SANA

Speech-Driven Automated
Neuro-Cognitive Assessment

User | GUIDE

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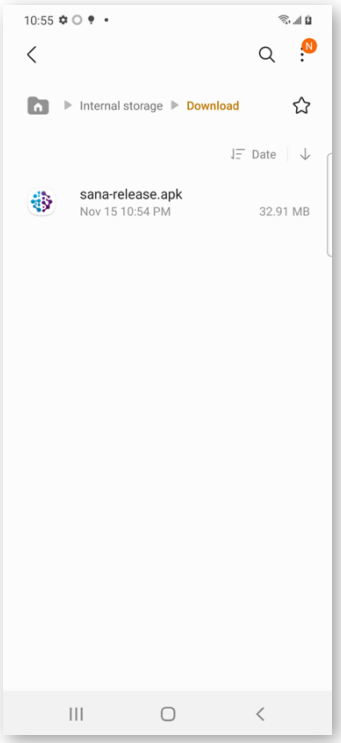
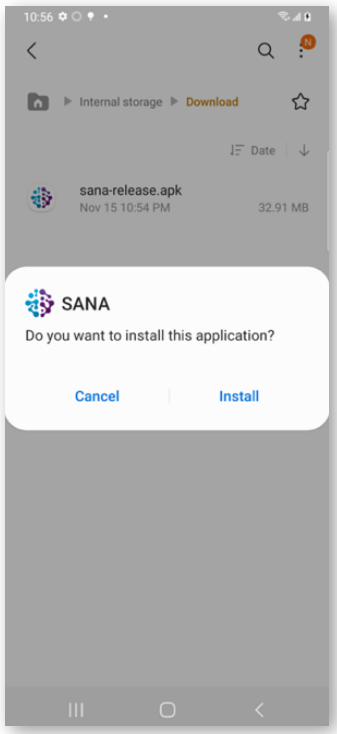
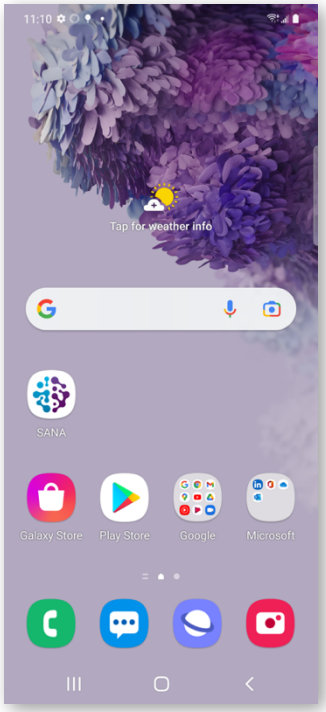
Getting Started with SANA

To install the SANA application, place the .apk file provided into the mobile device's file tree.

Install	
Upload APK to Android Device Using Android File Manager, drag and drop the sana-release.apk into the Downloads folder Navigate to All Apps > My Files > Internal Storage > Downloads to locate the SANA APK.	

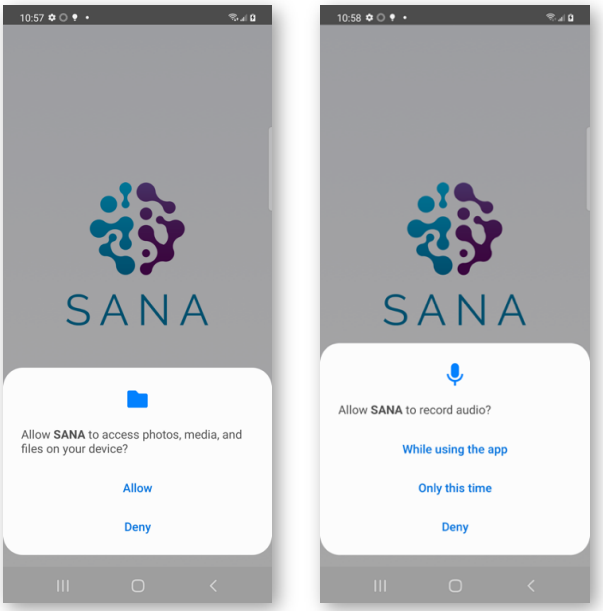
Install SANA After locating the SANA APK, tap on the file to begin installing. A prompt may appear to “allow the installation of apps from unknown sources”. If the notification appears, follow the prompts to the setting that allows the app to be installed from My Files. Tap “Install” to complete installation.	
Install Success After successfully installing the SANA application, SANA can be launched from the installation verification prompt or find the SANA app in your app drawer.	

Initial Launch

Allow Permissions

SANA requires access to the microphone and the mobile device's files to function.

Permissions must be granted in order to start using the app.

