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Injury News Coverage, Relative Concern, and Support for Alcohol-Control Policies: An Impersonal Impact Explanation

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Abstract

Research on the impersonal impact hypothesis suggests that news (especially print) coverage of health and safety risks primarily influences perceptions of risk as a societal issue, and not perceptions of personal risk. We propose that the impersonal impact of news—impact primarily on concerns about social-level risks—will mediate effects of news stories on support for public health policies; such effects substantively matter as evidence suggests health policies in turn have important effects on protective behaviors and health outcomes. In an experiment using 60 randomly-selected violent crime and accident news stories manipulated to contain or not contain reference to alcohol use as a causative factor, we find that the effect of stories that mention alcohol as a causative factor on support for alcohol-control policies is mediated by social-level concern and not by personal-level concern. In so doing, we provide a theoretical explanation as well as empirical evidence regarding the potential for news coverage—including breaking or episodic news—to influence health-related public policy.

Changes in health policies, regulation, and enforcement can influence risk behaviors (Rosen, 1993; Levy & Sheflin, 1983; Cook, 1981; Warner, 1986); this is particularly true in the case of alcohol-control policies (Wagenaar et al., 2000; Yanovitzky, 2002). We have previously shown how news—notably breaking, episodic news (Iyengar, 1989; 1991; Iyengar & Kinder 1987)—that covers alcohol as a causative factor in violent crime, car crashes, and other unintended injuries can influence support for public policy in the area of alcohol control (e.g., Slater, Hayes, Goodall, & Ewoldsen, 2012). Here, we focus on implications for health policy support of the impersonal impact hypothesis (Tyler & Cook, 1984), which argues that media coverage typically impacts perceptions about risks in society in general, but not personal risks for the individual reader/viewer.

A possible implication of the impersonal impact hypothesis is that media coverage does not really matter with respect to health outcomes, since perceptions of personal risk are more likely to motivate behavior change. However, we propose that concern about health and safety risks at the social level (i.e., impersonal impact) may in fact matter a great deal—not by influencing personal behavior directly, but by influencing support for public policy interventions which in turn are likely to influence behavior.

The Role of Relative Concern in Mediating Media Exposure Effects on Policy Support

We conceptualize relative concern as a summary assessment across a variety of risk perceptions (e.g., see Slovic, 1987) of how much a particular risk is a cause for unease or worry, relative to other concerns one may have. Our prior work has indicated that measuring concern about health and safety issues, if not framed in relative terms, has little utility (Slater & Rasinski, 2005). Agenda-setting theory suggests that concern about issues confronting society is a limited resource (McCombs & Shaw, 1972; 1993). New public policies are unlikely to be enacted unless the issues they address become more salient to the public and to legislators than other issues competing for attention (Cook et al., 1983). Relative concern differs from how agenda-setting research conceptualizes salience primarily with respect to the affective connotation—worry or anxiety—implicit in statements of concern. Health and safety risks, by definition, pose a threat, and concern is an appropriate response. Therefore, in employing relative concern as a mediating variable, we provide a convenient conceptual and operational tool to draw risk perception research and agenda-setting research closer together to better understand how news about risk may influence health public policy support.

A key limitation of our prior work (e.g. Slater, Lawrence, & Comello, 2009), however, was the presumption that relative concern is unidimensional. We had ignored the social versus personal-level distinction identified by the impersonal impact hypothesis (Tyler & Cook, 1984). In the present study we amend that shortcoming.

Impersonal Impact and Social vs. Personal-level Concern

The impersonal impact hypothesis

The impersonal impact hypothesis introduced by Tyler and Cook (1984) posits that mass media exposure—particularly news exposure—is likely to affect one’s perception that a certain problem is prevalent within society, but typically does not significantly influence one’s perception of personal risk. Tyler and Cook (1984) found support for this hypothesis across a series of three studies, examining outcomes including perceived prevalence, worry, and support for public policies. Our previous work suggests that these outcomes are in fact causally related. Effects of perceived prevalence on public policy were mediated by concern (Slater et al., 2009). Therefore, in the present study, we focus on social versus personal level concern as mediators of news story effects on public policy support.

Moreover, we note that newspaper stories, our present focus, appear to be particularly likely to lead to social rather than personal-level effects (Coleman, 1993; Snyder & Rouse, 1995). This may be because television formats provide vicarious direct experience through more vivid exemplars which may heighten perceptions of personal risk.

