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A new paradigm for credibly administering placebo alcohol to underage drinkers

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HIGHLIGHTS

- We created a new procedure for administering placebo alcohol.
- The primary methodological innovation was the inclusion of a confederate.
- We developed a funnel debrief for measuring deception.
- We observed a 90.0% deception rate.
- Most participants were under the legal drinking age.

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ABSTRACT

Background: The primary goal of this study was to establish a paradigm for credibly administering placebo alcohol to underage drinkers. We also sought to create a new, valid procedure for establishing placebo alcohol believability.
Method: Participants were 138 American college students (66.7% female) predominantly (90.0%) under the legal drinking age. Groups of 2–3 participants and one same-sex confederate consumed mixed drinks, purportedly containing alcohol, ad-lib in a naturalistic bar-laboratory for 20 min. All beverages, however, were non-alcoholic but we used visual, olfactory, and taste cues to maximize placebo credibility. Also, the confederate made two scripted statements designed to increase the perception of drinking real alcohol. After the drinking portion, participants responded to survey items related to alcohol consumption and intoxication. Next, they were individually debriefed, with open-ended responses used to make a determination of whether the participant was deceived with respect to placebo alcohol.
Results: All participants estimated consuming some amount of alcohol. However, using a more conservative criteria for estimating alcohol believability based on the debrief, 89.1% of participants were classified as deceived. Deceived participants were much more likely to estimate having a positive blood alcohol content and to say that their current level of intoxication was typical given the amount of alcohol consumed than non-deceived participants.
Discussion: Credibly administering placebo alcohol to underage drinkers is possible. This approach carries great potential for future laboratory work. In addition, the methodology used here to classify participants as deceived or not deceived appears valid based on self-reported BAC estimation and intoxication levels.

1. Introduction

Placebo alcohol has been widely used in experimental studies for participants of legal drinking age. It is almost exclusively administered as an experimental control condition to disentangle the pharmacological and psychological effects of alcohol administration on a range of emotions and behaviors, such as: stress (Sayette, Smith, Breiner, & Wilson, 1992), sexual risk taking (George et al., 2009), panic (Kushner et al., 1996), and aggression (Chermack & Taylor, 1995; Lang, Goeckner, Adesso, & Marlatt, 1975). To our knowledge, placebo alcohol consumption has only been used once solely as a dependent variable (Morrison, Noel, & Ogle, 2012), even though this approach has great potential for laboratory studies, particularly among underage drinkers who cannot legally consume alcohol. Whether used as an independent or a dependent variable, it is crucial that placebo alcohol beverages are convincing, otherwise internal validity is severely compromised. In spite of this, relatively little attention, particularly recently, has been given to the procedures used to administer placebo alcohol

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and evaluate the credibility of placebo administration. Below, we briefly summarize this body of research. Ultimately, the goal of the current study is to propose a novel paradigm for administering placebo alcohol, which has great utility for research involving underage drinkers.

1.1. Placebo alcohol procedures

Various types of placebo alcoholic beverages have been studied. Although some research supports non-alcoholic beer (Corcoran & Segrist, 1993; Keane, Lisman, & Kreutzer, 1980; Martin, Earleywine, Finn, & Young, 1990) or placebo gelatin shots as credible (Ralevski et al., 2006), most studies have used mixed drinks. With these beverages, participants are led to believe that liquor is mixed with juice or soda, although no alcohol is actually given. As reviewed at length elsewhere (Marlatt & Rohsenow, 1980; Martin & Sayette, 1993), a number of administration strategies have been suggested to enhance credibility, such as: taste/olfactory cues; chilling beverages; mixing drinks in front of participants with real liquor bottles that actually hold flattened tonic water; engaging in a distracter task that focuses participants away from introspective cues; adding strong flavoring; using a sham breathalyzer test; and having participants use mouthwash prior to consumption. Even though these procedures are strongly recommended (Marlatt & Rohsenow), they are infrequently followed. For instance, in one review of alcohol administration research (Breslin & Sobell, 1999), only 8% of placebo studies reported having participants view an experimenter mix drinks, and only 23% reported providing olfactory cues.

While past research has focused on the physical context when trying to increase placebo alcohol credibility, to our knowledge, no work has studied the social context. In particular, there is a long tradition of research that suggests that people are heavily influenced by the judgments of others (e.g., Asch, 1956; Cialdini & Griskevicius, 2010). Drawing on this body of work, we propose that using an experimental confederate who convincingly behaves as though he/she were drinking real alcohol could influence study participants into believing the same.