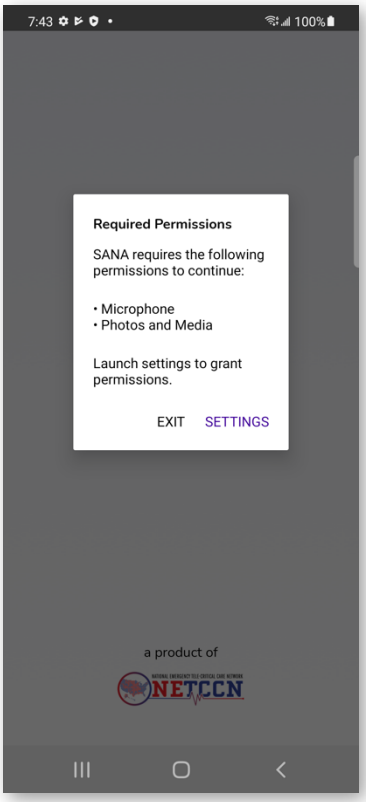


Permissions Denied

If permissions are not granted, SANA will block access to the application.

If the app is launched with no permissions granted, a required permissions modal displays and provides direct access to the required settings through the Settings link.

If "Exit" is tapped, SANA will close.



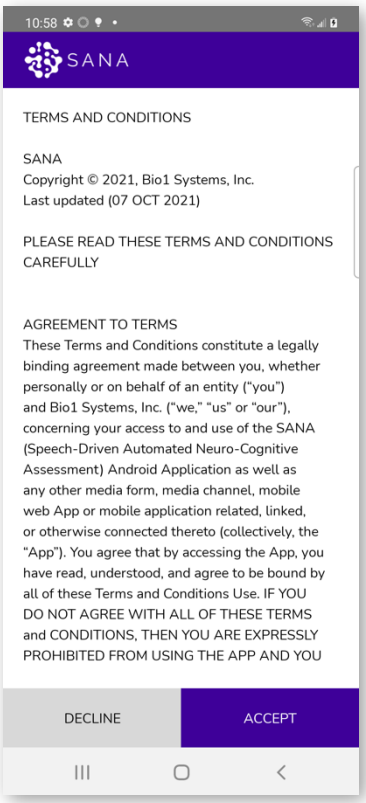
Terms and Conditions

SANA requires acceptance of the terms and conditions in order to use the application.

If the terms and conditions are declined, the SANA application will close.

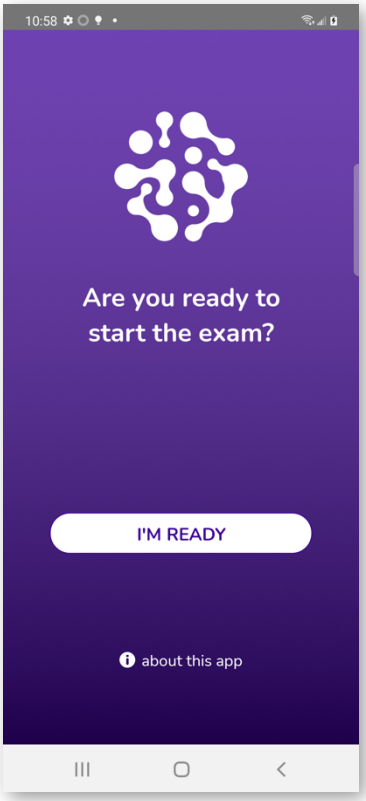
After accepting terms and conditions, access to the full application is granted.

The acceptance of terms and conditions is only required the first time the app is launched.



SANA Exam

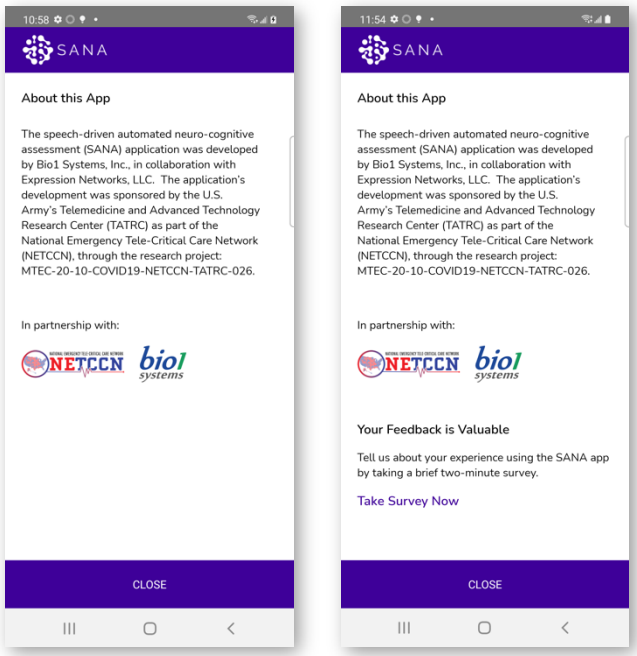
SANA allows researchers and clinicians to perform cognitive evaluations and assessments remotely using a self-guided interface. The SANA application captures and transcribes each participant's audio response, as input to the scoring rubric for the proprietary cognitive assessment. SANA computes a score of cognitive impairment, based on the transcribed responses to the proprietary cognitive assessment exam and the established scoring rubric. Audio files from the assessment and free response questions are saved in a cloud-based data repository, where they are used for downstream Natural Learning Process (NLP) and sound waveform machine learning model development.

