Official Title: Examining the Impact of Stress on the Emotionally Reinforcing Properties of Alcohol in Heavy Social Drinkers: A Multimodal Investigation Integrating Laboratory and Ambulatory Methods

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Study Protocol

Participants in this study will be male and female social drinkers, age 21-30. To be eligible, all participants will need to identify at least one eligible same-gender friend. Participants will be excluded from participation if they have a history of adverse reaction to the amount of beverage employed in the study, if they have a history of alcohol treatment or of major problems associated with alcohol, or if they are especially light drinkers or abstainers. Participants must also report comfort with the dose of alcohol administered in the study. Individuals will be excluded if they have medical conditions that contraindicate alcohol administration, if they are illiterate, or if they are non-fluent English speakers. Participants must not be dependent on any substance other than nicotine or caffeine, and must not qualify for severe Alcohol Use Disorder, as assessed at the time of study screening via DSM-V. Females who are pregnant or trying to conceive will be excluded.

The laboratory portion of this study involves an examination of dyadic interaction. Participants will be paid a maximum of $100 for completing the laboratory portion of the study. Once at least two members of a friendship group qualify for participation during screening, they are invited back for an experimental laboratory session. Study advertisements allow for friend groups larger than 2 in order to account for ineligible subjects and/or dropout. Two friend dyads are invited to the laboratory for simultaneous beverage administration sessions. On the day of the session, they are randomly assigned to consume alcohol in the company of their own friend, or of the friend of the other participant (an individual with whom they are unacquainted).We adopt this procedure—in which all participants are recruited through a single mechanism—to ensure that the populations of individuals in friend and stranger conditions are comparable and unaffected by selection bias. Within the stranger condition, we will adopt procedures we have used previously to ensure these participants are unacquainted (i.e., all participants are introduced prior to beverage administration and backup participants are invited to all stranger sessions in case the primary 2 participants are previously acquainted).

Dyads will be randomly assigned to receive either a moderate dose of alcohol or a control beverage. The dose will be adjusted for participants' weight and gender and is designed to produce a peak BAC of .08% (0.82-g/kg males; 0.74-g/kg females). Alcoholic beverages will be administered as a soda/juice-vodka cocktail, and control participants will consume an isolvolumic amount of soda/juice. In order to model drinking conditions as they most often manifest outside the laboratory (Senchak et al., 1998), both members of the dyad are assigned to the same beverage condition. We chose not to deceive participants in the control condition about the content of their beverages.

Participants consume their beverages in 3 equal parts over 36 minutes. Experimenters enter the room to refill drinks at 12 and 24 minutes. During the dyadic drink period, video cameras are trained on each participant. Participants are initially told that cameras are monitoring their drink consumption, and only later provide consent for their behaviors to be analyzed from video using FACS. Immediately after the drink administration period, participants are brought into separate rooms to complete self-reports, including positive and negative mood, and perceived social reinforcement. Participants in the control condition are allowed to leave after completing the rest of the laboratory procedures. Participants in the alcohol condition stay until their BAC drops to 0.00 and are breathalyzed at 15-min intervals.

Participants may also be offered the opportunity to participate in an additional ambulatory study. This opportunity may be offered to a subset of individuals who complete the laboratory study, as well as individuals recruited from the local community. Participants will sign a separate consent form outlining procedures involved in ambulatory assessment.

The ambulatory assessment techniques used in this study were selected for their capability to reliably and unobtrusively measure key constructs of interest. Data from the SCRAM transdermal alcohol monitor will be used to assess alcohol use during the ambulatory assessment period, lasting 14 days. Data from transdermal alcohol monitors will be converted into estimations of BAC using machine learning algorithms developed by our laboratory (Fairbairn et al., 2020). During the ambulatory assessment period, participants will complete self-reports of their mood and take photographs of themselves and their surroundings on their smartphones or, in the event they do not own a smartphone, on one of our lab's iPod touch devices. Participants will complete self-report surveys regarding their mood, their social surroundings, and their alcohol consumption in response to random "pings" or alarms sounding 8 times during their waking hours. Participants will be asked to attend 2 additional (brief) laboratory visits during the ambulatory assessment period—a total of 3 visits, including the original lab orientation session. The first of these visits will take place approximately halfway through the ambulatory assessment period. During this visit, the fit of the transdermal sensors will be assessed, and they will receive feedback on their compliance with ambulatory assessment procedures. At the end of the ambulatory assessment period, participants will review the photographs they took during ambulatory assessment and report their level of acquaintance and relationship quality with each individual depicted therein. During their final visit, they will return the transdermal equipment. Participants will be paid up to $200 for completion of the ambulatory assessment period.

Statistical Analysis Plan

Analyses will be conducted using Hierarchical Linear Modeling (HLM; Raudenbush & Bryk, 2002). Models for facial data will involve 3-levels—within-person, between-person, and dyad-level. Raw video frame files—originally recorded for every 1/30th second—will be aggregated into bins for analysis to reflect the duration of facial behaviors as the interaction progresses (Fairbairn et al., 2013; Sayette et al., 2012). Effects of time within the drink period will be entered at level-1 and treated as random at levels 2 and 3. Models for self-reported mood data will involve 2 levels –between-person and dyad-level. Alcohol condition and social familiarity will be entered at the dyad-level as predictor variables. Self-reported positive and negative mood as well as perceived social reinforcement will be each entered at the individual-level as the dependent variables.

Analysis of ambulatory data will also involve HLM, accounting for clustering of observations (level-1) within individuals (level-2). Note that, although ambulatory data will include some complete friendship dyads, we do not anticipate significant clustering at the level of these dyads, although ICC's will be calculated to confirm. An index of BAC and familiarity will be available for each observation, and these variables will be entered at level-1. Follow-up analyses will then parse within-person from between person effects—predictors will be centered according to the individual mean at level-1, and then individual averages will be entered at level-2. Level-1 covariates will include time of day, day of the week, limb of the BAC curve, and physical drinking context and level-2 covariates will include basic demographic variables (gender, age, and personality) (Miranda et al., 2014; Piasecki et al., 2011).