Overview of the ASA24™ Respondent Web sites and Considerations Related to Data Security and Participant Confidentiality

Extensive evidence has demonstrated that 24-hour dietary recalls provide the highest quality, least biased dietary data. Traditional 24-hour recalls, however, are expensive and impractical for large-scale research because they rely on trained interviewers and multiple administrations to estimate usual intakes. As a result, researchers often make use of food frequency questionnaires, which are less expensive but contain substantial error.

To address this challenge, investigators at NCI created the Automated Self-administered 24-hour Recall (ASA24™) system, a freely-available, web-based tool that enables multiple automated self-administered 24-hour recalls. ASA24™ was developed under contract with Westat®, a social science research firm located in Rockville, MD, and builds on the Food Intake Recording Software System (FIRSSt) developed by Dr. Tom Baranowski of the Baylor College of Medicine. An External Working Group provided advice about the needs and interests of potential users.

ASA24™ consists of a Respondent Web site used to collect recall data and a Researcher Web site used to manage study logistics and obtain data analyses. Two Respondent Web sites are currently available in English and Spanish: **ASA24™-2014** and **ASA24™-Kids-2014**. This document provides an overview of the methodology and main features of the ASA24™ Respondent sites, as well as information on security of the data collected and protections to the confidentiality of the participants of studies that make use of ASA24™. Images of the main Respondent site screens are also included.

ASA24™ Respondent Web site Methodology

Respondents are guided through the 24-hour recall interview using a modified version of the USDA's Automated Multiple-Pass Method (AMPM). The steps in the interview process include:

1. Meal-based Quick List
2. Meal Gap Review
3. Detail Pass
4. Forgotten Foods
5. Final Review
6. Last Chance
7. Usual Intake Question
8. Supplement Module (if selected by the researcher)

Meal-based Quick List

During the first pass of the interview, respondents are asked to provide a list of the foods and drinks consumed at each meal occasion for one of two possible 24-hour time periods, depending on the preference of the researcher: yesterday, from midnight to midnight; or, the past 24-hours based on the time of participant login. Respondents are able to browse food group categories to find their foods and drinks or search for a particular item. Foods and drinks

reported at each meal are recorded in the My Foods and Drinks panel within the instrument. This initial step is called the meal-based Quick List. In addition to selecting an eating occasion (e.g., breakfast, lunch, snack), respondents are also prompted to specify the time of the occasion before reporting the foods and drinks consumed. The researcher can opt to collect additional contextual information including where meals were eaten, television and computer use during meals, and whether the meal was eaten alone or with others.

Meal Gap Review

Once respondents finish creating their My Foods and Drinks list at the end of the Quick List step, they are asked if they consumed anything during any 3-hour gaps between eating occasions, and, for the midnight to midnight version, between midnight and the first eating occasion, and between the last eating occasion and midnight. A response of "Yes" to any gap will return the respondent to the Quick List to add the appropriate food(s) or drink(s).

Detail Pass

Respondents are asked for details about the foods and drinks they recorded during the Quick List, including form (e.g., raw), preparation methods (e.g., grilled or roasted), the amount eaten, and any additions (e.g., sugar, coffee cream, salad dressing). Researchers can also opt to ask the source (grocery store, farmer's market, vending machine, etc.) of each food reported.

Forgotten Foods

Following the Detail Pass, a pop-up window appears with questions probing about the consumption of commonly forgotten foods and drinks (e.g., snack foods, fruits, vegetables, cheese, water, coffee, tea). Respondents must check either "Yes" or "No" for each food or drink probed. For any "Yes" response, the respondent will be returned to the Quick List to add the forgotten item(s).

Final Review

Respondents are prompted to review all of the foods and drinks reported for the intake day, and make edits and add meals, foods and drinks as necessary.

Last Chance

After the Final Review, a pop-up screen appears with an option to add food or drink items if respondents have still forgotten any. Again, respondents will be brought back to the Quick List to add more items; otherwise, they will move forward to the final question in the food and drink module.

Usual Intake Question

The final question asks: Was the amount of food that you ate yesterday more than usual, usual, or less than usual? This question probes whether this was a typical day's intake.