SANA Home Page	
Are you ready to start? From the home screen of the SANA application, tap the "I'm Ready" button to start the exam. If the device is idle on the home screen, a light haptic will occur every 30 seconds to encourage action. Tap "about this app" to view more information about the application.	

About This App

This page displays sponsorship and partnership information.

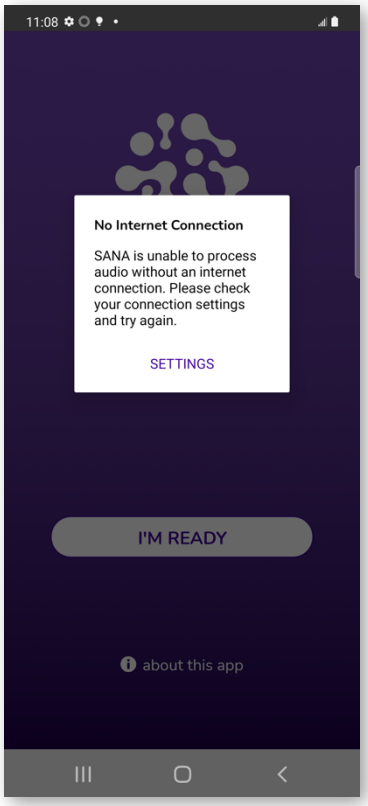
After completing an exam, a link to take the survey appears below the partnership information.



Connection Error

SANA requires an internet connection in order to process the audio transcription service.

If the device is not connected to the internet when tapping "I'm Ready", SANA displays a prompt to set up a Wi-Fi connection.



Begin Exam

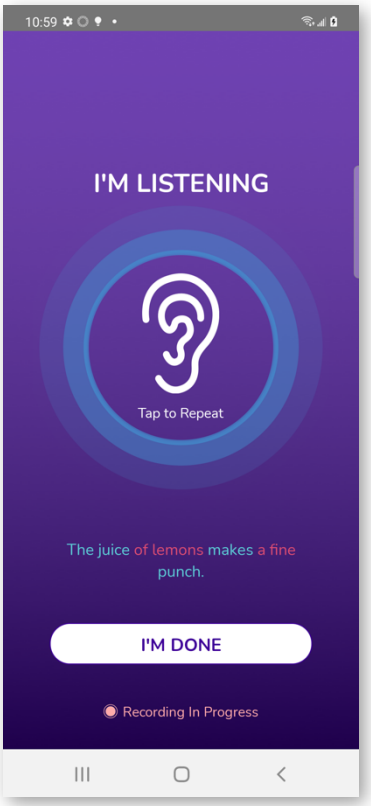
Calibration

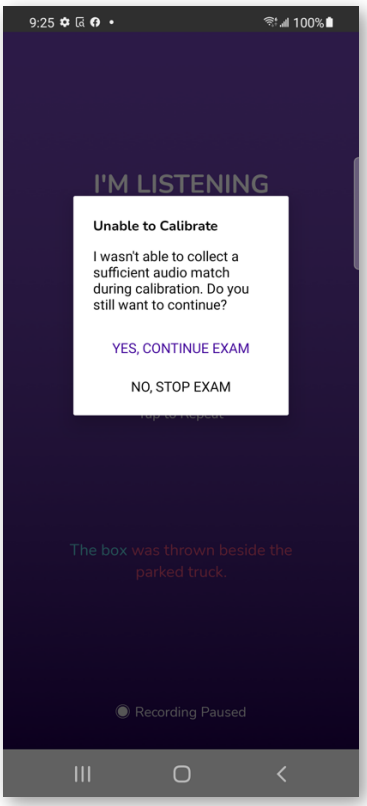
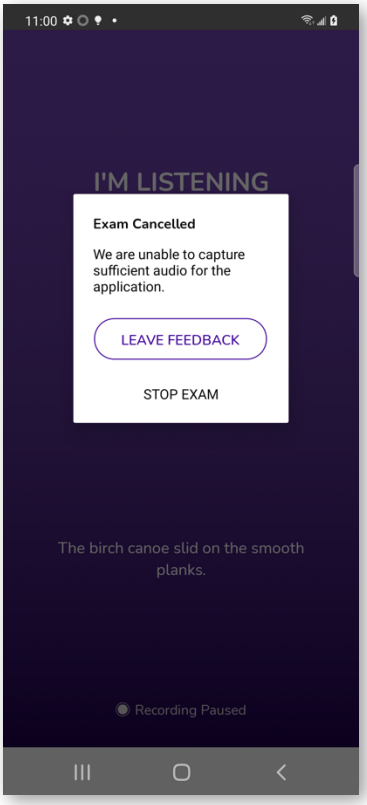
After starting the exam, SANA requires audio calibration. The app will display a sentence on the screen to be read aloud. After reading the sentence aloud, tap the “I’m done” button to complete calibration.

