Increasing Support for Alcohol-Control Enforcement Through News Coverage of Alcohol's Role in Injuries and Crime

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ABSTRACT. **Objective:** Prior research has shown that the proportion of news stories about violent crimes, car crashes, and other unintended injuries that mention the possible contributing role of alcohol is far lower than the actual proportion of alcohol-related crimes and unintended injuries. An experiment was conducted to test the hypothesis that inclusion of such mention can increase concern about alcohol risks and support for alcohol-control measures, which have elsewhere been shown to decrease alcohol-related problems in community settings. Methodologically, we provide a model for experiments permitting generalization across randomly selected message stimuli. **Method:** Sixty randomly selected local news stories on violent crime, motor vehicle crashes, and other unintended injuries from newspapers throughout the United States were manipulated into versions including or not including alcohol as a causative factor. Participants ($n = 785$) were drawn from a national online research panel representative of the U.S. population; 66% of panel members contacted agreed to participate. Data were analyzed using mixed-effect, multilevel models to permit generalization across message and participant variability. **Results:** Mention of alcohol in news stories increased support for enforcement of alcohol-control laws. **Conclusions:** Efforts to increase mention of alcohol as a causative factor in news reports of violent crime and unintended injury have the potential to increase public support for alcohol-control policies. (*J. Stud. Alcohol Drugs, 73,* 311–315, 2012)

PUBLIC HEALTH ESTIMATES INDICATE that more than 30% of fatalities because of violent crimes, motor vehicle use, and other unintended injuries are in part attributable to alcohol consumption (National Center for Statistics and Analysis, 2003; Smith et al., 1999). An effective way to reduce alcohol-related harms is through alcohol-control policies (Toomey and Wagenaar, 1999; Wagenaar and Perry, 1994). Media content can influence public support for such policies (Holder and Treno, 1997; Slater et al., 2009b; Wallack and Dorfman, 2001; Yanovitzky, 2002).

We examined whether exposure to news stories identifying alcohol as a causative factor in death or injury because of violent crimes, car crashes, or other mishaps would influence support for alcohol-control policies. We extended findings from a pilot study conducted with college students (Slater et al., 2009a), which indicated that effects of such coverage were contingent on student attentiveness to crime and accident news. We did so by manipulating breaking news stories randomly sampled from 2 years of U.S. local

newspaper coverage to include or not include mentions of alcohol as a causative factor. Stories were presented to members of a national online panel constructed to be representative of the U.S. population.

Mentions of alcohol's role in news coverage of injuries are proportionally lower than the actual prevalence of alcohol as a contributing factor—in newspapers, 7.3% for violent crime and 4.8% for unintended injury, respectively (on television, 2.6% and 1.5%, respectively; Slater et al., 2006). If, in fact, exposure to news coverage of alcohol as a causative factor in crime and other injuries influences public opinion and support for alcohol-control policies, then this underreporting poses a notable public health communication challenge.

We therefore propose that exposure to a news story that mentions alcohol as a contributing factor will influence policy support: Exposure to versions of news stories in which the contributing role of alcohol use is mentioned will increase support for alcohol-control policies compared with exposure to news stories in which no such mention is made.

Effects of crime or injury topic

It is possible that different story topics regarding different types of injuries may moderate effects of alcohol mentions in news stories. If not, of course, the findings are more robust. Therefore, we ask the following: Does the news story

topic (violent crime, motor vehicle crash, other unintended injury) moderate effects of the alcohol-as-causative-factor manipulation?

Method

Design

Overview. The present study is a 2 (alcohol as causal factor/no alcohol mention) × 3 (story topic: violent crime, car crash, other unintended injury) between-subjects experimental design. The Ohio State University Institutional Review Board approved the protocols.

Stimuli. Twenty stories for each topic were randomly sampled from a previously collected representative sample of U.S. local newspapers' injury coverage (see Long et al., 2005, for details regarding construction of this sample and Slater et al., 2009a, regarding coding procedures and reliability for identifying the story topic). Stories were used verbatim except for correction of typos and changing personally identifying information. Eligible stories had to be more than a news brief listing and not report on a celebrity, because such stories might already be familiar to participants.

