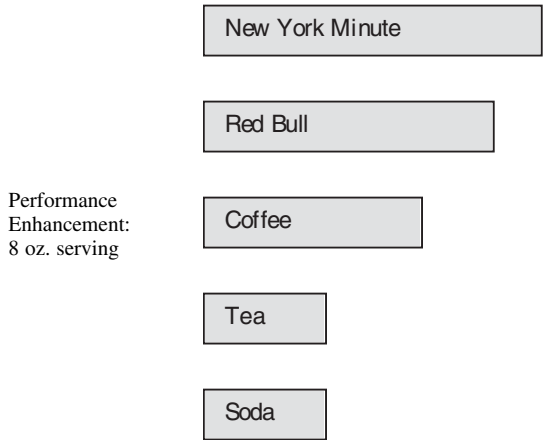
The best energy drink out there? A recent study by the Institute of Sports rated our own city's beverage—New York Minute—the best performance-enhancing drink on the market.

For mental alertness, fast responses, and better performance on mental tasks, New York Minute surpassed all other brands.

Unlike competitive drinks on the market, New York Minute provides the energy without the highs and lows of a sugar buzz.

Instead, New York Minute contains healthful additives, like taurine and vitamin B in the form of niacin, pantothenic acid, and pyridoxine hydrochloride (B6). Taurine, which the body produces on its own, is found in high concentrations in the heart. Taurine is lost during high stress and physical exertion. A 2001 study from the European journal Amino Acids noted an increase in the amount of blood, oxygen, and nutrients that the heart can pump to the working muscles among a group of athletes who drank energy drinks, like New York Minute, with taurine.

In addition, caffeine can be ergogenic—a fancy word for performance enhancing—because it perks up the central nervous system, and that becomes increasingly important as mental and physical exertion increases.



Source: Institute of Sports.

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