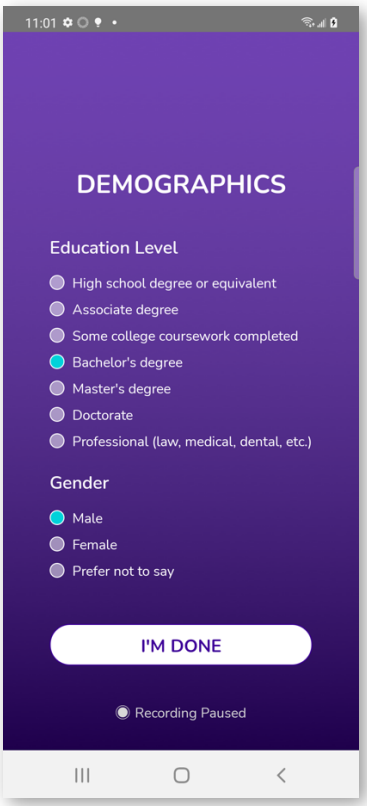
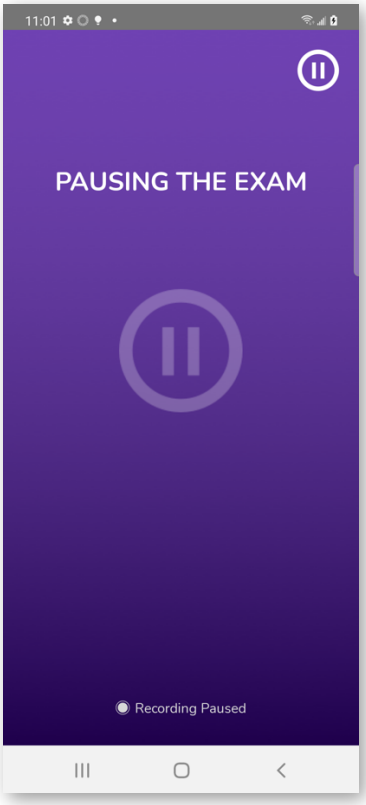
Calibration is a success if there are 2 or less errors in the sentence.

Calibration fails if there are more than 2 errors in the sentence.

Calibration is required at the start of every exam, regardless of the progress in the exam.



Partial Calibration Fail If “I’m Done” is tapped three times with partial failures, a modal will display to either continue the exam despite calibration failure or stop the exam. Continuing despite calibration failure may impact the application’s ability to accurately transcribe and score portions of the assessment.	
Calibration Fail If SANA fails to record any audio after 15 seconds, a prompt will display to try again. If SANA fails to record audio after another 15 seconds, the exam is cancelled. **This same modal will appear at any point in the exam if the app fails to record any audio after two attempts.**	

Demographics Information The selection of education level and gender is required to continue with the assessment. After selecting a gender, tap the "I'm Done" button to continue.	
Pause Exam Information SANA displays a screen that explains how to pause the exam at any time. It also mentions that the exam may take up to 40 minutes. SANA allows users to return to the exam at any time and will pick up at the beginning of the latest assessment that the user left off.	

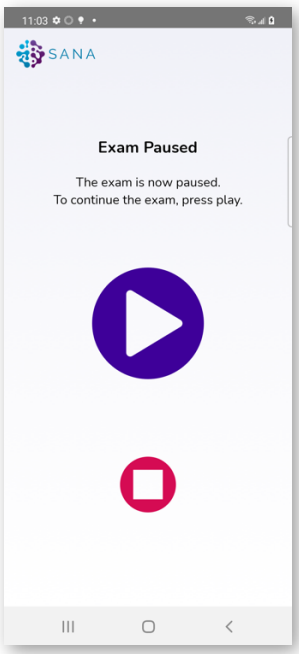
Pause Screen

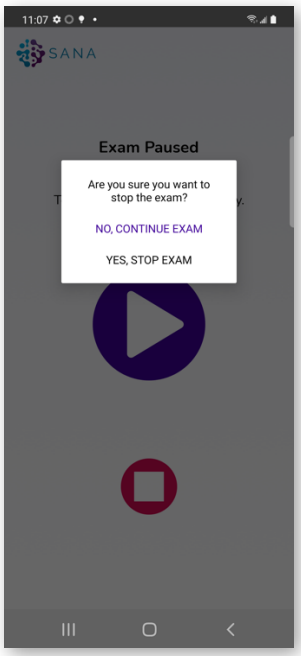
When the exam is paused, the pause screen is displayed. The first time the exam is paused, the audio explaining that the exam may be continued or stopped to come back later is played.

