

Running head: NORMS, SELF-AFFIRMATION, AND SSB

The Effects of Social Norms and Self-Affirmation on Changes in Sugar-Sweetened Beverage
Consumption

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NORMS, SELF-AFFIRMATION, AND SSB

Abstract

The relative efficacy of a social norms and a self-affirmation intervention for motivating decreased sugar-sweetened beverage (SSB) consumption was examined. Participants (143 college students, 83% female) were randomly assigned in a 3(risks vs. norms vs. risks + norms) x 2(control vs. self-affirmation) design. Future SSB consumption intentions were assessed immediately. Preparations to alter consumption (e.g., reading labels for sugar content) and consumption changes were assessed two-weeks later. The results demonstrated that the affirmed participants reported significantly greater and marginally more frequent preparatory behaviors if they had received the risk information, relative to only the norms information, whereas controls reported greater intentions and more frequent preparatory behaviors if they had received the norms information ($p = .003$ and $p = .10$ for intentions and preparations, respectively). Also, 78% of norms participants, compared to only 32% of risk and 44% of combined condition participants, had reduced SSBs at follow-up ($p = .001$).

NORMS, SELF-AFFIRMATION, AND SSB

The Effects of Social Norms and Self-Affirmation on Changes in Sugar-Sweetened Beverage Consumption

There is increasing concern about the health risks of added dietary sugar, particularly when consumed in beverages that contain no essential nutrients (e.g., sodas). The purpose of this experiment was to examine the relative and combined efficacy of a social norms intervention and a self-affirmation manipulation for motivating decreases in sugar-sweetened beverage (SSB) consumption among young adults.

Social Norms

Cialdini, Reno, and Kalgren (1990) distinguished between two types of social norms: injunctive (e.g., what should be done) and descriptive (e.g., what others actually do). Both types of normative information have been shown to influence a variety of beliefs and behaviors (e.g., recycling). Previous literature provides evidence of the effectiveness of descriptive and injunctive norms interventions in reducing a variety of health risk behaviors such as alcohol use, smoking, drug use, and excessive sun exposure (Mattern & Neighbors, 2004; Mahler, Kulik, Butler, Gerard, & Gibbons, 2008).

Self-Affirmation

Health promotion messages generally include information about the health consequences of the targeted risk behavior (e.g., sun exposure can cause skin cancer; therefore, sunscreen should be used). Self-Affirmation Theory suggests that a defensive reaction can occur when the health message threatens an individual's personal self-integrity (Hardeman et al., 2002). Research in a variety of health domains (e.g. sun protection, tobacco and alcohol consumption) indicates that participants who undergo a self-affirmation manipulation—designed to bolster self-

NORMS, SELF-AFFIRMATION, AND SSB

integrity—become more receptive to the health risks message (Armitage, Harris, & Arden, 2011; Harris, Mayle, Mabbott, & Napper, 2007; Sherman, Nelson, & Steele, 2000).

Thus, previous work has found that correction of misperceived norms regarding health risk behaviors can result in decreases in such risk behaviors and, separately, that a self-affirmation manipulation can increase receptiveness to health messages. However, it appears that no previous research has tested the efficacy of either a social norms intervention or a self-affirmation manipulation in the context of a message about the health risks of sugar-sweetened beverage (SSB) consumption. Moreover, there is a dearth of literature examining the combined efficacy of self-affirmation and the correction of misperceived social norms in health contexts. The purpose of this experiment was to investigate the separate and combined efficacy of a self-affirmation manipulation and a social norms intervention for reducing sugar-sweetened beverage consumption. One might assume that the combination of two interventions, that have demonstrated efficacy independently, would result in a more powerful, positive effect. However, in the case of these two particular interventions, it is possible that bolstering self-integrity with an affirmation manipulation might weaken the efficacy of a norms intervention. That is, individuals' whose self-integrity has been enhanced might be (temporarily) less impacted by what their peers are doing or approve of doing.

