

Research Report

Does Red Bull give wings to vodka? Placebo effects of marketing labels on perceived intoxication and risky attitudes and behaviors[☆]

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Abstract

Why sexual assaults and car accidents are associated with the consumption of alcohol mixed with energy drinks (AMED) is still unclear. In a single study, we show that the label used to describe AMED cocktails can have causal non-pharmacological effects on consumers' perceived intoxication, attitudes, and behaviors. Young men who consumed a cocktail of fruit juice, vodka, and Red Bull felt more intoxicated, took more risks, were more sexually self-confident, but intended to wait longer before driving when the cocktail's label emphasized the presence of the energy drink (a "Vodka-Red Bull cocktail") compared to when it did not (a "Vodka" or "Exotic fruits" cocktail). Speaking to the process underlying these placebo effects, we found no moderation of experience but a strong interaction with expectations: These effects were stronger for people who believe that energy drinks boost alcohol intoxication and who believe that intoxication increases impulsiveness, reduces sexual inhibition, and weakens reflexes. These findings have implications for understanding marketing placebo effects and for the pressing debate on the regulation of the marketing of energy drinks.

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Red Bull recently settled a \$13M class action lawsuit brought by plaintiffs who argued that it does false advertising and does not "give wings" as it proclaims ([Careathers v. Red Bull GmBh, 2016](#)). The case was especially noteworthy

because Alcohol Mixed with Energy Drinks (AMED), such as Red Bull, are consumed by 50% of American and European college students and are associated with numerous anti-social behaviors ([Miller, 2013](#)). Compared to people who drink alcohol straight, those who mix it with energy drinks have double the risk of experiencing or committing sexual assault, or having an alcohol-related motor vehicle crash ([Howland & Rohsenow, 2013](#)). The court in this case did not consider the psychological effects that energy drinks may have, especially when mixed with alcohol; however, we do.

Prior consumer behavior research has shown that marketing actions can result in "placebo effects" (for a review, [Plassmann & Wagner, 2014](#)). For instance, energy drink prices, logos, and labels can impact puzzle solving, physical reflexes, and video

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car racing (Brasel & Gips, 2011; Irmak, Block, & Fitzsimons, 2005; Shiv, Carmon, & Ariely, 2005).

We extend this stream of research to examine the perceptual, attitudinal, and behavioral placebo effects created by the labeling of AMED. We show that merely emphasizing the presence of an energy drink in the label used for the AMED (e.g., calling it a “vodka-Red Bull” instead of a “vodka” or “exotic fruits” cocktail) makes young males feel more intoxicated, take more risk in a gambling game, be more sexually self-confident, but also more likely to wait before driving.

Our study contributes to the pressing debate on possible reasons for the empirical link between AMED consumption and risky attitudes and behaviors. Crucially, our study reflects realistic AMED consumption situations—subjects consume real alcohol—we merely change the label of the drink. Finally, we contribute to the debate on the source of marketing placebo effects—expectancy or conditioning—by examining the moderating effects of beliefs and past experience (Stewart-Williams & Podd, 2004).

Explaining the link between AMED consumption, perceived intoxication, and risky attitudes and behaviors

Perceived intoxication: physiological vs. placebo effects

Early AMED studies argued that the caffeine amounts present in energy drinks can mask drinkers’ perception of being intoxicated, without attenuating the diminishing effects of alcohol on mental and physical abilities, resulting in inconsiderate risk-taking (FDA, 2010; Howland & Rohsenow, 2013).

However, recently, there has been converging evidence against the masking theory. A meta-analysis of 16 “blind” experiments (in which people are not told what they are drinking) concluded that the low amount of caffeine typical of AMED has no effect on actual or perceived intoxication and is unlikely to increase alcohol’s effect on behavior (Benson, Verster, Alford, & Scholey, 2014). The current thinking is that the link between AMED consumption and risky behaviors is spurious and caused by self-selection, because people who drink AMED are inherently risk seekers (EFSA, 2015; Skeen & Glenn, 2011; Verster, Aufrecht, & Alford, 2012).

We propose an alternate psychological (vs. physiological) causal explanation for the link between AMED and risky attitudes, in line with research on marketing placebo effects. In prior studies on AMED consumption, people did not know what they were drinking. Yet, in real life, people know what they are drinking. Additionally, college students believe that adding an energy drink to alcohol increases alcohol intoxication, compared to drinking the same amount of alcohol straight (Marczinski, Fillmore, Bardgett, & Howard, 2011; Peacock, Bruno, & Martin, 2013). We therefore hypothesize that labeling an AMED cocktail to emphasize the presence of an energy drink will lead to higher perceived intoxication (*Hypothesis 1a*).

The moderating role of beliefs and experience

Placebo effects can be caused by explicit beliefs created by information or observation (the “expectancy theory” of placebo effects), but also by conditioned responses created by experience (the “conditioning” theory of placebo effects). Generally, these two sources reinforce each other (Stewart-Williams & Podd, 2004). In the pain domain for example, the placebo effects of analgesics last longer when they are induced by a large number of conditioning trials (Colloca, Petrovic, Wager, Ingvar, & Benedetti, 2010). However, it has not been tested if marketing placebo effects can rely solely on beliefs (for instance created by marketing and media communication), even when these beliefs are not backed by past consumption experiences.

AMED consumption is particularly suited to answer this question because of the dissociation between beliefs and experience. As reviewed earlier, people do *not* feel more intoxicated after consuming AMED vs. straight alcohol when they do not know what they are drinking (Benson et al., 2014). Yet, a majority of students explicitly believe that energy drinks boost the intoxicating effects of alcohol (Marczinski et al., 2011; Peacock et al., 2013). We therefore hypothesize that the placebo effects of labels on perceived intoxication are only moderated by the belief that energy drinks increase alcohol intoxication (*Hypothesis 1b*), and are independent of past intoxication experience. Supporting H1b, Shiv et al. (2005) found that prior consumption did not moderate the effect of energy drink pricing on people’s ability to solve puzzles. However, they only measured prior consumption of the specific energy drink brand used in the study, not prior experience with solving puzzles (with and without energy drink consumption).

Placebo effects of energy drink labels on attitudes and behaviors

Several studies have found that people explicitly associate alcohol intoxication with impulsiveness and risk-taking (e.g. Corazzini, Filippin, & Vanin, 2014; Fromme, Katz, & D’Amico, 1997a; Fromme, Katz, & Rivet, 1997b) as well as with sexual disinhibition (George & Stoner, 2000; Hull & Bond, 1986). For instance, men feel more self-confident when talking to women when they believe that they have consumed alcohol (Bègue, Bushman, Zerhouni, Subra, & Ourabah, 2013). Although people do associate alcohol intoxication with impulsiveness, they also associate it with cognitive and motor impairment, such as decreased reflexes. This is why studies consistently find that higher perceived intoxication (holding actual intoxication constant) leads to lower intentions to drive (Beirness, 1987; Quinn & Fromme, 2012).

We hypothesize that emphasizing the presence of an Energy Drink in an AMED cocktail will increase risk-taking (*Hypothesis 2a*). We further expect that this effect will be stronger among people who jointly believe that energy drinks increase alcohol intoxication, and that alcohol intoxication increases impulsive decision-making (*H2b*).

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