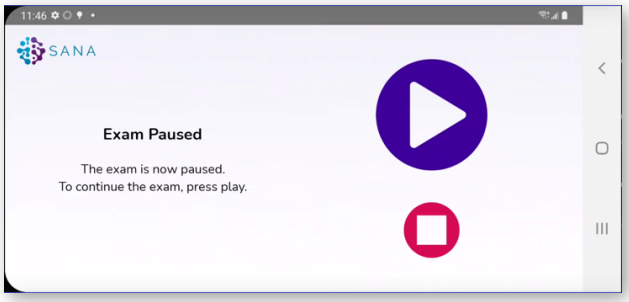
Continuing the exam returns to the beginning of the assessment where the exam was paused, regardless of how far along the assessment was.

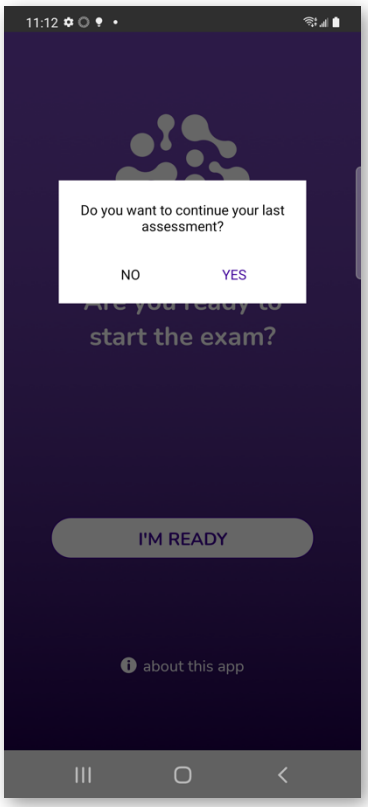
Stopping the exam brings up a modal. “Yes, stop exam” returns to the home screen. “No, continue exam” returns to the pause screen.

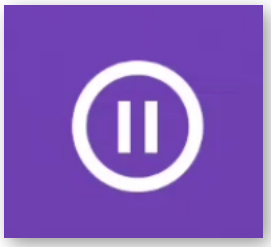
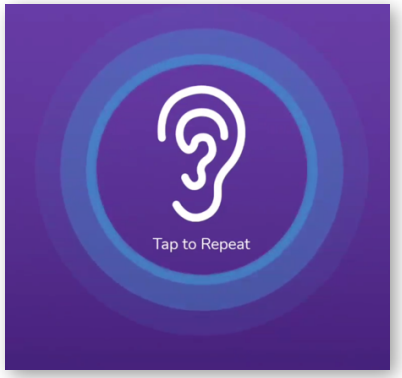
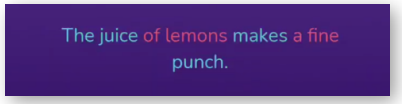
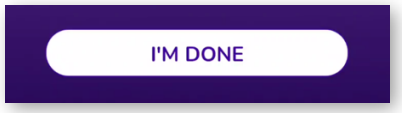
Exiting the app during the exam (for instance, by tapping the home button or locking the device screen), when SANA is opened again, the following page is displayed.

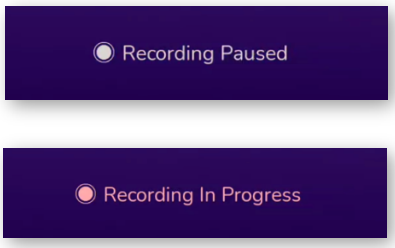
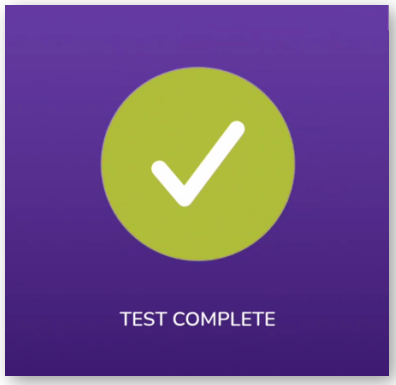






Return to SANA After stopping or exiting the exam, upon returning to start the exam again, SANA prompts to start from the beginning of the assessment where it left off or to start the exam over. “No” begins calibration and then to the beginning of the exam. “Yes” begins calibration and then to the beginning of the last assessment that was started.	