The substantive importance of personal vs. social-level risk perceptions

Generally, behavioral changes are likely to depend primarily upon personal concern regarding risk. For example, the health belief model (Rosenstock et al., 1988) emphasizes

that feeling personally susceptible to a health risk is a key determinant of behavior. In this paper, however, we argue for the potential importance of impersonal effects of media coverage on such social-level risk perceptions. We suggest that impersonal effects, or increasing the perception of risk at a societal rather than a personal level, may promote support for public policy interventions. We make this argument based on the agenda-setting literature, which suggests that increasing the relative importance of an issue as a social problem makes it a more likely candidate for policy action (Cook et al., 1983).

News Coverage of Alcohol as a Causative Factor in Violent Crime/ Unintended Injury, and Social versus Personal-level Impact

Our prior research has demonstrated that exposure to news stories manipulated to mention alcohol as a causative factor in violent crime and unintended injuries enhances support for at least some alcohol-control policies (Slater et al., 2012) compared to exposure to news stories manipulated to exclude such mention. In this study, we are interested in understanding how such effects take place, using a similar design but a new study population and data set (see Methods). Certainly, given findings from earlier work (Slater et al., 2009) we would expect that exposure to the stories that mention alcohol as a causative factor would increase relative concern about alcohol-related risks. What is new, as noted above, is that we assess whether exposure to such news stories differentially impacts personal versus social-level relative concern about alcohol-related risks. If it does, we find support for the impersonal effects hypothesis in this context, as well as confirm that our conceptualization and operationalization of personal versus social-level relative concern adequately parallels the conceptualization of social versus personal risk perceptions as assessed in prior work (e.g., Tyler & Cook, 1984). Therefore,

H1. Exposure to news stories manipulated to contain alcohol use as a causative factor in violent crime and unintended injury will increase social-level relative concern assessments; we do not expect a significant effect of such exposure on personal-level relative concern.

As discussed above, a key element of our argument, based on agenda-setting research (McCombs & Shaw, 1993) as well as our prior findings (Slater et al., 2009) is as follows:

H2: Social-level relative concern about alcohol-related risks will predict alcohol-control public policy support.

If this hypothesis is supported, there will be good reason to place greater emphasis in health communication on news and other media exposures that can increase social-level relative concern, given the importance of enacting appropriate health policies to reduce health and safety risks.

As noted above, it is possible that personal-level concern might also influence alcohol-control policy support, given that such policies might be perceived to reduce personal risk. However, the theoretical logic to support such a prediction seems less clear. Therefore, we ask:

RQ1. Is there a relationship between personal-level relative concern about alcohol-related risks and support for alcohol-control policies?

Since we predict exposure to violent crime and unintended injury news stories with alcohol as a causative factor will increase social but not personal level relative concern about alcohol-related risks, and we predict that such concerns predict support for alcohol-control policy, we are also expecting that:

H3. The effect of exposure to accident and crime news stories with alcohol as a causative factor on support for alcohol control policies will operate indirectly through social-level (but not personal-level) relative concern about alcohol-related risks.

If this hypothesis is supported, it will advance theoretical understanding of how appropriate news coverage influences public support for health policy initiatives, and provide evidence for the substantive importance of “impersonal effects” on social-level risk perceptions as a result of media exposure.

Methods

We used an experimental design in which half of our participants were randomly assigned to read a version of a news story about a violent crime, a car crash, or another unintended injury that included alcohol as a causative factor, and the other half read a version of the news story that omitted mention of alcohol as a causative factor.

Stimuli

Stimuli were news stories about violent crime, car crashes, or other unintended injuries, such as drowning, falls, and electrocution. Sixty such stories were randomly selected from a sample of over 1000 local newspapers, themselves randomly selected from U.S. local newspapers, with twenty stories about each of the three topics (see Long, Slater, Boiarsky, Stapel, & Keefe, 2005), in order to increase the generalizability of findings across the population of U.S. local newspaper coverage (see Slater et al., 2012). Each story was manipulated into a version with and without alcohol included as a causative factor, resulting in a total of 120 stimuli. The news stories were revised to appear to have taken place in the city in which the study took place, in order to replicate the typical experience of reading local news about one’s own city or region. The story presented to each participant was randomly selected from the stimulus pool.