Participants. Participants were recruited through the Knowledge Networks, Inc., online panel. The participation rate of panel members invited by email in our experiment was 66%.

This panel was recruited via a U.S. population random sample. About 21% of those contacted by Knowledge Networks agree to join their online panel; individuals without Internet access were provided access and/or web televisions to minimize selectivity biases associated with Internet access and computer ownership. Because of study length, participants were offered $5 in compensation beyond the usual incentives provided by Knowledge Networks.

We excluded 58 of the 843 participants who either completed the entire study in less than 8 minutes (pretests indicated that it was impossible to actually read the news article and provide responses to each question so quickly) or did not respond to the outcome measures. This left 785 participants available for analysis (49.8% male; M_{age} = 48.77 years, SD_{age} = 16.47; 76% White, 8.2% Black, 8.4% Hispanic, and 7.4% other or multiple races).

Procedure. Potential participants were sent a series of invitation emails with links to the survey. The survey began with the consent form, and then the experiment was presented. The story and level of the manipulation within the story were randomly assigned to each participant. Each story was read by between 11 and 14 participants. Because the unfamiliarity of reading a short news story in the context of an online study might lead to low comprehension at the first pass, the story was presented twice, first followed by filler items measuring evaluation of the news story (which participants were told was the study's main purpose) and,

second, followed by recall measures used to create the manipulation check (see the following).

Measures

Alcohol-control policy support. Our measures, derived in part from work by Wagenaar et al. (2000), had been developed via cognitive interviews and pretests with members of the general population (Slater and Rasinski, 2005). Seven questions asked participants to indicate their level of support for an existing policy or proposed policy on a 0 (*strongly oppose*) to 10 (*strongly support*) scale. A principal axis factor analysis revealed a two-factor solution. The first factor contained three items pertaining to enforcement of existing laws regarding serving intoxicated persons, sales to underage youth, and open containers, and the second factor contained four items pertaining to new laws restricting the number of bars and liquor stores, restricting advertising, and server liability. Scores were created by averaging responses within each factor (enforcement: Cronbach's α = .87, M = 8.24, SD = 2.17; new laws: Cronbach's α = .87, M = 5.61, SD = 2.81), with higher scores reflecting greater support for alcohol-control policies.

Manipulation checks and screening for potential covariates. We created three items for each story to assess story recall, one of the ostensible purposes of the experiment. One item included a choice regarding whether alcohol was a causative factor in the crime or injury. Ninety-eight percent of participants in the alcohol condition identified alcohol as a cause, whereas only 10% did so in the no-alcohol condition, $\chi^2(1) = 595.73$, $p < .001$, supporting the validity of the manipulation.

We also examined the effectiveness of the random assignment by testing for differences between experimental groups on attention to news, alcohol use (measured using quantity/frequency items), and demographics. No statistically significant differences were found. Age, gender, and alcohol use were selected as statistical controls because they showed fairly consistent associations with the outcome variables but were uncorrelated with the manipulation of alcohol-related information. Including them enhances the power of statistical tests of the key manipulation.

Data analysis. With appropriate adjustments to the estimation and inferential statistics produced by the nesting of participants within message-using multilevel modeling, we can generalize our findings to the population of messages sampled as stimuli in our study (see Hoffman and Rovine, 2007, for a recent discussion of the application of multilevel models to experiments and Southwell, 2005, for an example involving mediated messages). The statistical model is

$$\text{Level 1: } Y_i = \beta_{0j} + \beta_{1j}ALCOHOL_i + \beta_2ATTN_i + \beta_3SEX_i + \beta_4AGE_i + \beta_5USE_i + r_i$$

