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Descriptive Norms: How Specificity Versus Generality Affects Planned Drinking Behavior

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Abstract
We investigated the effect of specificity versus generality (provinciality) of descriptive norms regarding drinking behavior for light, moderate, and heavy drinkers. We employed a 3 (condition: United States adult, United States undergraduate, or Washington University undergraduate) x 3 (drinker type: light, moderate, or heavy) between-subjects design. Participants were told that the average person in the appropriate setting level consumes four alcoholic drinks per week and then were asked how many alcoholic drinks they had consumed in the last seven days and how many alcoholic drinks they planned to consume in the next seven days. As expected, there was a main effect of drinker type such that heavy drinkers planned to reduce their alcohol consumption more than moderate drinkers, who in turn planned to reduce consumption more than light drinkers, who actually planned to increase consumption. There was no main effect of condition and no interaction between condition and drinker type. There were several limitations to the current study, like the small biased sample employed, that should be addressed in future research on this topic.

Introduction
Heavy drinking is prevalent among college students and can be highly problematic. It can lead to health issues, violence, and bad decisions like unplanned sexual activity (Wechsler, Davenport, Dowdall, Moeykens, & Castillo, 1994). Descriptive norms, which specify the prevalence of behaviors, and injunctive norms, which regard the acceptability of behaviors, have an effect on concurrent drinking behavior (Cialdini, 2003; Larimer, Turner, Mallett, & Geisner, 2004).

Descriptive norms generally involve perceptions of how common certain behaviors are, rather than being based on empirical data. This can lead to excessive alcohol use among college students, since drinking is prevalent on college campuses. In addition, perceptions of other students’ drinking behavior often indicate pluralistic ignorance such that individuals tend to overestimate others’ alcohol consumption (Baer & Carney, 1993; Baer, Stacy, & Larimer, 1991; Borsari & Carey, 2003; Prentice & Miller, 1993; American College Health Association, 2012). When individuals believe others are drinking a lot, this leads to injunctive norms indicating general acceptance of excessive alcohol consumption, which have been shown to predict future drinking behavior, in addition to current and future alcohol-related consequences and dependency symptoms (Larimer et al., 2004). In fact, despite the prevalence of heavy drinking among many college students, a significant amount of college students drink moderately or not at all (American College Health Association, 2012).

Knowledge of accurate descriptive norms, as opposed to perceived descriptive norms, has been shown to successfully reduce alcohol consumption among college students (Haines, 1998). Although these results are impressive, it would nevertheless be useful to improve upon them. Normative appeals have been demonstrated to be most effective when applying most specifically to the given setting (provincial norms; Goldstein, Cialdini, & Griskevicius, 2008). For example, hotel patrons were more likely to reuse their towels when told that most guests who had stayed in their specific room had reused their towels than when told that guests who stayed in the whole hotel had reused their towels (Goldstein et al., 2008). Thus, this study examines the effect of descriptive norms of varying specificity to the setting (provinciality) of Washington University, where the study was conducted. The descriptive norm employed was that either adults in the United States,
undergraduates in the United States, or Washington University undergraduates (the three conditions) consumed an average of four drinks per week. This specific norm was chosen since the average individual in the three different conditions have been shown to drink approximately four drinks per week on average (American College Health Association, 2012; Guenther, Bowman, & Goldman, 2010). In addition, participants were classified as light, moderate, or heavy drinkers, since previous research has indicated that response to descriptive norms might depend on initial level of behavior (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007).

We have three hypotheses for this study based on the increased effectiveness of more provincially relevant norms found by Goldstein et al. (2008). On the basis of the findings of Schultz et al. (2007), our first hypothesis is that there will be a main effect of drinker type, such that heavy drinkers will plan to reduce alcohol consumption more than moderate drinkers, who will in turn plan to reduce alcohol consumption more than light drinkers, who might even plan to increase their consumption. Our second hypothesis is that there will not be a main effect of condition, given the differential effects we expect it to have on different types of drinkers. Our third hypothesis is that there will be an interaction between condition and drinker type. Specifically, we hypothesize that heavy and moderate drinkers will plan to reduce alcohol consumption more in the Washington University undergraduate condition than in the United States undergraduate condition, where in turn heavy and moderate drinkers will plan to reduce alcohol consumption more than in the United States adult condition. We hypothesize that the opposite pattern will occur for light drinkers: they will plan to decrease their alcohol consumption less (or increase it more) in the Washington University undergraduate condition than in the United States undergraduate condition, where in turn they will plan to decrease their alcohol consumption less (or increase it more) than in the United States adult condition.