Method

Participants

Participants were 143 college students at California State University San Marcos (83% female) ranging in age from 18 to 35 years ($M = 20.23$, $SD = 2.51$). The participants described their racial/ethnic background as Asian (9.1%), Pacific Islander (0.7%), Africa-American (4.9%),

NORMS, SELF-AFFIRMATION, AND SSB

Hispanic (46.9%), Caucasian (32.9%), Multi-Ethnic (4.2 %), Other (1.4%). Although there was a gender disparity, it was consistent with the psychology student population at CSUSM.

Materials

Demographics and Baseline Behaviors. Demographic information (e.g., age, gender, ethnicity), current beverage consumption practices (checklist form), and participants' perceptions of their peers' sugary beverage consumption practices were assessed at baseline.

Directed Positive Thinking Task. A standardized and validated method of enhancing self-integrity was used (Harris et al., 2007). Specifically, the task requires participants to spend 2 minutes listing their personal strengths. A control version of the task requires participants to list all of the buildings they pass by on their way home from campus.

SSB Risks Information Card. A laminated card that contains information about the potential health risks of the consumption of sugar-sweetened beverages was created. For example, the card included information about the number of teaspoons of sugar contained in a typical 12 oz. can of soda and about the role that sugar consumption may play in obesity and Type II diabetes.

Social Norms Information Sheet. The social norms information sheet provided each participant with a direct comparison of their perceptions of their peers' sugary beverage consumption habits (taken from the baseline measure) to the actual reported sugary beverage consumption habits of over 200 CSUSM college students who participated in a previous survey conducted during the Fall 2014 term. This sheet indicated that a large majority of CSUSM students thought it was important to, and were making efforts to, limit SSB consumption.

Intentions. The intentions section asked the participants to indicate any planned changes in their sugary beverage consumption. For example, "I plan to try to minimize my sugar sweet-

NORMS, SELF-AFFIRMATION, AND SSB

ened drink consumption” and “ I plan to avoid adding sugar when I drink coffee or tea.” There were 9 intentions items and each was rated on a 1 = *strongly disagree* to 5 = *strongly agree* scale.

Follow-up Measures. At follow-up, participants were asked to complete measures assessing current beverage consumption practices in a checklist form (e.g., Gatorade, sodas, teas, water), and a rating scale to assess behaviors that might indicate preparation to alter SSB consumption. The following are sample questions assessing preparations to change behaviors, “During the past two weeks... how often did you browse the diet soda or water section?” “... how often did you look at the labels on the drinks you were about to consume or drink?” Each item was rated on a 0=*not at all* to 5=*very frequently* scale.

Procedure

Participants were recruited via the Psychology Department Human Participant Pool and run individually. After providing informed consent, each participant completed the demographic and baseline behaviors measure. Participants were then randomly assigned to one of 6 conditions in a 3(Norms Condition: SSB risks info. only vs. Norms info. only vs. SSB risks info. + Norms information) x 2(Self-affirmation: control task vs. self-affirmation task) design. Next, future SSB consumption intentions and manipulation checks were assessed. Participants were then probed for suspicion about the study (none was detected), partially debriefed, scheduled to return in two weeks for a follow-up, and thanked. Those who returned at follow-up (~50%) completed the measures designed to assess SSB consumption as well as behaviors that might indicate preparation to alter SSB consumption. Finally, a post-experimental inquiry was conducted to probe for suspicion (none was detected), and the participant was fully debriefed and thanked.

NORMS, SELF-AFFIRMATION, AND SSB

Results

Results demonstrated a significant interaction between self-affirmation manipulation and norms information on participants' intentions to limit themselves to no more than two SSBs per day, $F(2, 137) = 6.08, p = .003$ (See Fig. 1). Specifically, for those in the affirmation condition, their intention to limit their SSB consumption was greater if they received the health risk information than if they only received the norms information. However, for those in the control condition, their intentions were greater if they received the norms information than if they only received the health risk information. A similar, marginally significant, interaction pattern was observed at follow-up with regard to preparatory behaviors, $F(2, 73) = 2.37, p = .10$ (See Fig. 2). That is, among the affirmed participants, preparatory behaviors were more frequent if they had received the health risk information relative to only receiving the norms information, whereas among control participants' preparatory behaviors were more frequent if they had received the norms information as opposed to only the health risk information. Finally, a significant norms condition effect was obtained for the percentage of participants who reduced their reported SSB consumption from baseline to the two-week follow-up, $F(2, 73) = 7.60, p = .001$ (See Fig. 3). Specifically, 78% of those who had only received the norms information reported having consumed fewer SSBs at follow-up, relative to the baseline beverage checklist, whereas only 32% of those who only received the risk information and 44% of those in the combined condition did so.