Supplement Module (if selected by the researcher during study set-up)

Respondents are asked to provide information about the type and dose of supplements consumed by completing a Quick List, a Detail Pass, and a Final Review. Supplements include vitamins, minerals, and other supplements including prescription supplements. Respondents are able to browse supplement categories (e.g., Multi-Vitamin/Mineral, Calcium products, Herbal/Botanicals) or search for a particular supplement. The supplements included are based on those reported in the National Health and Nutrition Examination Survey.

ASA24™ Respondent Web Site Features

The ASA24™ Respondent Web site guides the participant through the completion of a 24-hour recall for the previous day, from midnight to midnight, using a dynamic user interface. The instrument:

- provides an animated guide and audio and visual cues to instruct participants and enhance use in low-literacy populations and with children (with options to turn off the guide and/or the audio);
- asks respondents to report eating occasion and time of consumption;
- includes optional modules to query where meals were eaten, whether meals were eaten alone or with others, and television and computer use during meals;
- flows as per modified USDA Automated Multiple-Pass Method (AMPM) 24-hour recall;
- allows respondents to report foods and drinks by browsing by category or searching from a list of food and drink terms derived from the National Health and Nutrition Examination Survey (NHANES);
- asks detailed questions about food preparation, portion size, and additions so that food codes from USDA's Food and Nutrient Database for Dietary Studies (FNDDS) can be assigned; it also provides an option to query respondents about food source;
- uses images to assist respondents in reporting portion size;
- allows the respondent to add or modify food and drink choices at multiple points during the interview;
- includes an optional module to query dietary supplement intake based on supplements reported in NHANES;
- is available in English and Spanish; and
- is compliant with Section 508 of the 1973 Rehabilitation Act.

The Respondent Web sites do not provide any direct feedback to respondents. Instead, researchers can obtain analysis files from the Researcher Web site and contact respondents with any findings they choose to share.

Data Security and Protections to Confidentiality of Participants using ASA24™

Researchers using ASA24™ do not provide the National Cancer Institute, Westat (the research firm that developed and maintains ASA24™), or the ASA24™ system with any identifying data for participants of their studies. Rather, researchers specify an identifier for each respondent and download system-generated usernames and encrypted passwords that they provide to respondents so that they may access the application.

ASA24™ also does not collect any identifying data directly from respondents. However, IP address information is accessed for the purpose of routing information between the server and the respondent's computer—often the IP address is that of the user's Internet Service Provider (ISP). IP addresses are not stored or tracked by ASA24™. However, logs of connections are kept in the hosting environment for audit trail purposes. This information is not mined in any way but would be available if there were a legal obligation to release it.

Response data are secured at the hosting site using industry standard security controls, including firewalls and encryption. All data entered into ASA24™ at the respondent's computer is encrypted by the internet browser (e.g., Internet Explorer, Firefox) before they are transmitted to our servers using Secure Socket Layer (SSL) Technology. SSL allows for the authentication of the sending and receiving computers.

Only a particular study's investigator(s) and the ASA24™ operations team can access response data. Access is gained through usernames and strong passwords.