**Method**

**Overview**

This study had a 3 (condition: United States adult, United States undergraduate, or Washington University undergraduate) x 3 (drinker type: light, moderate, or heavy) between-subjects design. Drinker type was based on the answer to the first question: “How many drinks did you consume in the last 7 days?”, since this question provided baseline information about alcohol consumption. Participants were classified as light drinkers if their answer was between 0 and 4, moderate drinkers if their answer was between 5 and 10, and heavy drinkers if their answer was 11 or more. Participants were not informed of this method of classification.

**Participants**

Participants were 131 individuals approached by an experimenter on the Washington University Danforth Campus; they were not compensated for their time. This convenience sample included 54 males, 75 females, and 2 individuals who did not identify as either male or female. Data were excluded for several reasons. First, we excluded data from participants that did not identify as either male or female (n = 2), since the sample size was too small to make accurate generalizations. Second, we excluded data from participants that did not identify as male or female (n = 2), since the sample size was too small to make accurate generalizations. Second, we excluded data from participants that were not Washington University undergraduates (n = 3), since the provinciality of the settings used in this
study would be different for those other than Washington University undergraduates. Third, we excluded data from participants that did not consume any alcoholic drinks in the last seven days and did not plan to consume any alcoholic drinks in the next seven days (n = 33), since the target of the manipulation was college students who drink alcohol; data was also excluded if participants did not provide answers for both of those questions (n = 3), since this did not provide enough information on the dependent variable (the planned reduction in alcohol consumption). Fourth, if, when asked if they read the directions at the top of the page before answering the questions, participants either said "no" or did not answer (n = 35), we excluded their data since they would (or might) not have been exposed to the independent variable. Finally, data would have been excluded if participants had known what the study was measuring, due to potential demand characteristics, but no participants correctly identified the purpose of the study. Once all exclusions were applied, the sample consisted of 19 males and 34 females. Data regarding participant age was not gathered.

Materials

Participants were given a paper questionnaire with the following instructions at the top: "I am interested in the frequencies of certain behaviors among ____. For example, the average ____ consumes an average of 4 drinks per week. Please answer the following questions regarding the frequencies of your behavior." There were three different conditions, so that the above blanks said "adults in the United States" and "adult in the United States," "college undergraduates in the United States" and "college undergraduate in the United States," or "Washington University undergraduates" and "Washington University undergraduate."

The first two fill-in-the-blank questions, regarding alcohol consumption, asked "How many drinks did you consume in the last 7 days?" and "How many drinks do you plan to consume in the next 7 days?". The next two fill-in-the-blank questions, regarding sleep, asked "On average, how many hours of sleep do you get per night during the week?" and "On average, how many hours of sleep do you get per night on the weekend?". The final pair of fill-in-the-blank questions, regarding exercise, asked "How many times did you exercise in the last 7 days?" and "How many times do you plan to exercise in the next 7 days?". The following question was multiple choice; it asked "Which of the following best describes you?" and offered the options: "a. Washington University undergraduate student, b. Washington University graduate student, c. Other ______". The next fill-in-the-blank question asked "What is your gender?". The final question, which gave eight full lines to write an answer, asked "What do you think this study was about? If you do not know, just say you do not know." See Figure 2 for a copy of the questionnaire. Questions three through six (the questions regarding sleep and exercise) were distractor questions, meant to disguise the purpose of the study and decrease demand effects.

Procedure

Participants were handed the questionnaire and given the following instructions: "Please be sure to read the directions at the top of the page. 'Drinks' refers to alcoholic drinks." If asked, the experimenter specified that one drink is the equivalent of one 12 ounce beer, one 1.5 ounce shot of liquor, or one 4-5 ounce glass
of wine ("What is a "drink"?,” n.d). Once participants had completed the questionnaire, the experimenter asked them whether or not they had actually read the directions before completing the survey. The experimenter recorded their response at the bottom of their questionnaire. When the experimenter administered the questionnaire to multiple people at one time, she asked them to turn over their questionnaire when they were done. Once everyone had finished, the experimenter asked all participants to write at the bottom of their questionnaire whether or not they had actually read the directions before completing the questionnaire, highlighting the need for honesty.