Participants and Recruitment

Participants were recruited to participate in the experiment using random digit dialing phone lists generated by Survey Sampling, Inc. Eligible participants were between age 18 and 80. An initial phone call assessed eligibility and invited participation in the data collection session at the university. Those who agreed to participate provided some initial demographic information over the phone. They were also told they could invite up to three friends or relatives to participate in the study, as we found that cooperation levels were greater when persons could attend the data collection session on campus with friends. Participants were paid \$50 for participation. We had a total of 725 participants. The intention with the phone-

based recruitment was to gain a diverse participant pool for this lab-based experiment; this was not a survey intended to be generalized from the sample to a population.

Data was not recorded for eight participants. Of the 717 participants who provided data, 10 were discarded due to a failure to respond to one or more of the variables used as statistical controls in the analyses reported below. The 707 participants included in the analyses were 57% percent female, 25% percent African American, 5% percent other minority, and were on average 46.7 years old with a standard deviation of 16.2 years; 95% reported having at least a trade school or high school diploma, and 46% reported holding a university degree.

Measures

Relative concern about alcohol-related risks—Relative concern about alcohol-related risks was assessed with five questions to which participants responded on a 0 (just a minor concern) to 10 (one of my biggest concerns) scale. The five questions differed with respect to whether the putative victim was identified as “someone in your region”, “someone in the United States”, “a close friend”, “me,” (i.e., the participant) or “a relative”. Participants were asked how much of a concern they had, compared to their other concerns, about each type of victim being injured as the result of a violent crime, a motor vehicle accident, or some other kind of accident (such as a fall, a fire, a drowning, etc.) caused by someone under the influence of alcohol. The source of injury was matched to the topic of the news story that the participant was randomly assigned to read (e.g., those who read about a motor vehicle accident were asked about their concern for victims of motor vehicle accidents). An exploratory principal axis factor analysis with oblimin rotation revealed two interpretable factors, which we label *personal concern* (me, a close friend, and a relative; $\alpha = 0.90$, $M = 5.83$, $SD = 3.26$) and *social concern* (someone in your region and someone in the United States; $\alpha = 0.91$, $M = 6.65$, $SD = 2.30$), each constructed as the average response across indicators. Though these two factors were moderately correlated ($r = 0.42$, $p < .001$), a confirmatory factor analysis revealed that this two-factor solution fit better than a one-factor solution by a chi-square difference test.

Support for alcohol-control policies and laws—Participants were asked seven questions about their support for enforcing existing alcohol-control policy laws and enacting new alcohol-control policy laws. Responses were made on a 0 (strongly oppose) to 10 (strongly support) scale. Questions pertaining to stricter enforcement of laws included asking participants about stores and restaurants selling alcohol to people visibly intoxicated or under the age of 21, and questions regarding having an open alcohol container in an automobile. Questions pertaining to new policies and laws included asking participants about: limiting the number of bars/liquor stores in a neighborhood, banning alcohol-related advertising on billboards, and making restaurant and bar owners liable if a patron left intoxicated and caused an accident. An exploratory principal-axis factor analysis with oblimin rotation revealed two factors, which we label *support for stricter enforcement* (3 items, $\alpha = 0.84$, $M = 8.48$, $SD = 2.19$) and *support for new policies* (4 items, $\alpha = 0.86$, $M = 6.68$, $SD = 2.72$), constructed as a respondent’s average response across indicators. Though these two factors were highly correlated ($r = 0.59$, $p < .001$), a confirmatory factor analysis

comparing the fit of a single factor to this two-factor solution revealed that the two-factor model fit better based on a chi-square difference test.

Covariates—In the multilevel mediation analysis reported below, causal inference for differences between experimental conditions (i.e., alcohol attribution or not) on social and personal concern (mediators) as well as support for the enforcement of existing laws and the enactment of new alcohol-control policies (outcomes) is facilitated through random assignment of participants to condition. However, this design does not rule out the possibility of spurious association between social or personal concern and support for the enforcement of existing laws and the enactment of new alcohol control laws. Thus, we measured additional variables that we used as statistical controls in the mediation analysis. These included participants' sex (0 = female, 1 = male), age in years, political ideology (0—extremely conservative to 7—extremely liberal; $M = 3.91$, $SD = 1.53$), alcohol use, and attention to accident and crime news.

Attention to accident and crime news was quantified as an aggregate response to four questions, two framed in terms of news watched on TV and two in terms of news read (with reading referencing a newspaper or online content that was not specified). Participants were asked “When you READ the news/WATCH TV news, how much attention do you pay to stories about...”, with the target of attention crossed with medium. Two of the questions asked about “...stories about accidents, such as car crashes, drowning, etc.” and two asked “...about violent crimes”. Responses were made on a 0 (none at all) to 10 (a lot of attention) scale. A principal axis factor analysis revealed a single factor with all four questions loading highly on this common factor, the average of which was used as a variable we henceforth refer to simply as *attention to news* ($\alpha = 0.92$, $M = 5.71$, $SD = 2.49$).