ASA24 Respondent Web site Screen Shots

Figure 1: The participant can choose to complete ASA24 in either English or Spanish.
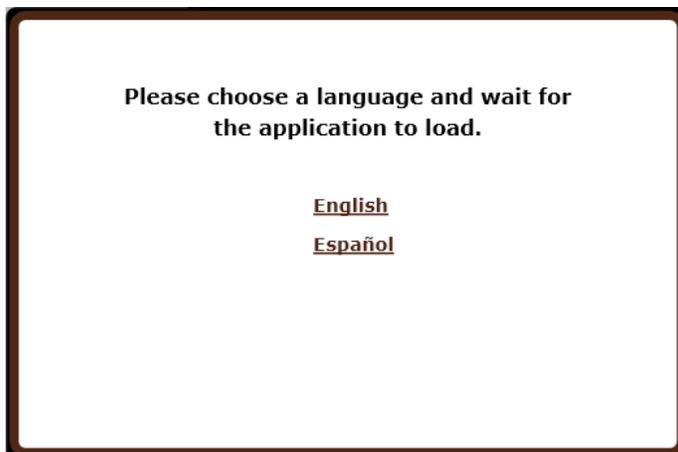
Figure 2: An introductory screen prompts the participant to report everything that she or he had to eat or drink yesterday.
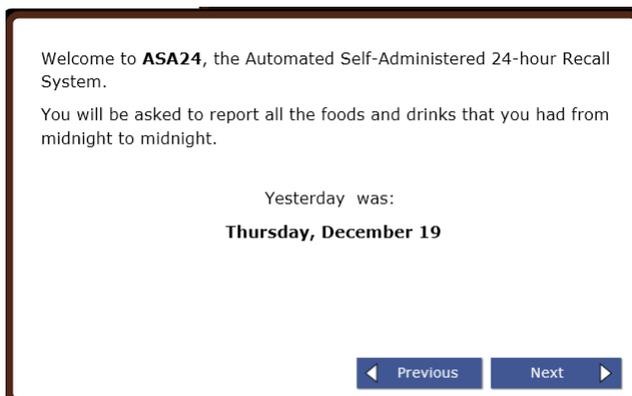
Figure 3: The main ASA24 screen is used to select foods and drinks to be added to My Foods and Drinks during the Quick Pass, and to add details and make changes. The animated guide provides an overview of the main ASA24 screen and gives instructions on how to report all foods, drinks, and supplements (if the optional Supplement Module is selected by the researcher) consumed either from midnight to midnight yesterday or for the past 24 hours, starting at the time of login (depending on the researcher preferences).
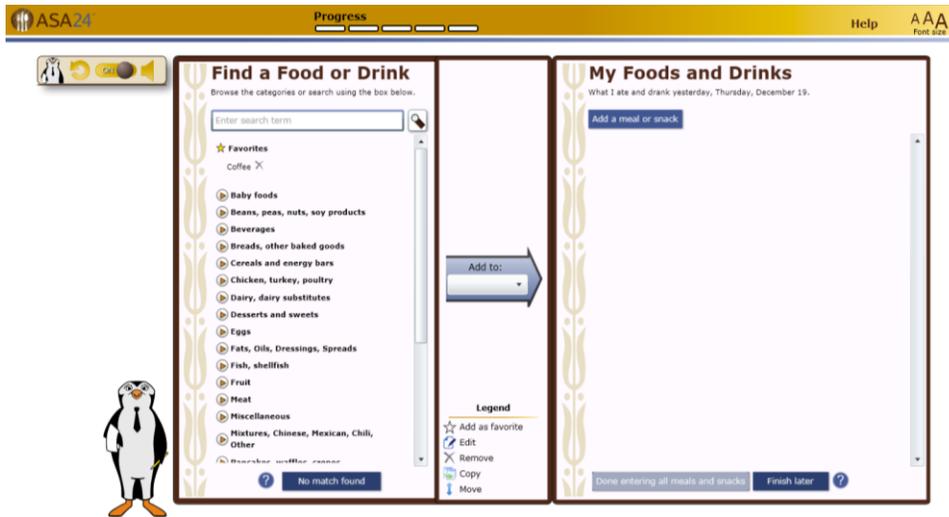
Figure 4: The meal details screen collects information on the eating occasion and time, and displays optional modules that can be selected by the researcher to query where meals were eaten, whether meals were eaten alone or with others, and television and computer use during meals. This is the first step in the meal-based Quick List.