Results

Data were analyzed using a 3 (condition: United States adult, United States undergraduate, or Washington University undergraduate) x 3 (drinker type: light, moderate, or heavy) between-subjects analysis of variance (ANOVA). Data from 19 males and 34 females were included in analyses. Since there was not a significant difference between the responses of males and females $F(1, 47) = 2.81, p = .100$, results were not analyzed separately by gender. There was a main effect of drinker type on planned decrease in alcohol consumption (the dependent variable), $F(2, 44) = 12.52, p < .001$. Post hoc comparisons indicated that heavy drinkers ($M = 8.85, SD = 10.17$) planned to reduce their alcohol consumption more than moderate drinkers ($M = 1.11, SD = 3.45$), $p = .002$. Moderate drinkers planned to reduce their alcohol consumption more than light drinkers ($M = -2.00, SD = 4.76$), even though this difference did not quite reach significance, $p = .053$, ns. Heavy drinkers planned to reduce their alcohol consumption more than light drinkers, $p < .001$. There was not a main effect of condition, $F(2, 44) = .81, p = .452$, ns. Although the interaction between condition and drinker type did not quite reach significance, $F(4, 44) = 2.24, p = .080$, if the sample size had been larger this effect would most likely have reached significance. The pattern that emerged indicates that heavy drinkers planned to reduce their alcohol consumption most in the Washington University undergraduate condition, 95% CI [7.95, 17.72], closely followed by the United States adult condition, 95% CI [2.42, 16.25], and planned to reduce their consumption least in the United States undergraduate condition, 95% CI [-3.49, 8.49]. Moderate drinkers planned to reduce their alcohol consumption only slightly in all three conditions, 95% CIs between [-4.35, 6.35]. Light drinkers planned to increase their alcohol consumption slightly in both the the United States adult and United States undergraduate conditions, 95% CIs between [-5.42, 3.21], and planned to increase their consumption considerably more in the Washington University undergraduate condition, 95% CI [-12.36, -0.39]. See Figure 1 for details regarding planned alcohol consumption as a function of condition and drinker type and Figure 3 for more detailed information regarding 95% confidence intervals.

Discussion

As expected, there was a main effect of drinker type, such that heavy drinkers planned to reduce their alcohol consumption more than moderate drinkers, who in turn planned to reduce their alcohol consumption more than light drinkers, who actually planned to increase their alcohol consumption. This can be explained by research indicating differential effects of normative messages depending on initial level of the relevant behavior (in this case, baseline amount of alcohol consumption;
Schultz et al., 2007). Normative messages tend to successfully reduce problem behavior of those initially at a high level (in this case, heavy drinkers). However, the same messages can produce a boomerang effect in those initially at a low level (in this case, light drinkers), ironically causing them to increase the rate of the problem behavior (Schultz et al., 2007). Also in line with our expectations, there was no main effect of condition, most likely due to the differential effects of condition on different types of drinkers.

The data partly supported our hypothesis that there would be an interaction between condition and drinker type. This interaction did not quite reach significance, most likely due to the small sample size, but we nevertheless analyzed the pattern of the data since it is likely that with more participants this interaction would have reached significance. We expected that both heavy and moderate drinkers would plan to reduce their alcohol consumption more in the Washington University undergraduate condition than in the United States undergraduate condition, and plan to reduce their consumption least in the United States adult condition. Heavy drinkers did plan to reduce their alcohol consumption most in the Washington University undergraduate condition, as expected, but contrary to hypotheses planned to reduce their consumption second most in the United States adult condition and reduce consumption the least in the United States undergraduate condition. There was quite a bit of overlap in the 95% confidence intervals for heavy drinkers in these conditions, however, so it is uncertain whether or not these conditions would be significantly different if the sample had been larger. Also contrary to our hypotheses, regardless of condition moderate drinkers planned to reduce their alcohol consumption only slightly (on average, by approximately one drink). This may be due to our definition of moderate drinkers (participants whose baseline consumption was between five and ten drinks in the past seven days). Since participants were told that the average person in their condition consumed an average of four drinks per week, in order to consume approximately the same amount themselves, they would not have to reduce their alcohol consumption by much. Thus, there was not much room for variability in the responses of moderate drinkers, reducing the likelihood of finding much difference in responses between conditions. Data did support our hypothesis that light drinkers would plan to reduce their alcohol consumption the most (or increase it the least) in the United States adult condition than in the United States undergraduate condition, and reduce it the least (or increase it the most) in the Washington University undergraduate condition. This is consistent with the boomerang effect of descriptive norms on people with a low baseline level of the described behavior (in this case, drinking) and with the idea that the more provincial the descriptive norms, the more effect they will have on future behavior (Schultz et al., 2007; Goldstein et al., 2008).

There were some limitations to the current study, mainly related to the employed sample and the formatting of the questionnaire. The sample was a convenience sample of Washington University undergraduates, with more females than males, which is not representative of the general population (Jones, 2010). In addition, the sample was biased further because data from participants who did not read the directions before responding to the questions could not be analyzed. It is possible that people who tend not to follow directions respond to descriptive norms differently than those who
tend to follow directions. Another issue was that the survey was not administered to all participants on the same day, since questions of interest asked how many drinks the participant consumed in the last seven days and planned to consume in the next seven days. Since Halloween and Thanksgiving occurred while we conducted this study, it is likely that participants drank more or less than they normally would, adding noise to the data and potentially limiting generalizability. Additionally, this study only examined self-reported past behavior and planned future behavior (also self-reported). It is possible that actual behavior might be affected in a different way than self-reported and planned behavior. The setting in which the study was administered and presence or absence of peers were not kept constant, which also may have biased the results. Additionally, the sample was too small to conduct a 3 (condition: United States adult, United States undergraduate, or Washington University undergraduate) x 3 (drinker type: light, moderate, or heavy) x 2 (gender: male or female) between-subjects design, which would have allowed us to look at how gender interacts with drinker type and provinciality of descriptive norms.