Level 2: $\beta_{0j} = \gamma_{00} + \gamma_{01}OA_j + \gamma_{02}VC_j + u_{0j}$
$\beta_{1j} = \gamma_{10} + u_{1j}$,

which, when condensed into mixed-model form, is

$$Y_i = (\gamma_{00} + \gamma_{01}OA_j + \gamma_{02}VC_j) + (\gamma_{10} + u_{1j})ALCOHOL_i$$
$$+ \beta_2ATTN_i + \beta_3SEX_i + \beta_4AGE_i + \beta_5USE_i + u_{0j} + r_i,$$

where i is the participant and j is the story. In this model, $(\gamma_{00} + \gamma_{01}OA_j + \gamma_{02}VC_j)$ captures systematic variation in the average outcome attributable to the topic of the story. OA (other accidents) and VC (violent crime) are dummy codes for story topic, with motor vehicle accidents as the reference. These accounted for less than 1% of the total variance in response when in the model by themselves. In turn, γ_{10} estimates the average effect of the alcohol manipulation across all j stories ($ALCOHOL$ is coded 1 for those assigned to the alcohol attribution condition, 0 otherwise), and the βs represent the effect of various control variables (attention to news, sex, age, and alcohol use). We were primarily interested in the estimate of γ_{10} and whether this term was statistically different from zero. Additional details on the specification of this model are available from the authors (Slater et al., 2011).

This model contains three random effects: a random intercept, a random effect of the manipulation, and a random error in estimation. The first random effect allows the average response for a story to vary from its expected value. Such variation presumably is the result of content unique to that story, and it is this term that accounts for much of the nonindependence because of the nesting of responses within

the story. The second random effect estimates how the effect of the alcohol manipulation in a given story differs from the average effect of the manipulation. By using multiple instantiations of a message, we explicitly allow the effect of the manipulation to vary across the stories rather than fix the effect to be homogeneous across stories. Also, had we not included at least the random intercept in the model, then the residual would contain the influences of story-specific content on participant responses—influences that would be common to all participants who read the same story—and this would produce nonindependence problems, which undermine hypothesis tests.

There are two primary reasons we considered our experimental manipulation a Level 1 variable. First, multilevel modeling assumes independence of observations within Level 2 units after accounting for random Level 2 variation. But observations could not be assumed independent within pairs of stories that differ only by the presence or absence of the alcohol information because they are otherwise identical in content—content that would likely affect everyone to some extent who read that story. Second, to properly test the average effect of the manipulation across the 60 stories, we needed to model alcohol information's effect as varying randomly across stories (we note that this effect is tested using the number of stories as the basis for calculating error degrees of freedom; see Table 1). Level 2 effects cannot be estimated as random effects.

We used PROC MIXED in SAS version 9.2 (Little et al., 1996; Singer, 1998), using restricted maximum likelihood estimation. To allow the random effects to covary, the covariance matrix for the random effects was estimated unconstrained.

Results

When alcohol's role was mentioned in a news article, respondents expressed more support, on average, for greater enforcement of alcohol-control policies relative to when it was not mentioned ($\gamma_{10} = 0.39$, $p < .01$, Cohen's $d = 0.18$; see Table 1). However, there was no evidence that the mention of alcohol involvement influenced support for the creation of new laws compared with when not mentioned ($\gamma_{10} = 0.12$, $p > .10$, Cohen's $d = 0.04$), although the effect was in the expected direction.

We addressed the possibility of these effects being moderated by the story topic by adding a cross-level interaction to the models reported in Table 1. Similarly, we tested the moderation of effects by attention to crime and injury news as found for college students in the pilot study (Slater et al., 2009a) by adding two cross-level interaction terms to the model reported in Table 1 (i.e., by changing the model for β_{1j} at Level 2 to $\gamma_{10} + \gamma_{11}OA_j + \gamma_{12}VC_j + u_{1j}$). No evidence for contingent effects was found because neither

TABLE 1. Multilevel regression results estimating support for alcohol control policies