Figure 5: Participants complete the Quick List pass by browsing categories or searching for the foods and drinks they consumed. The food and drink terms are based on the National Health and Nutrition Examination Survey.
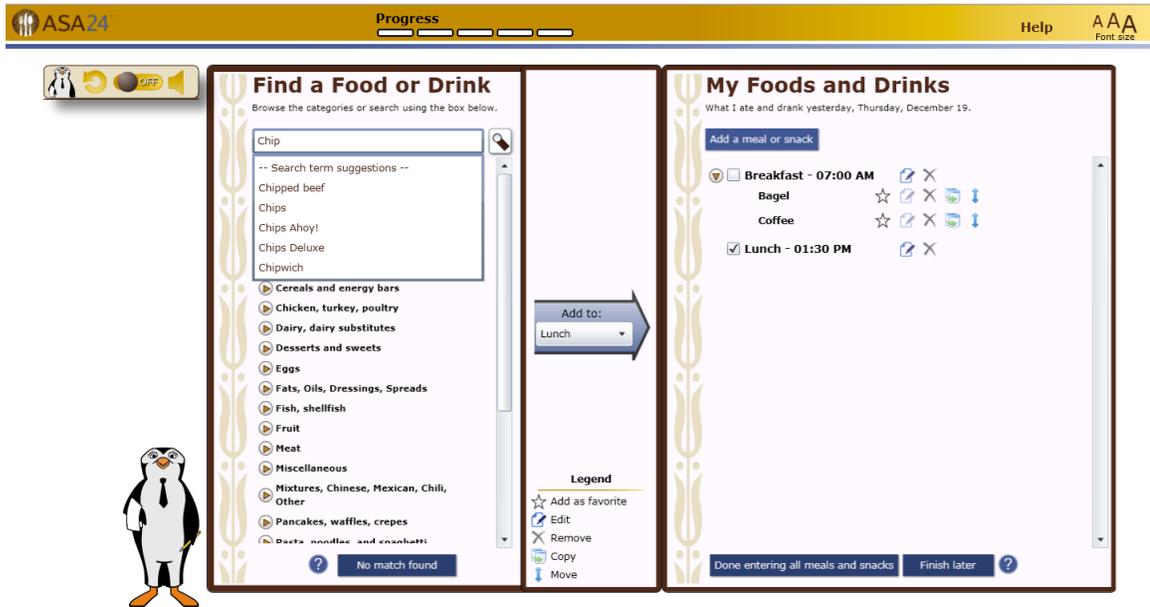
Figure 6: The foods and drinks that the participant reports during the Quick List are displayed in the My Foods and Drinks panel on the right of the main screen.
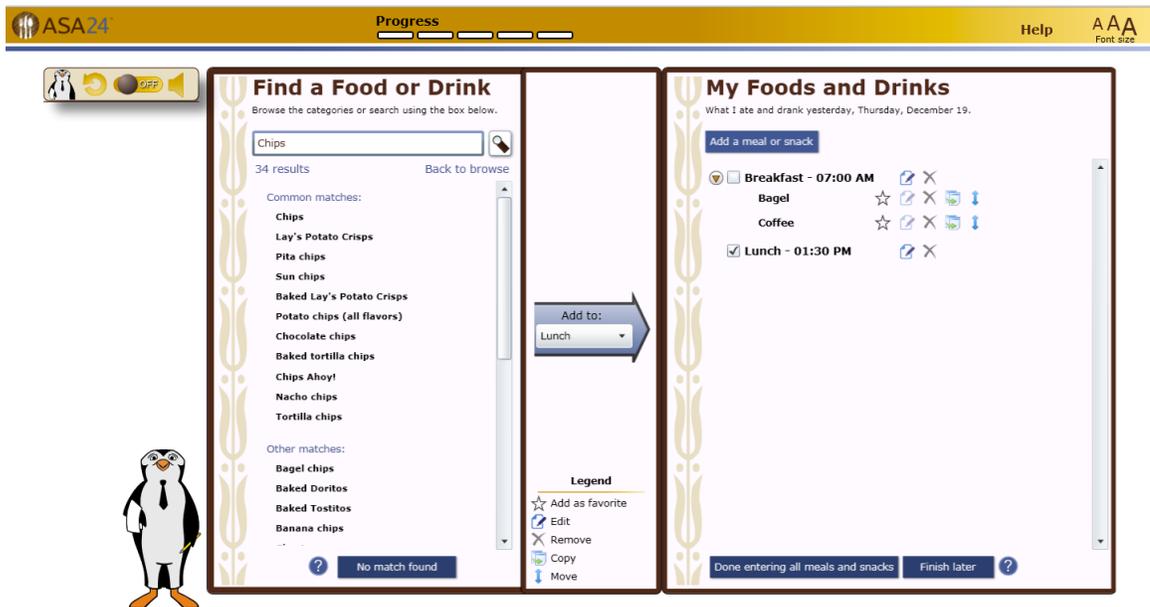
Figure 7: After the participant reports the foods and drinks consumed yesterday and selects Done entering all meals and snacks, the Meal Gap Review is displayed.
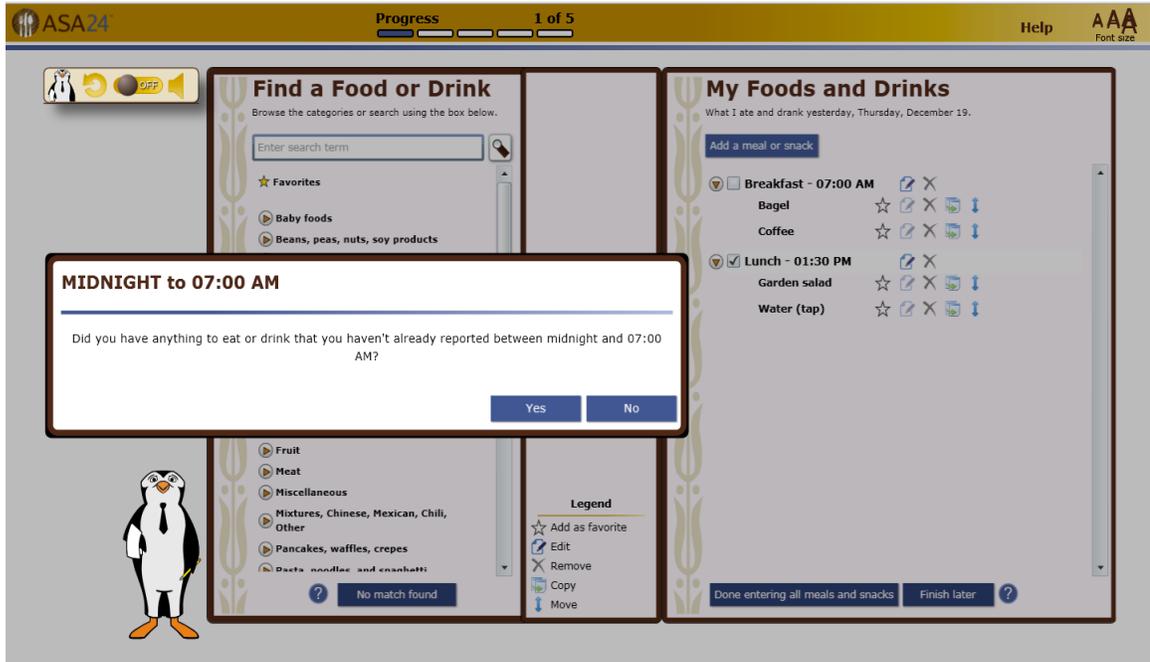
Figures 8a-c: The detail pass prompts the participant to report the details of each food and drink, including the specific type or how it was prepared, anything added to it, and the amount that was consumed.