Discussion

These findings suggest that although previous literature has demonstrated that self-affirmation and social norms interventions, separately, can be efficacious for reducing health risk behaviors, combining these interventions may not be advisable (Mahler et al., 2008; Mattern & Neighbors, 2004). That is, consistent with previous research we found that the self-affirmation

NORMS, SELF-AFFIRMATION, AND SSB

manipulation appeared to increase participants' receptiveness to the SSB risk information (Armitage et al., 2011; Sherman et al., 2000). However, adding social norms information appeared to reduce the efficacy of the self-affirmation manipulation. In contrast, the social norms information did appear to have beneficial effects on future SSB consumption intentions and preparatory behaviors for those who had not undergone self-affirmation. Thus, it is possible that increasing self-integrity may have bolstered participants' confidence in their own choices and lowered their concern about what others approve of or what others are doing.

This study had some limitations that warrant consideration. One major limitation was the low follow-up rate (~50%). It is difficult to know how the characteristics and behaviors of those who chose to return for follow-up may differ from those who did not, and from the general population. One way to correct this limitation in future studies may be by doing phone follow-ups, which has been found to have a higher follow-up rate (Mahler et al., 2008). Another limitation was that we only collected data from one college campus; therefore, our results may not generalize to other populations. A way to correct this limitation is to collect data from diverse settings (e.g., other universities/campuses, community).

Limitations notwithstanding, this study also had some strengths. First, the experimental design of our study strengthens its internal validity, thereby allowing for causal conclusions. Second, the inclusion of a follow-up allowed us to assess the efficacy of the intervention for actually altering behavior. Many health risk studies measure only the intentions of the participants, making it difficult to know whether these interventions actually affect future behavior. We made the effort to do a follow-up in order to measure actual behavioral changes as a result of the intervention.

NORMS, SELF-AFFIRMATION, AND SSB

In the future, we would like to replicate this study in other settings (e.g., community) to see whether the findings generalize to other populations. Additionally, we would like to examine methods of increasing the impact of the intervention to determine whether greater behavioral changes in decreasing SSBs can be produced. If the intervention is found to be effective, it may improve the health behaviors of some of the participants. Finally, to the best of our knowledge this is the first time that social norms and self-affirmation have been studied together, based on the results of this study we recommend they should not be used together.

NORMS, SELF-AFFIRMATION, AND SSB

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NORMS, SELF-AFFIRMATION, AND SSB