To measure alcohol use, participants were asked if they ever drink alcohol and, if so, how many drinks they typically have when they do drink (response options from 1 to 5, with 5 representing “five or more”). Responses to the question about quantity were used as the measure of *alcohol use*, with abstainers (i.e., those who reported they never drink) given a score of zero ($M = 1.57$, $SD = 1.41$).

Data Analysis: Multilevel Mediation

To appropriately test hypotheses while taking into account the nesting of participants within one of the 60 stories used to create stimuli, multilevel mediation analyses were undertaken (see e.g., Zhang, Zypher, & Preacher, 2009). The full mediation model is diagrammed in Figure 1 and depicts three pathways of influence of the alcohol attribution manipulation on support for the enforcement and the enactment of alcohol-control laws. Two of those pathways are indirect through social or personal concerns, and one is direct without passing through concern. In this analysis, story was considered the level-2 unit and participant was the level-1 unit. All individual-level measurements described in the method section were used as level-1 predictors or outcomes, as was the level of the experimental manipulation to which a participant was randomly assigned. Level-2 variables included story topic (motor vehicle accident, violent crime, and other accident or incident) as well as story-level means on key variables in order to eliminate the conflation of level-1 and level-2 indirect and direct

effects. The analysis was conducted in Mplus version 5 using maximum likelihood estimation. A copy of the Mplus code can be found in the Appendix.

The “Level-1” component of the multilevel model is a set of equations estimating each participant’s alcohol-related concerns and support for alcohol control policies and enforcement from whether the participant was assigned to read a story attributing the accident to alcohol or not, as well as individual level covariates. Formally, the Level-1 model is:

$$\begin{aligned} M_{1i} &= \beta_{0j1} + \beta_{11} \tilde{X}_i + \dots + r_{1i} \\ M_{2i} &= \beta_{0j2} + \beta_{12} \tilde{X}_i + \dots + r_{2i} \\ Y_1 &= \beta_{0j3} + \beta_{13} \tilde{X}_i + \beta_{23} \tilde{M}_{1i} + \beta_{33} \tilde{M}_{2i} + \dots + r_{3i} \\ Y_2 &= \beta_{0j4} + \beta_{14} \tilde{X}_i + \beta_{24} \tilde{M}_{1i} + \beta_{34} \tilde{M}_{2i} + \dots + r_{4i} \end{aligned}$$

where i refers to participant (out of 707), X is the experimental manipulation of alcohol attribution (-0.5 for absent, 0.5 for present), M_1 and M_2 are social and personal concern, respectively, Y_1 and Y_2 are support for stricter enforcement of alcohol control laws and support for enactment of new laws, and r are model residuals. Each equation above also contained five covariates (merely denoted “+ ... +” above), including attention to news, political ideology, alcohol use, sex (0 = female, 1 = male), and age in years. The tilde (\sim) refers to *story or group* mean centering (i.e., centered around the mean of the variable for participants assigned to a given story). All covariates were grand mean centered.

The Level-2 model allows the intercepts of the Level-1 model to vary systematically with features of the story and responses to the story averaged across all participants assigned to a given story, with an additional random component unique to a given story. Formally,

$$\begin{aligned} \beta_{0j1} &= \gamma_{10} + \gamma_{11} OA_j + \gamma_{12} VC_j + \gamma_{13} \bar{X}_j + u_{1j} \\ \beta_{0j2} &= \gamma_{20} + \gamma_{21} OA_j + \gamma_{22} VC_j + \gamma_{23} \bar{X}_j + u_{2j} \\ \beta_{0j3} &= \gamma_{30} + \gamma_{31} OA_j + \gamma_{32} VC_j + \gamma_{33} \bar{X}_j + \gamma_{34} \bar{M}_{1j} + \gamma_{35} \bar{M}_{2j} + u_{3j} \\ \beta_{0j4} &= \gamma_{40} + \gamma_{41} OA_j + \gamma_{42} VC_j + \gamma_{43} \bar{X}_j + \gamma_{44} \bar{M}_{1j} + \gamma_{45} \bar{M}_{2j} + u_{4j} \end{aligned}$$

where j is story (out of 60), where OA and VC are dummy variables coding topic of the story ($OA = 1$ for “other accident” stories, 0 otherwise; $VC = 1$ for violent crime stories, 0 otherwise; thus, motor vehicle accidents is the reference story topic), \bar{X} , \bar{M}_1 and \bar{M}_2 are story-level means for the alcohol manipulation, social-concerns, and personal concerns, respectively.