Figure 8a.
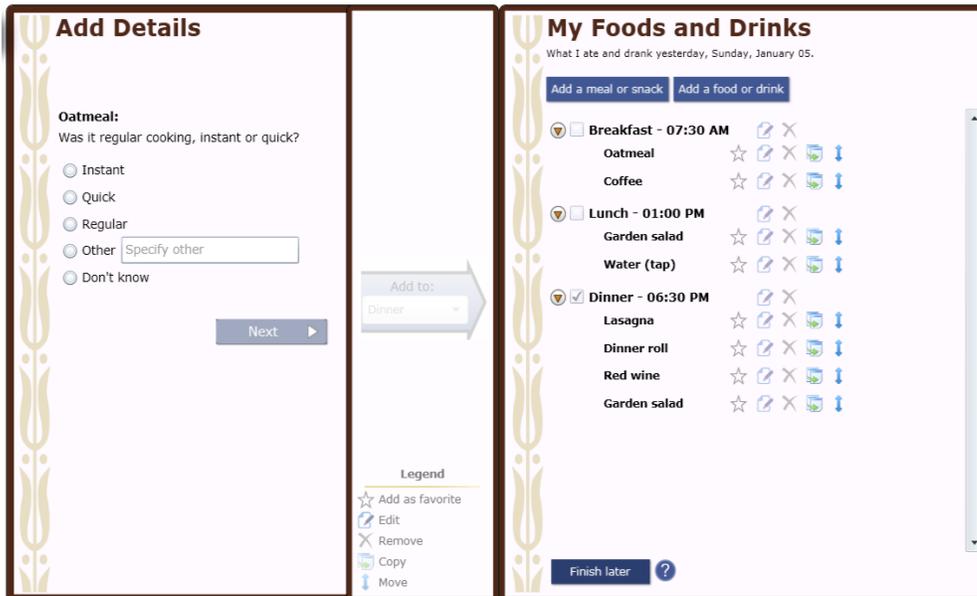
Figure 8b.

Oatmeal: How much did you actually eat?