SANA Anatomy	
Title of Test As the tests progress, the titles update to show which test the user is taking.	
Pause Exam Once the exam begins, the pause icon can be found on every screen. Tapping this icon opens the pause screen.	
Repeat Button / Listening Indicator After SANA says the instructions, there is a blue ripple around the ear icon indicating that SANA is listening to the response. If the ear icon is tapped, the instructions/prompt is repeated.	
Calibration Sentence During calibration, SANA provides a real-time indication of which words are being successfully heard.	
I'm Done Button Tapping this button after completing the required responses is how the exam keeps progressing.	

Recording Indicator SANA provides indication when responses are being recorded.	
Success Indicator Each time a test is successfully completed, a visual indication is provided along with a light haptic and a success chime.	
Progress Bar As the exam progresses, a bar is displayed showing how much has been completed. As each exam is completed successfully, the bar updates accordingly.	

SANA Assessments

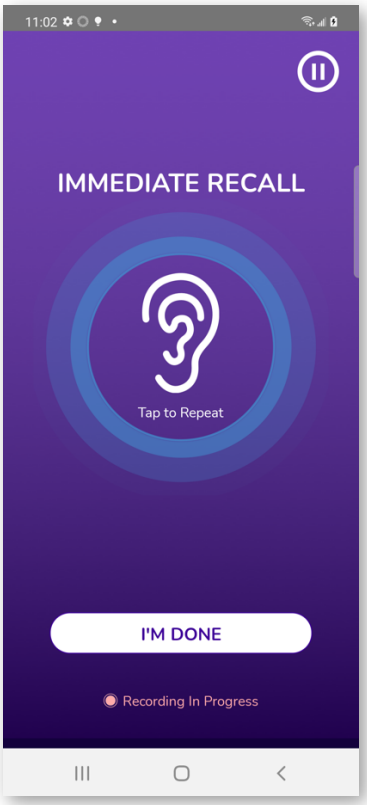
Assessment One: Immediate Recall

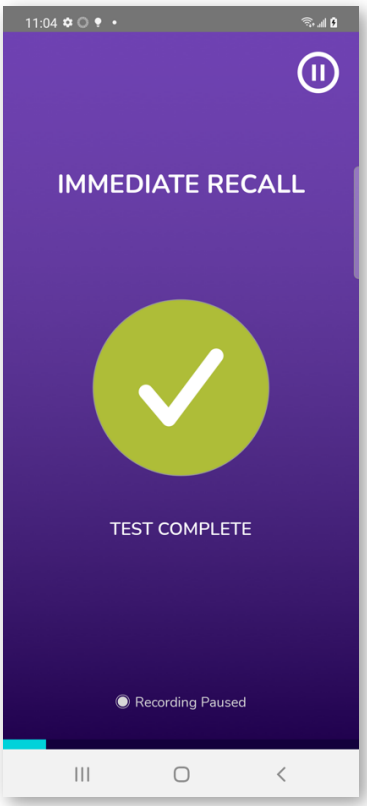
Four sentences are read twice in a row. SANA listens for as many of the sentences in the order in which they were read.

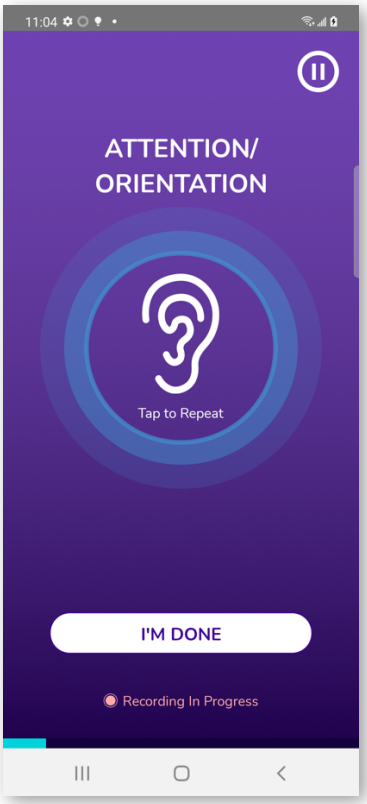
SANA only says the sentences twice. If the instructions are repeated, SANA does not repeat the actual sentences in the repeat instructions.

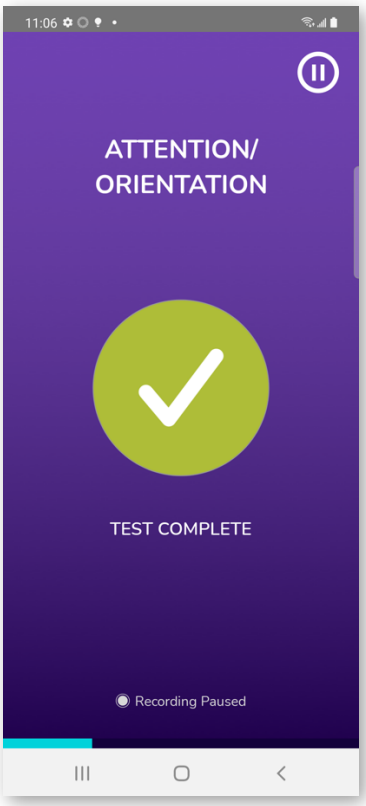
If SANA does not hear any response, it will repeat the instructions.