As discussed in Zhang et al. (2009), the use of story-level means in the Level-2 model in conjunction with corresponding story-mean-centered variables in the Level-1 model deconflates the story-level and individual-level effects that define the direct and indirect effects of the experimental manipulation operating at different levels. That is, direct and indirect effects quantified from parameter estimates in the Level-1 model define the mediation process occurring at the level of the individual without being biased by the mediation operating at the level of the story. Although it is possible to quantify story-level

direct and indirect effects using parameter estimates in the Level-2 model, in this analysis they turned out to be negligible and non-significant, so they are not discussed further.

Two points about this analysis are worth making before describing the results. First, all paths in the mediation model defining the direct and indirect effects were estimated as fixed rather than random because preliminary analyses revealed no evidence of significant variation in any of these effects between stories. Second, we included the story level mean of the experimental manipulation (coded -0.5 and 0.5) as a predictor in the Level-2 model because the random assignment procedure did not constrain the assignment of participants to experimental condition within story to be distributed equally between the two conditions. As a result, the alcohol attribution occurred more frequently in some stories than others. This imbalance could induce level-2 correlation between alcohol attribution and all other variables to be causally downstream and conflate level-1 and level-2 mediation. Use of the mean experimental condition (essentially a linear transformation of the proportion of cases assigned to the alcohol attribution condition in a given story) as a level-2 predictor helps de-conflate level-1 and level-2 mediation.

Results

The multi-level model's coefficients and standard errors can be found in Table 1. As predicted in H1, participants who read a story in which alcohol was attributed as the cause of an accident or injury expressed stronger social concerns ($\beta_{11} = 0.31, p < .05$) but not personal concerns ($\beta_{12} = 0.06, n.s.$) relative to when alcohol was not reportedly involved.

Furthermore, H2 was also supported. Holding ideology, sex, age, alcohol use, attention to news, and personal concerns constant, participants who reported relatively higher social concerns also reported stronger support for stricter enforcement of existing alcohol-control laws ($\beta_{23} = 0.21, p < .001$), as well as stronger support for the enactment of new alcohol-control laws ($\beta_{24} = 0.24, p < .001$) than those who reported lower social concerns. This effect was also present at level-2. Stories that elicited higher average social concerns from readers also elicited higher average support for stricter enforcement of existing laws ($\gamma_{34} = 0.37, p < .01$), as well as higher average support for the enactment of new laws ($\gamma_{44} = 0.33, p < 0.05$).

Per our research question, after incorporating statistical controls including social concerns, there was no evidence of association between personal concerns and support for either stronger enforcement of existing laws ($\beta_{33} = 0.02, n.s.$) or enactment of new laws ($\beta_{34} = -0.00, n.s.$).

Hypothesis 3: Mediation of Policy Support by Social Concern

The critical hypothesis in this study was that the effects of mentioning alcohol in news stories on alcohol-control policy support would be mediated by social but not personal-level concern. In a mediation model of this sort, mediation is established by evidence that the indirect effect of a putative causal variable on an outcome through one or more intervening variables is statistically different from zero (see e.g., Hayes, 2009, 2013; MacKinnon, 2008). An indirect effect serves as quantitative instantiation of the size and strength of the

mechanism by which the causal agent exerts its effect on the outcome. With two outcomes and two mediators, there are four indirect effects that can be estimated in these data, quantified as the products of the paths linking the alcohol attribution to the manipulation of one of the outcomes. In a multiple mediator model (see Figure 1), each indirect effect is known as a *specific indirect effect* and quantifies the mechanism through a given mediator independent of other mediators.

Point estimates and standard errors for the four specific indirect effects of the alcohol attribution on support for stricter enforcement of existing laws and support for enactment of new laws can be found in Table 2. For statistical inference, we rely on Monte Carlo confidence intervals (see, e.g., Preacher and Selig, 2012). Although bootstrap confidence intervals are the most widely recommended inferential method in the mediation analysis literature, the proper approach to bootstrapping in multilevel analysis has not been established with any consensus. Monte Carlo confidence intervals (MCCI) are a good alternative to bootstrapping, in that it is flexible and applicable to complex models, such as ours, while also respecting the non-normality of the distribution of products of coefficients (unlike the Sobel test which ignores this irregularity and treats it as if it were normal). We used the estimated path coefficients, standard errors, and their covariances to generate 95% confidence intervals for each specific indirect effect as well as the difference between specific indirect effects on the same outcome. A confidence interval that does not straddle zero represents an effect that is statistically significant. The simulation was based on 1,000,000 samples.