Select the image that best represents the amount you ate at breakfast Sunday at 07:30 AM.

Figure 8c.

Did you add anything to your Oatmeal that you haven't already reported?

Select all that apply.

Search or browse to find foods added to your Oatmeal at breakfast Sunday at 07:30 AM. Use the arrows to add or remove additions. If nothing was added or you have already reported the additions, select **Nothing Added** below.

Figure 9: Once the Detail Pass is complete, the Final Review begins. The participant can make changes to the details for a given food or drink and add more foods and drinks if necessary.
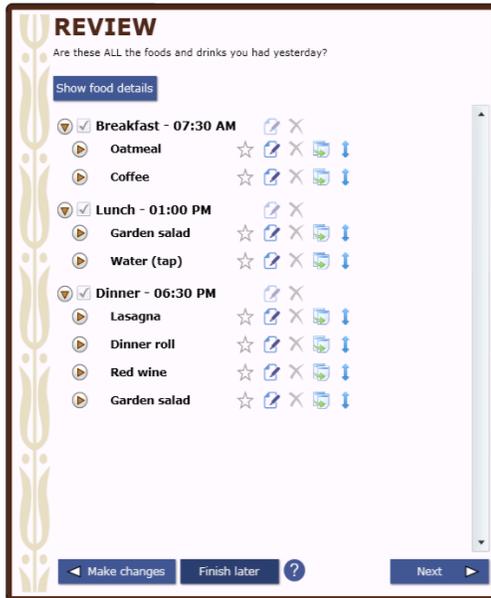
Figure 10: The forgotten foods pass queries the participant about frequently forgotten foods. Responding yes to one or more categories will result in a prompt to add the forgotten foods or drinks.

Figure 11: The final question in the food and drink module asks the participant whether the amount of foods and drinks consumed yesterday was usual.

Figure 12: If the Supplement Module is selected by the researcher during study set up, the participant will also be asked about the supplements, if any, that he or she took either from midnight to midnight yesterday or for the past 24 hours, starting at the time of login (depending on researcher preferences).

Figure 13: The Supplement Module collects details about each supplement reported.
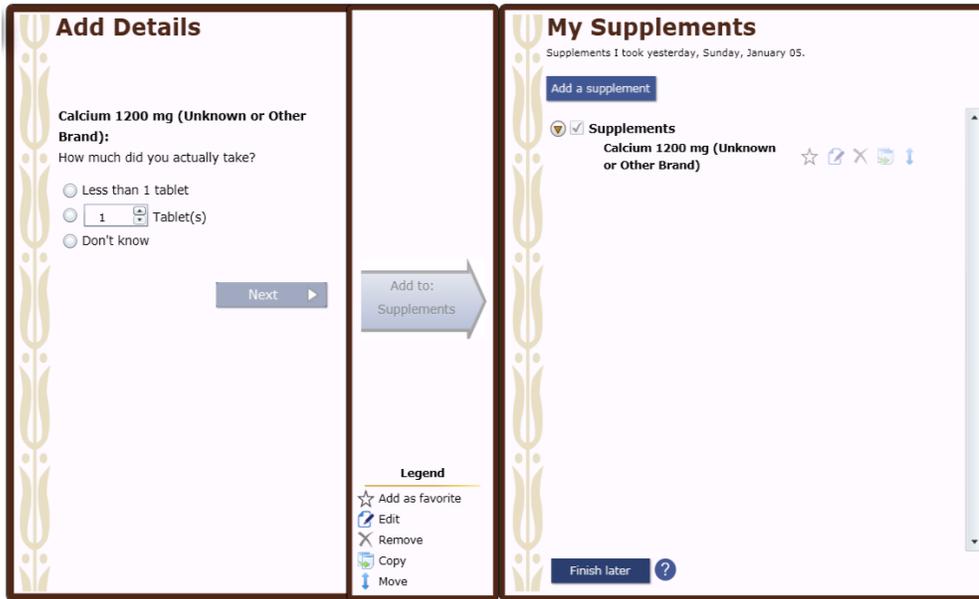

Figure 14: Once the participant completes the food and drink module and the supplement module, if selected by the researcher during study set up, his or her responses are saved in the secure database and he or she can exit ASA24. Only the researcher(s) who are registered to that study and the ASA24 operations team can access the response data.