If SANA does not hear any response twice, the exam will be cancelled.



Immediate Recall Success Upon completing the Immediate Recall assessment, the success screen is displayed accompanied by the success chime and haptic.	

Assessment Two: Attention/Orientation SANA asks for the day of the week, the date, and the year. Then asks in what house or building the U.S. President currently lives. Then asks in what city the U.S. President's house or building is located. Then asks in a couple of sentences why the exam is being taken. If SANA does not hear any response, it will repeat the instructions. If SANA does not hear any response twice, the exam will be cancelled.	

Attention/Orientation Success Upon completing the Attention/Orientation assessment, the success screen is displayed accompanied by the success chime and haptic.	

Assessment Three: Verbal Fluency

SANA asks for as many _____ that can be thought of in a minute.

SANA may ask for fruits, vegetables, or human body parts.

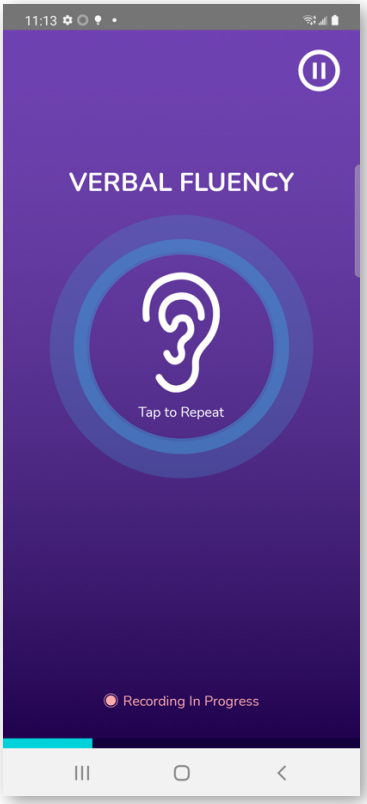
Then asks for as many words that start with the letter _____ that can be thought of.

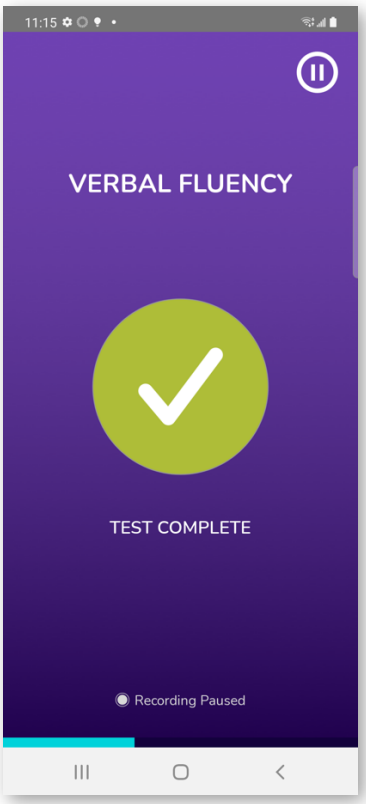
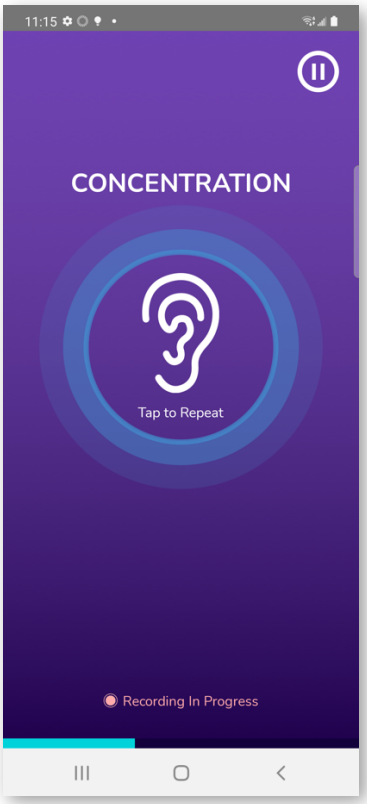
SANA may ask for the letters A, S, or F.