As can be seen in Table 2, the specific indirect effects of the alcohol attribution through social concern were positive and statistically different from zero for both support for stricter enforcement of existing laws ($\beta_{11}\beta_{23} = 0.065$, 95% MCCI from 0.004 to 0.116) as well as support for the enactment of new laws ($\beta_{11}\beta_{24} = 0.075$, 95% MCCI from 0.004 to 0.148). Given the signs of the constituent paths, we can claim that participants who read a story attributing an accident or injury to alcohol were more supportive of various alcohol control laws as a result of the effect of this attribution on elevating social concerns, which in turn enhanced support. There was no evidence of a comparable mechanism at work through personal concerns, as both specific indirect effects were not statistically different from zero (stricter enforcement of existing laws: $\beta_{12}\beta_{33} = 0.001$, 95% MCCI from -0.016 to 0.023; enactment of new laws: $\beta_{12}\beta_{34} = 0.000$, 95% MCCI from -0.021 to 0.015, see Table 3). These results support hypothesis 3.

Discussion

We proposed that breaking news stories mentioning alcohol's role in violent crime, motor vehicle accidents, and other unintended injuries would influence alcohol-control policy support through their effect on relative concern about social-level and not personal-level risks. This proposition was supported.

This finding is interesting theoretically as well as significant substantively. Media coverage of health and safety risks, according to research based on the impersonal effects hypothesis (Tyler & Cook, 1984), is likely to influence beliefs about risks regarding the larger

community and society, but generally has less effect on beliefs about one's personal risk status. Public health personnel and health communicators seek to increase the public's protective behaviors. As a result, the impersonal effects phenomenon has the potential to discourage efforts to advocate for media coverage highlighting health and safety risks.

Our findings are consistent with the impersonal effects hypothesis—exposure to news stories highlighting the role of alcohol in instances of violent crime or unintended injury affected social-level concern more than personal-level concern about alcohol-related risks. However, our findings also indicate that social-level concerns are a principal mechanism by which such news stories can influence the news consumer's support for alcohol-control policies. Because health policies in general (Cook, 1981; Warner, 1986; Yanovitzky, 2002) and alcohol-control policies in particular (Wagenaar et al., 2000) are effective and lasting ways to influence health behaviors in positive ways, this is good news indeed. The content of news coverage has considerable potential to motivate support for health policies and, through impact on health policies, impact health behavior, morbidity, and mortality.

Generally, media advocates (Wallack & Dorfman, 1996) recommend pushing for media coverage to increase the salience of an issue and bring attention to the need for policy change—thematic coverage, to use the Iyengar (1991) term. These findings suggest a complementary strategy. Encouraging coverage of health risks as part of breaking (or episodic, per Iyengar, 1991) news coverage, such as alcohol's role in violent crime and unintended injury, also has the potential to influence policy support. From a theoretical perspective, the role of relative social-level concern (i.e. increasing the subjective unease about a particular risk relative to other concerns about societal problems) in explaining the effect of such coverage is clearly consistent with a long history of research on the agenda-setting effects of the media (e.g., McCombs & Shaw, 1993). These results suggest a mechanism by which breaking, episodic news can influence relative concern and, it seems likely, agenda salience. We also acknowledge that there are complex issues with respect to the kinds of policy support encouraged by breaking news or episodic coverage, namely those that address individual behaviors rather than societal practices; we have addressed these issues elsewhere (Goodall, Slater, & Myers, in press).

An experimental design has the advantage of clearly demonstrating causal effects of a message's manipulated component (in this case, the presence or absence of mentioning alcohol as a causal factor in a crime or unintended injury). However, such a design introduces a variety of limitations, including exposure to a single news story and testing effects at an immediate post-test, which may be short-lived. Nonetheless, it is worth highlighting that examining effects after exposure to a single news story is a conservative test. In addition, while one cannot rule out evanescent effects due to news story exposure, exposure to such stories can occur on a daily basis (see Slater, Long, & Ford, 2006). Even if effects are short-lived in response to any given story, they are likely to be often refreshed. Moreover, psychological theory suggests that repeated exposure is likely to strengthen the association between alcohol use and such risks, making the association increasingly accessible in memory, and perhaps chronically accessible over time (e.g., see Bargh, 1984 for a classic discussion).

