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Alcohol and Cancer Message Testing Experiment

1. Project Personnel

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2. Background

Alcohol increases the risk for at least seven cancers,[1-3] yet recent estimates suggest only between one-third and one-half of US adults are aware of this risk.[4, 5] Raising public awareness of the alcohol-cancer link can encourage better informed choices about alcohol and promote reduced consumption, yet the most effective strategies for raising such awareness remain to be determined.[6]

One potential strategy is the use of alcohol-cancer risk messages, which could be disseminated through various communication channels (e.g., public service announcements, communication campaigns). However, such messages can differ in numerous ways, including their substantive content and the specific language used to communicate risk, and the optimal design of these messages and their effects on audiences remains to be determined.

Ours and others' prior work has tested different alcohol-cancer warning label messages in experimental studies. These experiments have tested the effects of using causal vs. hedging language,[7, 8] the utility of adding pictograms in warning labels,[9-11] different ways to frame the alcohol-cancer risk relationship,[12] and the type of cancer to communicate in warning labels.[10, 13] The overarching goal of these studies was to develop effective warning labels that could be added to alcohol beverages.

The current study aims to extend this work by developing and preliminarily evaluating alcohol-cancer messages designed for a *mass media* public health campaign. These messages are informed by theory-based constructs proximal to health behavior change (e.g., perceived likelihood/severity of harm, response efficacy).[14-16] We plan to collect

formative data and evaluate these messages via a message testing survey with US adults aged 21+.

3. Purpose and Objectives

3.1. Purpose

The purpose of this study is to evaluate theory-informed alcohol-cancer messages using an online survey experiment among a sample of US adults aged 21+.

3.2. Objectives

To identify how different alcohol-cancer message frames affect message-related perceptions and related health outcomes (e.g., risk beliefs, drinking intentions, etc.). Findings will help inform future alcohol harm reduction health communication efforts.

3.3. Research Questions

The primary research questions of this experiment are:

- **RQ1.** Do different alcohol-cancer message frames affect people's a) message receptivity, b) alcohol-related attitudes and risk perceptions, and c) drinking intentions?
- **RQ2.** Do any factors moderate the effects of exposure to different alcohol-cancer message frames (e.g., drinking status)?

4. Study Design

4.1. Design

The study will be an online survey experiment administered via Qualtrics. Participants will first answer questions about their demographics, as well as other question blocks covering topics such as perceptions on cancer, social media use, and substance use. They will then be randomized to one of the following message exposure conditions:

1) Perceived likelihood frame
2) Perceived severity frame
3) Harm prevention frame
4) Harm reduction frame
5) Response efficacy frame
6) Surgeon General's frame

Participants will see two messages in the condition they are assigned to (see Appendix A). They will be asked to rate each message separately based on common evaluation items used in health communication, such as perceived message effectiveness (PME). Participants may also be randomized to a no-message control condition, where they will not see or answer message-related outcome questions. Thus, there will be seven

(7) total randomized conditions. Next, all participants will answer questions about alcohol-related beliefs, behaviors, intentions, and attitudes. Finally, all participants will answer questions about their personal networks (for a separate study).

Participants will be debriefed about the purpose of the study after completing the survey. The debrief will inform participants that they may have been shown two randomly assigned messages. We will also tell them that other participants may have seen different messages (or no messages at all), which we did to compare how people respond to different alcohol-cancer frames. We will also provide them a link to learn more about how alcohol can affect health (including cancer risk). The link is: https://www.cdc.gov/alcohol/about-alcohol-use/index.html

4.2. Study Duration

It will take approximately 25 minutes to complete the online survey. We plan to collect all survey responses over the course of 1-2 weeks in Fall 2026.

4.3. Outcome Measures

Primary outcome: The primary outcome is effects perceptions PME, which will be measured using the following three items: 1) This message discourages me from wanting to drink alcohol; 2) This message makes me concerned about the health effects of drinking alcohol; and 3) This message makes drinking alcohol seem unpleasant to me. Items will be assessed on a 5-point scale ranging from strongly disagree (1) to strongly agree (5). We will assess internal consistency using Cronbach's alpha. Assuming adequate measure reliability, we will average the items into a single effects-perceptions PME measure.

Secondary outcomes of interest include: Message perceptions PME, message reactions (e.g., perceived credibility and message engagement, reactance), beliefs/perceptions about non-alcoholic beverages, intentions to drink/quit alcohol, and alcohol risk beliefs. See pre-registered outcomes for a complete list (including the individual items that make up these outcomes).

5. Analytical Plan

We will use descriptive statistics to characterize the participant sample. Participants will independently evaluate two messages in their randomized condition. For message-related outcomes assessed after each exposure, scores will be averaged across the two exposures. This will create a participant-level variable representing participants' overall responses to their assigned message condition. We will report correlations between responses to the two message exposures descriptively.