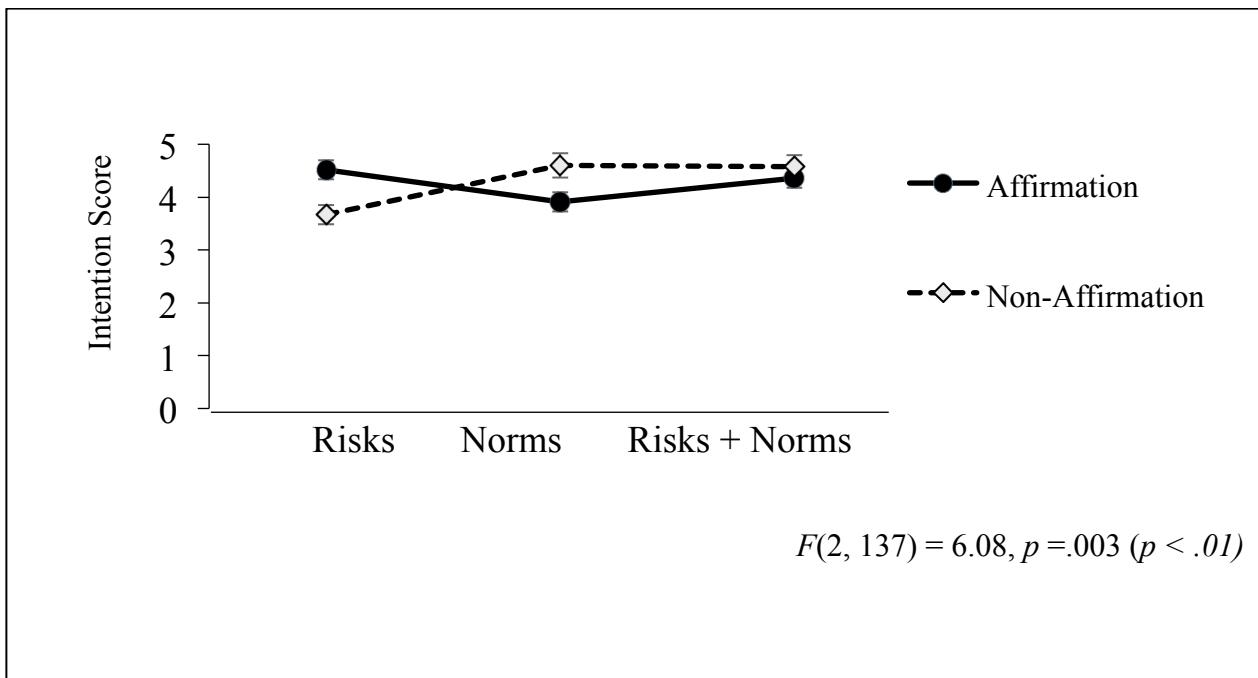


Figure 1. In the affirmation condition, intentions to limit SSB consumption were greater if health risk information had been received than if only the norms information was received, whereas, in the control participants' intentions were greater if they received the norms information than if they only received the health risk information. The figure error bars attached to each column represent standard errors.