1.2. Manipulation checks and deception rates

Even though a great deal of experimental research has been conducted using placebo alcohol administration, there is no "gold standard" for determining whether participants were actually deceived. This is a critical factor to address, since research indicates that placebo alcohol is not always believable. One meta-analysis (Schlauch et al., 2010) of 44 alcohol administration studies with both alcohol and placebo conditions found that subjective intoxication and estimated number of drinks consumed was much lower among those in the placebo condition as compared to those in the alcohol condition.

Manipulation checks designed to assess placebo credibility also vary widely. One common approach is to ask participants whether or not they received alcohol during the experiment, with those indicating "yes" considered deceived. Using this dichotomous criterion, deception rates in published studies have ranged from 59% to 100% (Abrams & Wilson, 1979; Gilbertson, Prather, & Nixon, 2010; Kreusch, Vilenne, & Quertemont, 2013). Other studies have evaluated placebo deception by asking participants to estimate how much alcohol they consumed, or the alcohol content of their drink. Using these indices, placebo credibility was considered to be demonstrated if participants estimated that they drank any amount of alcohol, or if they estimated their drink had an alcohol content above 0%. At least two published studies employing these criteria have observed 100% rates of deception (Fillmore, Carscadden, & Vogel-Sprott, 1998; Morrison et al., 2012).

One concern about the methods described above for evaluating placebo alcohol credibility is that participant responses may be influenced by experimenter demand (Orne, 1962). To be classified as non-deceived, participants have to say they did not get alcohol after being informed by the experimenter that they did. To explore this, some studies have used an alternative approach in which the researcher informed participants at the end of an experiment that some people received alcohol while others actually received a non-alcoholic beverage despite being told it contained alcohol. Participants were then asked which condition they believed they were in. Those who thought they received alcohol were classified as deceived, and this procedure has yielded deception rates of 58–60% (Knight, Barbaree, & Boland, 1986; Martin et al., 1990). While this approach does minimize experimenter demand, it may be overly conservative. During the study, it is possible that people believed the alcohol was real, but responded otherwise since the experimenter voluntarily suggested they may have received a placebo (see Martin & Sayette, 1993).

As such, a middle ground between the more conservative (Knight et al., 1986; Martin et al., 1990) and less conservative (e.g. Abrams & Wilson, 1979; Fillmore et al., 1998) manipulation checks may be appropriate. For example, some participants may think they received less alcohol than told by an experimenter, yet believe that some alcohol was still consumed. Sher, Bartholow, Peuser, Erickson, and Wood (2007) reported that participants assigned to alcohol (target BAC .08) reported consuming an average of 4.80 ($SD = 1.67$) drinks versus an average of 2.55 ($SD = 1.48$) for those in the placebo group. To better capture where participants fall on this continuum, there is a need for the use of more nuanced approaches, such as a funnel debrief, where an experimenter carefully probes participants for suspicion on study deception (Bargh & Chartrand, 2000; Wilson, Aronson, & Carlsmith, 2009). Due to it's gradual nature, funnel debriefs, which are widely used in Social Psychology, minimize the chance a participant is not disclosing their true impression of the study because he/she is placating the experimenter or embarrassed to look gullible (Wilson et al., 2009). Additionally, funnel debriefs minimize the possibility of emotional harm by allowing an experimenter to explain study deception (an important tool frequently used in experimental work), and address any participant concerns.

1.3. Current study

The current study is part of a broader investigation with two primary goals: 1) to develop a new approach for credibly administering placebo alcohol as a dependent variable to underage college students; and 2) to examine the effect of anticipatory social anxiety on ad-lib placebo alcohol consumption in a bar-laboratory. Results related to the latter goal are presented elsewhere (Bernstein & Wood, in preparation). Here, we focus on the methodological aspect of the study (goal one). Participants in groups of two or three, along with one confederate were given the opportunity to drink placebo alcohol ad-lib in a naturalistic bar-laboratory. To assess placebo credibility, we used a novel manipulation check consisting of a brief semi-structured interview during a funnel debrief.

There were two primary aims for the present study: Aim 1 was to determine the rate of placebo alcohol believability with our approach. Aim 2 was to assess the validity of our manipulation check procedure by comparing participants classified as deceived and non-deceived. A tertiary aim was to examine whether placebo alcohol credibility was related to age, gender, quantity of typical alcohol consumption outside the laboratory, or alcohol consumption consumed during the experiment.

2. Method

2.1. Participants and recruitment

Participants were recruited from 100- and 200-level psychology classes[2] in exchange for class credit at a medium-sized New England public university. Announcements were made for a study examining the effects of "alcohol on language fluency." Interested students were

[2] One participant was also recruited from a 100-level gender studies class.