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In Shiv, Carmon, and Ariely (2005), the authors demonstrate that marketing actions such as price promotions and advertising evoke consumer expectations, which can alter the actual efficacy of the marketed product, a phenomenon they call “placebo effects of marketing actions.” In this rejoinder, they build on the preceding commentaries and refine their framework to account more fully for factors that may influence this placebo effect, and they describe directions for further research in this new topic area.

Ruminating About Placebo Effects of Marketing Actions

In Shiv, Carmon, and Ariely (2005), we illustrate a novel phenomenon that we call “placebo effects of marketing actions.” In our experiments, we show that actions such as price changes and advertising claims evoked consumer expectations, altering the actual efficacy of the marketed product. In their respective commentaries, Rao (2005), Berns (2005), and Borsook and Becerra (2005) highlight theoretical and managerial implications of our findings and suggest interesting ideas for further research. Irmak, Block, and Fitzsimons (2005) study a potential role of consumers’ desire to experience purported benefits of a product. In this rejoinder, we first build on those commentaries and on related literature, and we present a refinement of our framework for the placebo effect of marketing actions. We then speculate about other factors, such as motivation, that may influence placebo effects. Our goals are to delve deeper into the process that leads to the placebo effect, suggest other factors that may influence the placebo phenomenon, and highlight avenues for further research in this new topic area.

A REFINED FRAMEWORK FOR PLACEBO EFFECTS

Our placebo effect framework essentially involves two stages. First, salient beliefs about the substance or treatment activate response expectancies. These response expectancies, along with expectancies related to self-efficacy beliefs and other extraneous factors (which were both reflected in no-treatment control conditions), give rise to the behavioral

outcomes. The commentaries raise several questions about our framework. First, what types of beliefs might activate response expectancies, and what are the antecedents of these beliefs? Second, what factors might moderate the impact of these beliefs on response expectancies? Finally, after response expectancies are activated, in what ways are they likely to lead to the behavioral outcomes? In the following sections, we address those questions and present a refined framework for the placebo effect (see Figure 1).

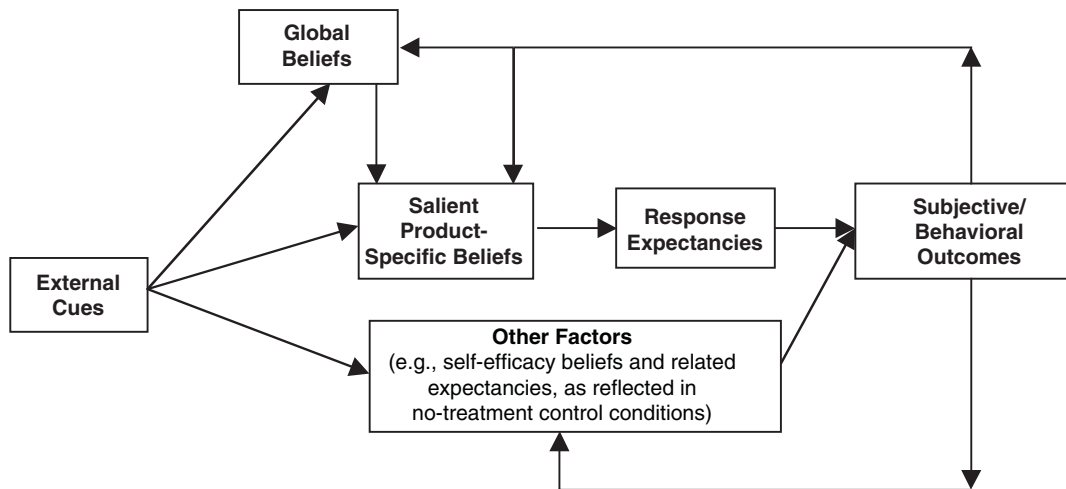
Types of Beliefs and Their Antecedents

Response expectancies may be activated by intrinsic and extrinsic product-specific beliefs. Such beliefs may be activated directly by external cues (e.g., verbal suggestions, advertising claims) and indirectly by global beliefs (e.g., “lower price reflects lower quality,” “the quality of national brands is better than that of private-label brands”). In our studies, product-specific beliefs were probably activated both directly and indirectly. For example, in the studies, participants were initially shown information about the energy drink, such as its brand name, packaging, and its ingredients. This could have directly activated beliefs about intrinsic mental acuity benefits of the product. Participants were also shown the price of the drink, which seems to have activated global beliefs about the relationship between price and quality.