We will then estimate one-way unadjusted ANOVAs to assess main effects of the message conditions on the following outcomes: effects perceptions PME (primary outcome), message perceptions PME, message reactance, NA beer message perceptions, attitudes

toward alcohol, intentions to reduce alcohol, intentions to drink alcohol, intentions to quit alcohol, alcohol-cancer causal beliefs, separate tri-risk alcohol-cancer risk belief items (affective, experiential, and deliberative risk), support for messages on alcohol containers, and perceived effectiveness of messages on alcohol containers. See the clinicaltrials.gov registration for exact measurement phrasing of these items. We will compute Tukey HSD post-hoc tests to examine pairwise effects. The no-message control group will only be included in ANOVAs where applicable (i.e., for non-message-related outcomes, such as drinking intentions). For sensitivity analyses, we may estimate covariate-adjusted ANOVAs controlling for demographic covariates (e.g., age, drinking history) that are statistically differ across randomized conditions.

Exploratory analyses may examine whether the main effects of our study conditions vary by potential moderators (e.g., drinking status). Moderator analyses will include a message condition X moderator interaction variable in two-way ANOVAs. Analyses will use available data for each outcome. Participants who do not provide data for a given outcome will be excluded from analyses of that outcome. Analyses will be computed using R (version 4.5.1).

6. Study Participants

6.1. Study Population

Participants will be adults in the US aged 21+.

6.2. Number of Participants

6.2.1. Sample Size

We plan to enroll approximately 1,400 participants (~200 per experimental condition).

6.3. Eligibility

Inclusion criteria are that participants must:

- currently reside in the US;
- be aged 21 years or older; and
- speak English.

Qualtrics Panels will only share the research opportunity with people in their panel who meet these criteria.

6.4. Vulnerable Populations

N/A

6.5. Recruitment Procedures

The survey vendor, Qualtrics, will recruit all participants for this study using their cohorts. Eligible participants will be contacted by email directly from Qualtrics to

participate in the survey. Below is an example of what a typical email invitation that participants will see.

> "Researchers at the University of Connecticut are recruiting people to participate in a survey to learn how people respond to messages about alcohol and health.
>
> The survey time to complete will be 25 minutes. Those who click on the 'Take your survey' button will be redirected to the online consent form."

6.6. Consent/Assent Procedures

Interested participants who interact with the recruitment blurb will be immediately directed to an online link where they will provide informed consent via Qualtrics (see Appendix B). The consent form provides information about:

- the purpose of the study;
- the risks/benefits associated with participating in the study;
- participant protections (e.g., anonymized data);
- incentives;
- how participation is entirely voluntary; and
- contact information (including for the PI and for the UConn IRB office).

The consent form also states that participants can withdraw at any time without penalty. Those who consent to participate in the study will be asked to select a response that says, "Yes, I agree and consent to participate in this study." Participants will have no time limits to review the consent materials. We will keep the signed consent forms until the completion of the study. Participants can save a copy of the consent form by printing the page.

6.7. Costs/Reimbursement

N/A

6.8. Compensation/Incentives

Qualtrics and its third-party affiliates will manage participant incentives directly. Because their panels recruit from various channels (e.g., online ads, email invitations, loyalty schemes, social media, etc.), there is no set type of incentive. For example, some participants may be provided with a reward instead of a monetary incentive. Qualtrics provided the following information to share with the IRB:

> "Because each respondent is compensated differently, it would be inappropriate to inform how much they will be compensated in the cover letter. Instead, we recommend including verbiage along the lines of: 'You will be compensated the amount you agreed upon before you entered into the survey.'"

In accordance with this recommendation, our recruitment ad will state that exact language.

6.9. Withdrawal/Termination

Participants may decide to withdraw from the study at any time. Participants do not need to provide a reason for withdrawing.

After a participant leaves the study, no new information will be collected for that individual. Information that has already been collected will remain in the study database and may be used to determine the results of the study. Participants who withdraw will not be eligible to receive the study compensation.

7. Study Procedures

Interested participants who interact with the recruitment blurb sent by Qualtrics will be redirected to the online survey (also administered via Qualtrics). Participants will complete the survey in a single session.

7.1. Data Collection/Instruments

We will collect survey data using Qualtrics.

7.2. Locations/Facilities

All surveys will be completed online via Qualtrics.

8. Risks/Benefits

8.1. Risks

This research does not involve more than minimal risk. Possible risks include the potential for discomfort when answering questions. In addition, participants will be asked to provide the first names of people in their personal networks. Participants may provide fake names when answering this question. Regardless of what names they provide, the data will be anonymized after the survey is done fielding.

8.2. Risk Mitigation

Participants will be informed in the consent form that they do not have to answer any question they do not wish to and that they are free to leave the study at any time. We will anonymize participants' social network information (relevant to a separate embedded study). For example, each network tie will be replaced with an anonymous alter identifier (e.g., alter_1, alter_2… alter_10).

Other inconveniences participants may experience include time spent to participate in the study. Our study procedures will minimize these risks by only collecting data related to study objectives.