Variable	Support for enforcement ($n = 785$) b (SE)	Support for new policies ($n = 785$) b (SE)
Intercept, γ_{00}	8.176 (0.123)	5.336 (0.154)
Alcohol mentioned, γ_{10}	0.388 (0.141)**	0.122 (0.181)
Other accident, γ_{01}	0.062 (0.173)	0.096 (0.213)
Violent crime, γ_{02}	0.140 (0.173)	0.727 (0.214)***
News attention, β_2	0.153 (0.028)***	0.173 (0.036)***
Sex, β_3	0.342 (0.144)*	0.614 (0.184)***
Age, β_4	0.031 (0.004)***	0.025 (0.006)***
Alcohol use, β_5	-0.529 (0.080)***	-0.989 (0.102)***
Level 1 R^2	.173	.185

Notes: "Alcohol mentioned" is coded -0.5 for the alcohol not mentioned condition and 0.5 for the alcohol mentioned condition and was estimated as a random effect across stories. "Other accident" and "violent crime" are dummy variables (0/1) coding topic, with the motor vehicle accident topic condition as the reference group. All other variables in the model are grand mean centered. Level 1 R^2 is the proportional reduction in the Level 1 residual variance when all seven predictors are entered into a model containing only the random intercept. All coefficients are unstandardized. The covariance between the random intercept and random alcohol-mentioned effect was freely estimated. Degrees of freedom for alcohol mentions and the intercept are 59 and 57, respectively. Degrees of freedom for all other effects are 661.
*$p < .05$; **$p < .01$; ***$p < .001$.

a likelihood ratio test of improvement in model fit nor the estimates of γ_{11} or γ_{12} were statistically significant.

Discussion

Our results provide experimental evidence that exposure to even a single brief newspaper story on a violent crime, crash, or other injury that mentions alcohol as a contributing factor increases support for enforcement of various typical existing alcohol-control laws. The study used an online panel designed to be representative demographically of the U.S. population, breaking news stories randomly sampled from U.S. local newspaper coverage, and statistical methods that appropriately account for the variability in the sampled news stories, all of which increase confidence in the robustness of our findings.

One might object that our experiment demonstrates only short-term effects of such story exposure. We argue that coverage of violent crime, car crashes, and other severe or fatal injuries is ubiquitous in local news. Even if effects are short lived, they are likely to be refreshed repeatedly if alcohol's role is mentioned regularly in such stories. Moreover, it may be that increased coverage of alcohol's role will have cumulative effects in terms of associating alcohol consumption with significant social and personal risks, such as violent crime. Whether such effects are cumulative or whether repeated exposure simply maintains a given level of concern is an unanswered empirical question. Previous research, however, suggests the former should be the case, given the effects of repeated exposures to a prime on the chronic accessibility of relevant constructs (Roskos-Ewoldsen, 1997; Roskos-Ewoldsen et al., 2009). Field intervention research emphasizes the potential importance of influencing news coverage in an ongoing way to help create a community climate supportive of broader efforts to influence alcohol-control policies through coordination of media advocacy with other community advocacy efforts (Holder and Treno, 1997).

Other limitations include the selectivity inherent in online panels. Studies suggest that responses from Knowledge Network panels are similar to those obtained from true probability samples (Couper, 2000; Dennis, 2001; Krosnick and Chang, 2001). However, we can only generalize with reasonable confidence to members of the online panel as a population. Nonetheless, given that convenience samples are normally used for experimental designs, this is an unusual degree of external validity.

Effects on support for new alcohol-control laws (e.g., marketing restrictions and increased server liability) as opposed to support for enforcing typical alcohol-control policies (e.g., underage drinking and open containers while driving) did not reach significance. This may reflect a lack of enthusiasm for interventionist policies in the present political climate.

Efforts by public safety agencies and public health officials to alert news reporters and editors about the role of alcohol in violent crime and unintended injuries (perhaps in cooperation with local law enforcement officials, using local data in the context of locally occurring crime and accident events) may help create a public opinion climate supportive of alcohol-control advocacy activities.

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