Although the exposure to the external cues occurred consciously in our experiments, exposure that triggers placebo effects could also occur nonconsciously. Analogously, anesthetized patients who are given verbal suggestions (of which they have no conscious recollection) that they will recover quickly from a surgery spend less time in the hospital than patients who are not given such suggestions (Kihlstrom and Schacter 1990). Similarly, Friedman and colleagues’ (2005) research suggests that a global belief held by some people, “consuming alcohol increases sexual desire,” can be activated subliminally by presenting words

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Figure 1
A REFINED FRAMEWORK FOR PLACEBO EFFECTS



such as “keg” and “booze” (with each exposure lasting a mere 40 milliseconds). Such beliefs led to a placebo effect, whereby participants experienced enhanced sexual attractiveness of members of the opposite sex.

Potential moderators of the activated beliefs. The same external cues can activate different product-specific beliefs in different consumers, resulting in different expectancies and subsequent behavioral effects. For example, some consumers (e.g., those who grew up in the United Kingdom) tend to believe that the malted drink Horlicks helps them sleep better, whereas others (e.g., those who grew up in India) tend to believe that the same drink promotes mental agility. In a study such as those we conducted, if participants were to consume Horlicks before a puzzle-solving task, we would expect different behavioral effects for the two groups, specifically, an undesirable placebo effect for the former group and a desirable placebo effect for the latter.

More generally, individual-difference factors may affect the beliefs that external cues activate, which could also influence the nature and magnitude of the subsequent placebo effect. For example, among consumers who are deal prone or are knowledgeable about determinants of quality (e.g., those who read *Consumer Reports*), global price–quality beliefs may be weaker, and thus the magnitude of corresponding placebo effects may be smaller.

In the context of pricing, attributions that consumers draw about the cause of a discount may moderate the global beliefs that are activated. For example, the effect that we report might have been different if the price change had been presented as a cause-related charitable donation (e.g., “\$1 of your payment of \$1.89 will be given to a charity”). Consumers may frame such a sale as a donation rather than as a discount, and this might activate a different set of global and product-specific beliefs (see Strahilevitz and Myers 1998). As Rao (2005) suggests, if new car buyers haggle aggressively before receiving a discount, they may attribute the discount to their bargaining skills rather than to

quality. Thus, price–quality beliefs may not be activated for or may be less salient to such buyers. This possibility is consistent with Simonson, Carmon, and O’Curry’s (1994) finding that when a deeply discounted television set had a scratch on a side panel, it was preferred more than when there was no such scratch, presumably because consumers attributed the low price to the scratch (ignoring the possibility that the television may be of low quality regardless of the scratch). These examples suggest that when there is a salient potential reason for a low price, global price–quality beliefs may have less of an impact. In this regard, it is noteworthy that we observed placebo effects of price discounts in our studies even though we indicated the reason for the discount (i.e., that it was part of an institutional bulk purchase). Thus, the placebo effects we observed might have been more substantial had we not provided a reason for the discount.

Self-efficacy beliefs. According to our framework, the behavioral effects of marketing actions are determined not merely by product-specific beliefs but also by self-efficacy beliefs. The framework implies that self-efficacy beliefs lie and arise “within the individual” (albeit with shifts in focus that may occur between self-efficacy and product-related beliefs, as we note in Experiment 2 to account for why we did not observe a desirable placebo effect related to full price). In line with work on behavioral effects of stereotypical beliefs (for a review, see Wheeler and Petty 2001), the refined framework we present in Figure 1 proposes that self-efficacy beliefs can also be influenced by external cues. For example, Johns, Schmader, and Martens’s (2005) work suggests that merely labeling a task of solving math problems as “a math test” (versus “a problem-solving exercise”) activated negative stereotypical beliefs among women and hurt their performance. Although we did not find gender effects in our experiments, a future study could combine our findings with those of Johns and colleagues by using, for example, a math test rather than a word-jumble task. Further research can also examine whether products that are

promoted toward specific segments could activate negative stereotypical beliefs and, thus, negatively affect the product's actual efficacy among different segments. For example, Viagra might be less effective for women than a differently branded but chemically equivalent medication (that was not first promoted as appropriate primarily for men, as was Viagra).