8.3. Training, Qualifications, Resources, and Study Oversight

N/A

8.4. Data Safety Monitoring

N/A as this data does not involve more than minimal risk.

8.5. Benefits

There will be no direct benefits to study participants. The findings from this study could benefit society by helping to inform future alcohol-cancer public awareness initiatives. Findings will also inform other research studies in areas related to alcohol and cancer risk communication.

9. Data/Sample Management, Protection, and Record Keeping

Identifiable data will be stored electronically on a password-protected UConn SharePoint server accessible only by members of the research team until the study is complete. Once complete, the researchers will de-identify the data and delete any unnecessary identifiable information.

De-identified study documents will be retained for at least 3 years after the completion of the research as required by Federal regulations.

10. Dissemination

We plan to draft our de-identified findings in one or more research manuscripts, which we aim to publish in peer-reviewed scientific journals (e.g., *Journal of Health Communication*, *Frontiers in Communication*, etc.).

11. References

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12. Appendix A: Message stimuli with example subject-facing material

Harm reduction	Harm prevention	Perceived likelihood of harm
Cutting back on the number of alcoholic drinks per week can lower your cancer risk.	Choosing not to drink alcohol can your lower cancer risk.	Drinking alcohol increases your risk of developing at least seven types of cancer, like breast and colon.
Swapping alcoholic drinks for non-alcoholic ones can lower your cancer risk.	Avoiding alcohol altogether can lower your cancer risk.	About 1 in 20 cancer cases are caused by alcohol. If you drink, you put yourself at risk.
Perceived severity of harm	**Response efficacy**	**Surgeon General warning**
Drinking alcohol can cause cancers that put your life at risk.	Cutting back on alcohol is an effective way to lower your cancer risk.	Women should not drink alcoholic beverages during pregnancy because of the risk of birth defects.
If you get cancer from drinking alcohol, you may need serious treatments, like surgery and chemotherapy.	Drinking less alcohol can actually lower your cancer risk.	Consumption of alcoholic beverages impairs your ability to drive a car or operate machinery and may cause health problems.





13. Appendix B: Participant consent form

Public Health Messaging Survey
SUBJECT INFORMATION AND INFORMED CONSENT FORM

Principal Investigator: Jacob Rohde, PhD, MPH
Institution: University of Connecticut
Address: 358 Mansfield Rd, U-1101, Storrs, CT 06269
Telephone: (860) 486 -2834

You are being asked to be a participant in a research study because you are 21 years of age or older and we would like your thoughts and reactions to different health messages. If you choose to be in the study, we will ask you to complete a survey. We plan to enroll approximately 1,400 participants in this research study. The survey will take about 20-25 minutes for you to complete.

The purpose of this survey is to understand people's perceptions about emerging topics in public health. The study will be an online survey experiment administered on Qualtrics. You will first be asked to answer different question blocks covering topics such as health, social media, and use of different substances such as tobacco and alcohol. After, you will be asked to review and evaluate different health messages. We will then ask questions about your personal networks, as well as demographic information on yourself. We cannot tell you all the details concerning why we are conducting the study and/or what we are testing in this study but will do so after your participation has ended.

You can skip any survey questions that you do not want to answer. Even if you start the survey, you are not required to complete it. You can stop at any time. All your answers will be confidential and will be shared only with the research team and other investigators who may wish to conduct secondary analyses of these data upon reasonable request. To protect your confidentiality, we will not collect any information that directly identifies you. Please do not include your name or other information that could be used to identify you in the survey responses. We will ask you to provide information about people in your personal networks. You may provide us with fake names if you would like. We will anonymize these names after the study is complete.

Your participation in this research study is voluntary. You may decide not to participate at all or, if you start the study, you may withdraw at any time without any penalty. Withdrawal or refusing to participate will not affect your relationship with UConn in any way.

There is no direct benefit to you by participating in this study. Risks may include the potential for discomfort when answering questions. Risks may also include the potential for a breach of confidentiality. Confidentiality will be maintained to the degree permitted by the technology used. When answering questions for this study, we encourage you to not include identifying information about you. Study records will be stored electronically

on password-protected drives. After this study is complete, the researchers may publish their findings. Information will be presented in summary format, and you will not be identified in any publications or presentations.

There is no cost to you to participate in this study. You will be compensated in accordance with the type and value of compensation that you agreed upon with the panel provider once your participation is complete.

If you have any questions about this study, please contact Dr. Jacob Rohde (jacob.rohde@uconn.edu). If you have any questions or complaints, you may contact a person not on the research team at the Biomedical Research Alliance of New York Institutional Review Board at (516) 318-6877 or at www.branyirb.com/concerns-about-research.

In addition, for any questions about your rights as a research participant, please contact the UConn IRB Office at irb@uconn.edu or at (860) 486-8802.

Consent Agreement:

If you click the ‘’yes” button below, it means that you read this consent form and agreed to participate in this study.

___ Yes, I agree and consent to participate in this study

___ No, I do not consent to participate in this study