Limitations to experiments employing messages as stimuli typically include the convenience sampling of participants and concerns regarding the representativeness of experimental stimuli. We made considerable efforts to obtain an unusually diverse set of participants from the general population to reduce concerns regarding the selectivity inherent in a lab-based study. Our messages are randomly sampled from U.S. news stories. The statistical generalizability to U.S. stories is limited by the use of an experimental manipulation of the stories, and by tweaking the stories to appear to have been published in a local newspaper in the city in which the study took place. Still, we captured the variability that would be expected across such stories in the U.S., as statistically accounted for in our model. Thus, the usual limitations bedeviling choice of stimuli in message experimentation (e.g., Jackson, O'Keefe, & Jacobs, 1988; Slater, 1991) are of much less concern here.

Our relative concern measure proved useful in distinguishing social versus personal level concern, and in predicting public policy support as hypothesized. The advantage of our approach is efficiency by allowing the respondent to self-define the comparative issues against which this concern is measured. However, we acknowledge that other approaches more similar to those used in agenda-setting research, such as explicitly listing competing issues, may have advantages of their own.

Overall, this study provides solid initial evidence that impersonal effects (news coverage tending to effect social-level and not personal-level risk perceptions) can in fact influence support for health policy. In so doing, this analysis provides further reason to believe that the specific content of breaking news stories about health and safety risks—in this case, the role of alcohol as a causative factor—can have important policy and public health implications.

Acknowledgments

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Appendix

Mplus Code for the Multilevel Mediation Analysis

Appendix

Mplus Code for the Multilevel Mediation Analysis

TITLE: Multilevel Mediation Analysis 1-(1-1)-1

DATA:

```
file is 'e:\nih2\ica.txt';
```

VARIABLE:

```
names are artid alcohol topic persconc socconc laws2 enforce
```

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```
condm persm socm attn use1 sex age ideology;

usevariables are artid laws2 enforce socconc persconc alcohol

condm persm socm use1 sex age ideology attn oa vc;

centering IS grandmean (sex age ideology use1 attn);

centering is groupmean (alcohol persconc socconc );

WITHIN are alcohol socconc persconc sex age ideology use1 attn;

BETWEEN are condm persm socm oa vc;

cluster is artid;

DEFINE:

if (topic eq 1) then oa = 0;

if (topic eq 1) then vc = 0;

if (topic eq 2) then oa = 1;

if (topic eq 2) then vc = 0;

if (topic eq 3) then oa = 0;

if (topic eq 3) then vc = 1;

ANALYSIS:

TYPE = TWOLEVEL;

MODEL:

%WITHIN%

socconc on alcohol (b11)

sex age ideology use1 attn;

persconc on alcohol (b12)

sex age ideology use1 attn;

enforce on alcohol
```

socconc (b23)

persconc (b33)

sex age ideology use1 attn;

laws2 on alcohol

socconc (b24)

persconc (b34)

sex age ideology use1 attn;

socconc with persconc;

enforce with laws2;

[socconc@0];

[persconc@0];

%BETWEEN%

socm persm laws2 enforce;

socm on condm oa vc;

persm on condm oa vc;

laws2 on condm socm persm oa vc;

enforce on condm socm persm oa vc;

laws2 with enforce;

socm with persm;

MODEL CONSTRAINT:

new (b11b23 b11b24 b12b33 b12b34 diff1 diff2);

b11b23 = b11*b23;

b12b33 = b12*b33;

b11b24 = b11*b24;

```

b12b34 = b12*b34;

diff1 = b11b23-b12b33;

diff2 = b11b24-b12b34;

OUTPUT:

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References

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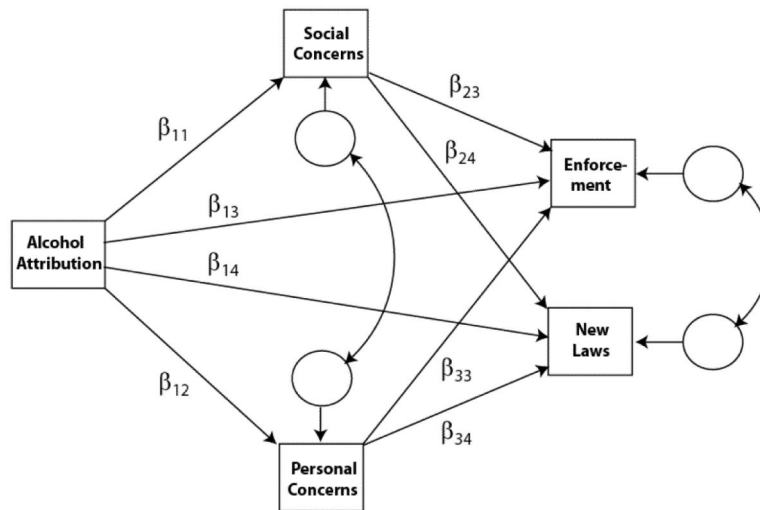


Figure 1.
A Graphical Depiction of the Level-1 Component of the Multilevel Multiple Mediator model. Not Depicted are Covariates and Level-2 Predictors

Table 1

Model Coefficients from a 1-(1-1)-1 Multilevel Multiple Mediator Model with Random Intercepts and All Effects Fixed. Standard Errors are in Parentheses.

Level 1 Predictors	Social Concerns (M_1)	Personal Concerns (M_2)	Stricter Enforcement (Y_1)	New Laws (Y_1)
Intercept	6.40	7.12	6.11	4.21
Alcohol Attribution (\tilde{X})	0.31* (0.15)	0.06 (0.29)	-0.25+ (0.14)	-0.04 (0.17)
Social Concerns (\tilde{M}_1)	---	---	0.21*** (0.05)	0.24*** (0.05)
Personal Concerns (\tilde{M}_2)	---	---	0.02 (0.03)	-0.00 (0.03)
Attention to News	0.18*** (0.04)	0.03 (0.04)	0.06* (0.03)	0.09** (0.03)
Ideology	-0.09+ (0.05)	-0.06 (0.07)	0.06 (0.05)	-0.14* (0.07)
Alcohol Use	-0.16** (0.06)	-0.04 (0.06)	-0.25*** (0.07)	-0.43*** (0.06)
Sex	-0.32* (0.14)	-0.08 (0.21)	-0.86*** (0.16)	-1.56*** (0.19)
Age in Years	0.01 (0.01)	0.00 (0.01)	0.03*** (0.01)	0.02*** (0.01)
Level-1 R^2	.085***	.002	.227***	.291***
Level 2 Predictors				
Other Accident (OA)	-0.81*** (0.21)	-1.48*** (0.39)	0.14 (0.23)	0.34 (0.24)
Violent Crime (VC)	-0.71** (0.25)	-0.34 (0.40)	0.58** (0.22)	0.57* (0.23)
Mean Alcohol Attribution (\bar{X}_j)	0.19 (0.71)	-0.25 (1.11)	0.23 (0.56)	-0.62 (0.62)
Mean Social Concern (\bar{M}_{1j})	---	---	0.37** (0.11)	0.33* (0.14)
Mean Personal Concern (\bar{M}_{2j})	---	---	-0.05 (0.07)	-0.00 (0.07)

Note: all coefficients are unstandardized

$n = 707$

+ $p < .10$

* $p < .05$

** $p < .10$

*** $p < .001$

Table 2

Indirect Effects of Alcohol Attribution Through Social and Personal Concern

	Point Estimate (SE)	95% Monte Carlo Confidence Interval
Outcome: Enforcement		
Alcohol Attribution → Social Concern → Enforcement ($\beta_{11}\beta_{23}$)	0.065 (0.030)	0.004 to 0.116
Alcohol Attribution → Personal Concern → Enforcement ($\beta_{12}\beta_{33}$)	0.001 (0.006)	-0.016 to 0.023
Difference Between Specific Indirect Effects ($\beta_{11}\beta_{23} - \beta_{12}\beta_{33}$)	0.064 (0.028)	-0.000 to 0.112
Outcome: Enacting New Laws		
Alcohol Attribution → Social Concern → New Laws ($\beta_{11}\beta_{24}$)	0.075 (0.040)	0.004 to 0.148
Alcohol Attribution → Personal Concern → New Laws ($\beta_{12}\beta_{34}$)	0.000 (0.002)	-0.021 to 0.015
Difference Between Specific Indirect Effects ($\beta_{11}\beta_{24} - \beta_{12}\beta_{34}$)	0.075 (0.040)	0.001 to 0.153

Monte Carlo confidence intervals are based on 1,000,000 Monte Carlo samples