Activation of Expectancies by Salient Beliefs

The next step in the placebo effect framework is the activation of expectancies by beliefs (product specific and/or self-efficacy) that external cues make salient. The activation and the expectancies can be moderated by a variety of different factors. One example is the diagnosticity of the activated beliefs for the situation at hand. For example, in our Experiment 2, drawing some participants' attention to their global price-quality beliefs eliminated the placebo effect. This presumably occurred because drawing attention to such global beliefs led participants to realize that the beliefs were not diagnostic for the energy drink they had consumed, and therefore the expectations were not different across the different price levels.

The diagnosticity of activated beliefs is most likely also influenced by characteristics of the task. In our studies, for example, the product-specific beliefs related to the energy drink (mental acuity) were presumably diagnostic for solving puzzles. However, salient product-specific beliefs may not always be diagnostic for the task at hand. Consider a study in which participants consume a medication for arthritis before solving puzzles. The beliefs about the medication (improvement of motor functioning) are presumably not likely to be diagnostic of cognitive functioning in a puzzle-solving task. As a result, expectancies that are relevant to the task are less likely to be activated, and therefore behavioral (placebo) effects are less likely. The diagnosticity of activated beliefs could also be affected by the level of cognitive elaboration. In our research, participants who elaborated on their expectations before the puzzle-solving task (Experiment 1) displayed greater placebo effects than did those who did not elaborate. We evoked this elaboration by having those participants rate how effective the energy drink was at improving concentration and at improving mental performance. An interesting question is whether the same placebo effects would have occurred if we had used a motivation-related factor (e.g., an incentive to perform well in the puzzle-solving task; see Rao 2005) to evoke cognitive elaboration rather than the opportunity-related factor we used. The answer is not obvious. On the one hand, for example, Shiv, Britton, and Payne's (2004) work suggests that elaboration engendered by opportunity-related factors enhances the accessibility of mental constructs and can also affect their diagnosticity. Therefore, providing a monetary incentive might negatively affect the diagnosticity of global price-quality beliefs and, thus, attenuate rather than amplify the placebo effects. On the other hand, research on behavioral priming effects suggests that such effects are stronger when levels of motivation are high rather than low (e.g., Petty 2001). This implies that higher levels of motivation might amplify effects similar to those that we document. We believe that this question could benefit from further research.

From Expectancies to Behavioral Outcomes

A particularly important direction for further research is to uncover the psychological and physiological mechanisms by which expectancies lead to behavioral effects in the form of a self-fulfilling prophesy. In this section, we propose alternative mechanisms through which expectancies could translate into behaviors, some that appear relevant to our experiments and others that may be more important in other contexts.

Anxiety as a mediator. Work on the placebo phenomenon (e.g., Stewart-Williams 2004) and on stereotyping (e.g., Wheeler and Petty 2001) suggests that one way that expectancies could affect behavioral outcomes is by modulating levels of anxiety that people experience in a given task. More specifically, when people consume a substance with known advantageous (disadvantageous) effects, they experience a sense of increased (decreased) confidence in and control over the outcome that reduces (increases) the level of anxiety that they experience. In turn, anxiety could affect a person's performance on tasks such as solving puzzles. Note that because we found no mood differences across the various conditions, the anxiety-as-mediator explanation may not be viable as an account for the placebo effects we document. Nonetheless, this mechanism may contribute to other types of placebo effects of marketing actions and should be explored in further research.

The ideomotor mechanism. The notion of "ideomotor action," popularized by William James ([1890] 1950), explains how merely thinking about a behavioral outcome increases the likelihood that the outcome will occur. Thus, activating behavioral representations leads to actual behavior with no separate act of volition. In recent years, Bargh and his colleagues provided considerable support for this notion, finding, for example, that merely activating beliefs and goals (that in our opinion share kinship with expectations) can nonconsciously evoke behavioral outcomes (for a review, see Bargh and Ferguson 2000). Furthermore, brain imaging studies support the notion of ideomotor action, showing that merely thinking about a behavior activates the same brain regions that are involved when the actual behavior is performed (Roland et al. 1980; see also Miller 2005).

It is quite possible that the mechanism that gave rise to our findings is similar to those that William James proposed and Bargh and his colleagues subsequently documented. However, more research is necessary to unravel the physiological and neurological processes that underlie this mechanism. Berns (2005) and Borsook and Becerra (2005) describe several concrete ideas for such research.