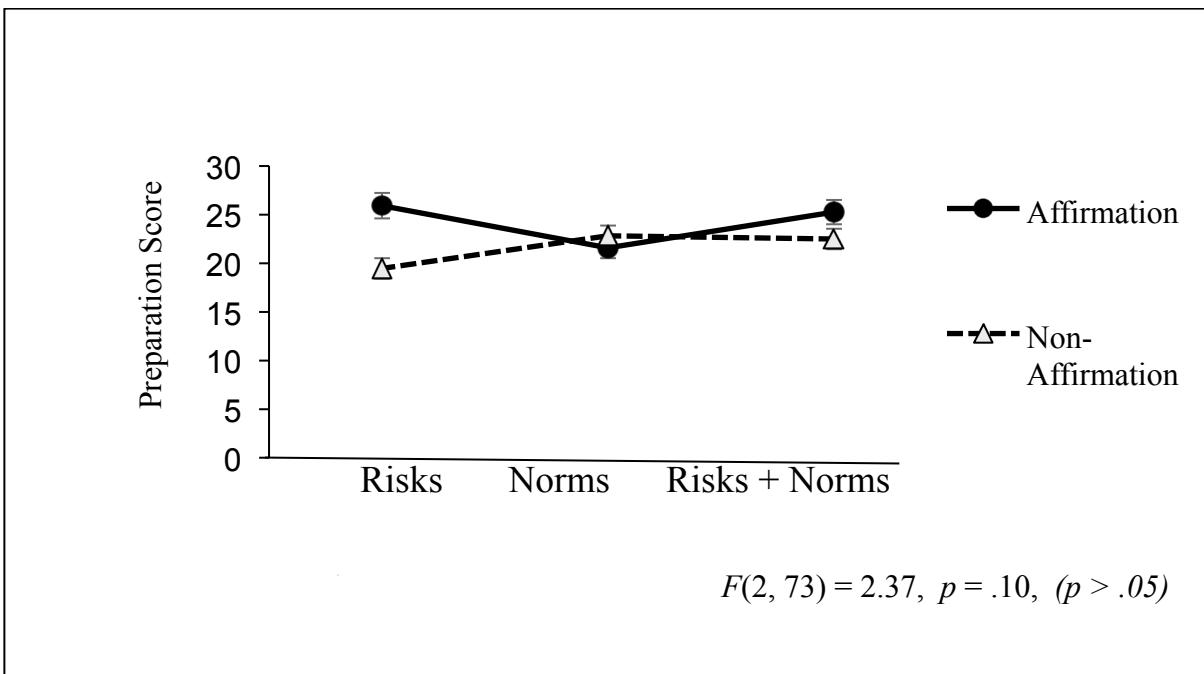


Figure 2. Among the affirmed participants, preparatory behaviors relative to only receiving the norms information tended to be more frequent if they had received the health risk information, whereas, control participants reported more frequent preparatory behaviors if they had received the norms information as opposed to only the health risk information. The figure error bars attached to each column represent standard errors.

NORMS, SELF-AFFIRMATION, AND SSB

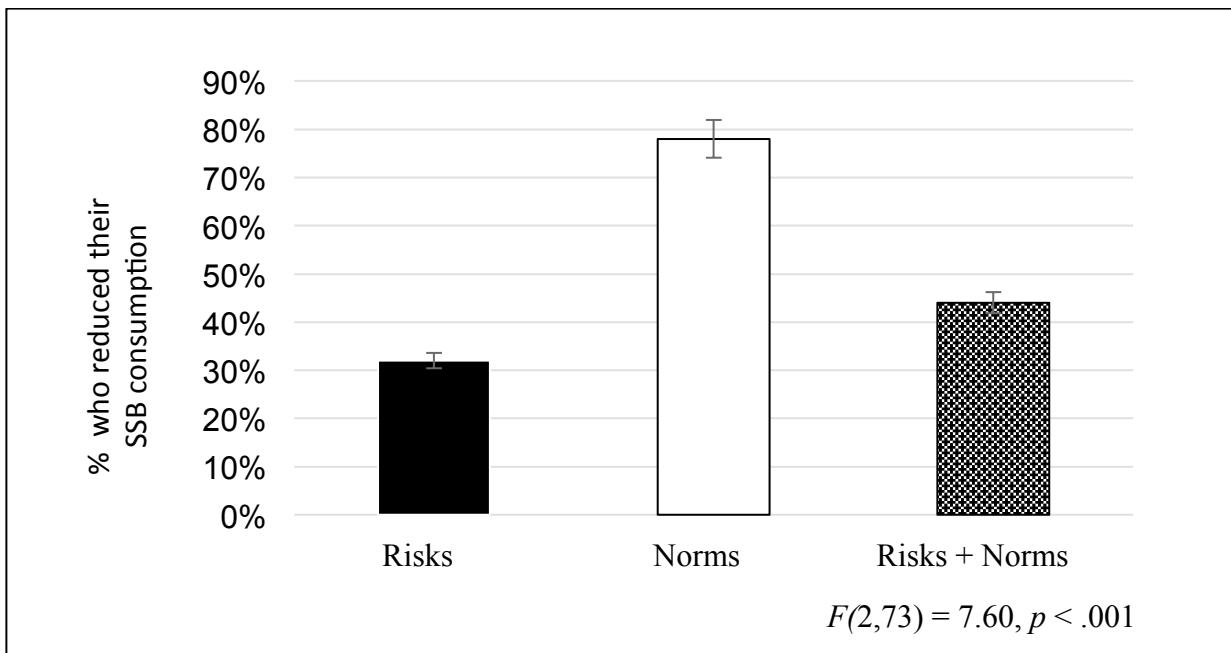


Figure 3. A greater percentage of those who had only received the norms information reported having consumed fewer SSBs at follow-up than Baseline (78%) relative to those who only received the health risk information (32%) and those in the combined condition (44%). The figure error bars attached to each column represent standard errors.