TigerAware is a software platform that allows researchers to design, build, and administer EMA studies to their participants. TigerAware consists of two major software components: native mobile applications which study participants use to receive prompts and respond to surveys, and a web dashboard which researchers use to build and manage their studies. TigerAware includes many novel advancements that provide an edge over other software options in the EMA field. First, TigerAware is built on a highly flexible and customizable study framework. This allows researchers to choose from a wide variety of question types, survey flow controls, and user notification types. New question types, external sensor integrations, or other features can also be added to the existing platform with little time or financial investment.

EMA software. We will use the *TigerAware* app, which assesses mood, behaviors, and experiences in real-time during daily life. TigerAware was developed by Drs. Trull and Shang and has been used in several NIH sponsored studies, including two current NIAAA R01s (AA019546; AA025451). Major features of *TigerAware* include: 1) configurable software that allows researchers to customize their surveys; 2) event-based modules can be self-initiated when the target event occurs (e.g., alcohol drink); 3) scheduling of prompts (e.g., random or fixed-interval); 4) integration of biometric data from connected devices (e.g., portable breathalyzers); 5) access to a dashboard for tracking important benchmarks and data downloads in CSV format.

TigerAware allows us to create a suite of device-prompted and user-initiated surveys, drawing from innovations developed in our prior work[102,105,106,157], that can be "pushed out" to the app on participants' phones. Using participants' personal phones is convenient for them (relative to a study-specific second device) and increases the likelihood they will carry it on their person and complete the assessments in a timely fashion. The app transmits encrypted data back to a cloud server and can be reviewed in near-real time by study staff. The user is able to complete reports even if the phone is offline; data is transmitted when an internet connection is established. In addition to user-entered responses, all diary records are stamped with time, date and geolocation. Note that the transmission of data are encrypted, and the data are also encrypted on the server.

b. Protections Against Risk

Tracking information and web-signed consent forms will be stored in a separate secure server from study data. Any paper signed informed consent documents will be kept in a locked file cabinet and physically separated from any study information (because the informed consent documents will contain identifying information). As noted, electronic data will be password-protected (on the smartphones) and both electronic data and physiological data will be stored on secure, password-protected computers and kept separate from all identifiers. Consistent with recent NIH changes, we will have a Certificate of Confidentiality, which will provide some protection of participant data from subpoena from local, state, and federal jurisdictions.

During the EMA bursts, all participants will carry their own smartphone with our app uploaded, or a study provided smartphone if they do not possess one, in the course of their typical daily activities. Although participants will potentially be providing reports on high risk behaviors, including heavy drinking and substance use, these reports will not be examined by the research team in real time, but will be available on the Research Team's Dashboard that will summarize data for each individual and the sample as a whole.

A potential risk of EMA/ambulatory assessment research is that participants might respond to their smartphone while driving. To reduce this risk, participants will be told during orientation and reminded during weekly check-in sessions that they should use the app's "suspend" function while driving or engaging in other activities where phone use is counter-indicated, which will suspend prompting for a specified period of time without hurting participant compliance.