Additional Clues About Placebo Effects of Marketing Actions

Clues about other factors that may mediate or moderate placebo effects of marketing actions can be found in unusual placebo effect findings. In this section, we review two examples: one that Irmak, Block, and Fitzsimons (2005) present in this issue and a classic study by Storms and Nisbett (1970).

Placebo effects arising from motivation. Irmak, Block, and Fitzsimons's (2005) study implies that consumers' desire to experience purported benefits may lead to placebo effects and that this can happen independently of expectancies. Because this is one of the first indications of another

potential route to placebo effects, it warrants replications and further studies. For example, it would be interesting to study psychological and physiological mechanisms that lead to such motivational placebo effects. Further research should also explore conditions under which expectancies mediate placebo effects that arise from motivation and conditions under which motivation effects are independent of expectancies.

“Reverse” placebo effects. Thus far, the discussion has been about “conventional” placebo effects, such that the behavioral outcomes are in line with those implied by the activated expectancies. However, reverse placebo effects, for which the behavioral outcomes are in direct opposition to those implied by the activated expectancies, have also been documented. For example, in Storms and Nisbett’s (1970) study, insomniacs were given a placebo pill that was described as either arousing or relaxing before going to bed. Their findings were in stark contrast to what a placebo effect would suggest; participants who consumed the pill with purported relaxing effects actually had greater difficulty falling asleep than those who consumed the pill with purported arousing effects. Storms and Nisbett argued that the reason for this reverse placebo effect was that participants who consumed the relaxing (arousing) pill felt that they were more (less) aroused than they had expected from consuming the relaxing (arousing) pill. Similar findings have been documented in other research (see Borsook and Becerra 2005).

A possible way to account for this reverse placebo effect is to consider our first placebo framework not merely as starting with the activation of beliefs and ending with the behavioral outcome but also as a dynamic process with beliefs (global, product-specific, and/or self-efficacy) that are affected by feedback from the behavioral outcome that a person experiences and perceives. For example, in Storms and Nisbett’s (1970) study, participants who consumed the relaxing pill may have initially nurtured beneficial expectations about the outcome (sleeping more quickly), but when they did not sleep soon after taking the pill as they had expected, the feedback could have affected their self-efficacy beliefs (“I am not sleeping despite taking a pill, so my insomnia might be more serious than I thought”), which in turn could have resulted in negative expectancies and a subsequent delayed onset of sleep.

This phenomenon suggests another possible moderator of placebo effects of marketing actions that is potentially important and, thus, should be investigated further. Expectancies that are evoked and appear unlikely to be materialized may trigger reverse placebo effects. For example, if the energy drink we used was presented as being exceptionally effective at boosting mental acuity, participants who would presumably believe that they are not performing as well as they should be may perform worse than they would had they not received the drink. Another possibility is that in such a situation, participants will deduce that the product claims are false. This is another question that can benefit from further research.

CONCLUSION

Given the substantial power and robustness of placebo effects, these effects are most likely multiply determined.

Although placebo phenomena have been extensively studied, especially by medical researchers, we believe that there is still much more to be discovered. Thus, we consider our framework a starting point, not a foregone conclusion. Exploring placebo effects in contexts such as marketing actions, which is different from the contexts in which it has traditionally been studied, may help uncover new factors that contribute to this phenomenon. For example, one finding that our lead article adds to what is known about placebo effects is that such effects can result from factors that are not inherent to the product (e.g., price). We hope that further research about placebo effects of marketing actions, which is important in and of itself, will also add to what is known about placebo phenomena in general.

In their respective commentaries, Rao (2005), Berns (2005), and Borsook and Becerra (2005) propose far-reaching implications of our research for areas such as marketing, medicine, engineering, and economics, and they present interesting ideas for a research agenda in this new topic area. Building on those commentaries and on Irmak, Block, and Fitzsimons’s (2005) study, in this rejoinder, we clarify and elaborate on our original work. What we now know is that marketing actions, such as price discounts, can influence more than consumer purchase behavior or consumers’ subjective experiences; such marketing actions can also influence the actual efficacy of the marketed products. We believe that there is much more to learn about when, why, and how placebo effects of marketing actions can happen.

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