The current study leaves room for future research with other samples and altering the behaviors of interest. First, the current findings should be replicated using other samples. Just because setting specificity of descriptive norms affects the planned future behavior of Washington University undergraduates, it is possible that different populations would respond differently. Additionally, actual change in behavior should be examined, since it is possible that actual behavior would respond differently than self-reported and planned behavior. Also, baseline drinking level should be assessed with more than just one question about behavior over the last seven days in order to increase reliability. Since the sample was biased by a large number of participants not reading the directions despite being prompted to do so, future research should make sure all participants are actually exposed to the independent variable of interest. Another setting level that could be examined is a setting that does not apply to the population of interest (for example, using Saint Louis University undergraduate as a condition in the current study). Future research should also look at the effect of injunctive norms in addition to descriptive norms. Ideas of how people should behave could be examined as a subject variable, or they could be manipulated as an independent variable; future research should look at injunctive norms in both of these ways. Another variable that could be manipulated in future research is the source that provides the descriptive norm; for example, the difference between a reputable and non-reputable source could be examined. Another variable that could be manipulated is whether responses are public or private; self-monitoring might be a factor that would mediate this relationship (Snyder, 1987).

This study sheds light on how to reduce problem drinking on college campuses. For heavy drinkers, descriptive norms should apply to the most specific setting possible in order to reduce alcohol consumption as much as possible. In order to prevent an increase in alcohol consumption for light drinkers, descriptive norms should not be employed for this population. Since moderate drinkers plan to continue drinking moderately regardless of descriptive norms, and moderate drinking tends not to be overly problematic (Gunzerath, Faden, Zakhari, & Warren, 2004), exposure to descriptive norms is not necessary but would not be detrimental. Programs intended to reduce problem drinking should take this
information into account in order to be as effective as possible.

References


**Figure 1:** Planned reduction in alcohol consumption as a function of condition and drinker type.
Figure 2: Example questionnaire (populations: adults in the United States, undergraduates in the United States, or Washington University undergraduates)

Subject Number: ___________ Date Completed: ________________

I am interested in the frequencies of certain behaviors among [population]. For example, the average [population] consumes an average of 4 drinks per week. Please answer the following questions regarding the frequencies of your behavior.

- How many drinks did you consume in the last 7 days? ___________
- How many drinks do you plan to consume in the next 7 days? ___________
- On average, how many hours of sleep do you get per night during the week? ___________
- On average, how many hours of sleep do you get per night on the weekend? ___________
- How many times did you exercise in the last 7 days? ___________
- How many times do you plan to exercise in the next 7 days? ___________
- Which of the following best describes you?
  a. Washington University undergraduate student
  b. Washington University graduate student
  c. Other __________________________

8. What is your gender? ___________

9. What do you think this study was about? If you don’t know, just say you don’t know.

_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
_________________________________________________________________
**Figure 3:** 95% Confidence intervals for light, moderate, and heavy drinkers in each condition

<table>
<thead>
<tr>
<th>Condition</th>
<th>Drinker Type</th>
<th>Lower Bound</th>
<th>Upper Bound</th>
</tr>
</thead>
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<td>light drinker</td>
<td>-4.77</td>
<td>3.21</td>
</tr>
<tr>
<td>US adult</td>
<td>moderate drinker</td>
<td>-4.35</td>
<td>6.35</td>
</tr>
<tr>
<td>US adult</td>
<td>heavy drinker</td>
<td>2.42</td>
<td>16.25</td>
</tr>
<tr>
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<td>light drinker</td>
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<td>3.05</td>
</tr>
<tr>
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<td>moderate drinker</td>
<td>-3.81</td>
<td>5.24</td>
</tr>
<tr>
<td>US undergraduate</td>
<td>heavy drinker</td>
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<td>8.49</td>
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<td>light drinker</td>
<td>-12.36</td>
<td>-0.39</td>
</tr>
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<td>WU undergraduate</td>
<td>moderate drinker</td>
<td>-2.95</td>
<td>6.10</td>
</tr>
<tr>
<td>WU undergraduate</td>
<td>heavy drinker</td>
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<td>17.72</td>
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