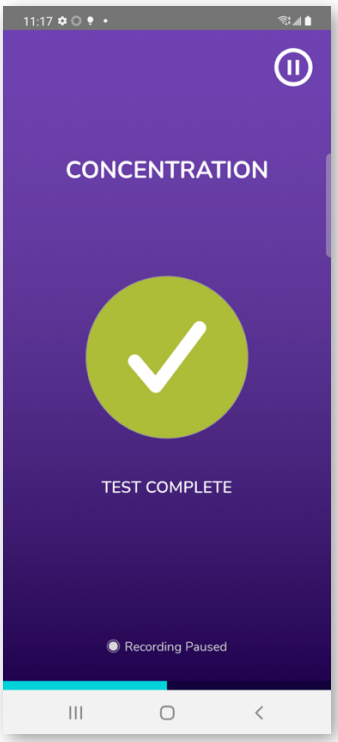
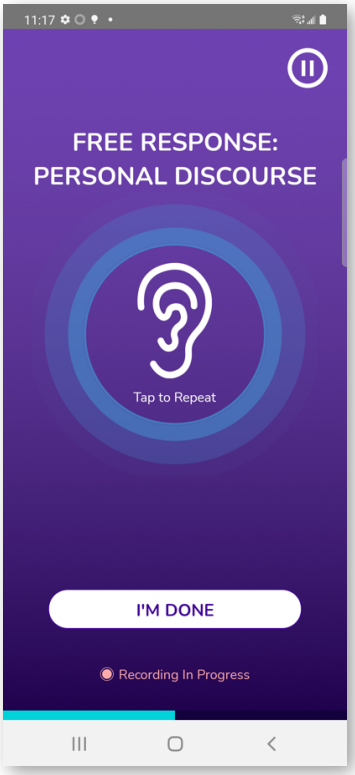
If SANA hears two or more words that start with a different letter, it will correct the user and repeat the instructions.

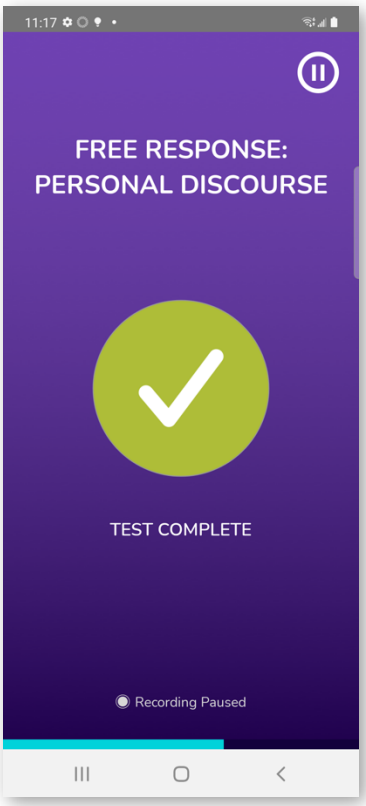
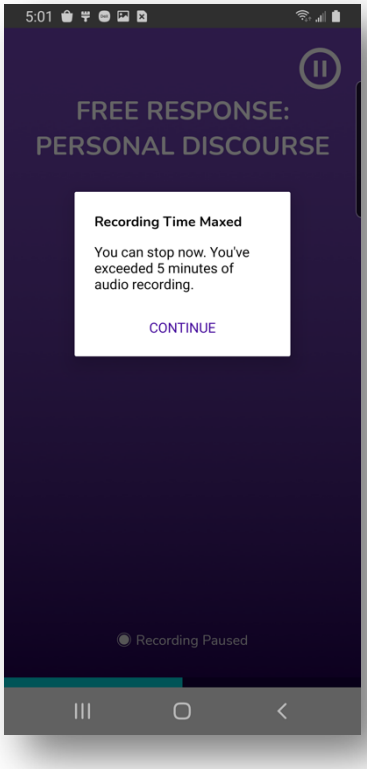
If SANA does not hear any response, it will repeat the instructions.

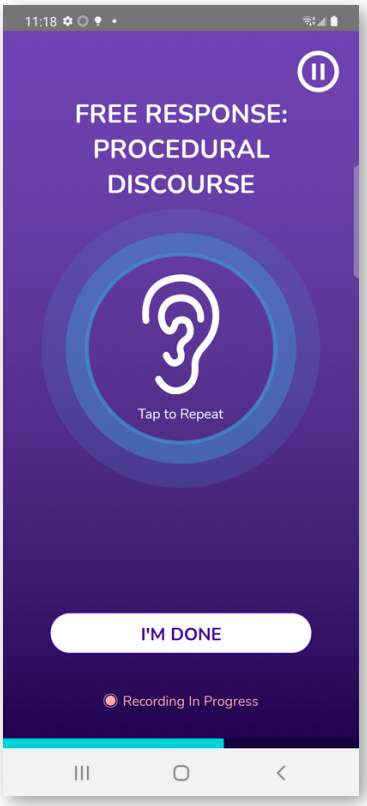
If SANA does not hear any response twice, the exam will be cancelled.

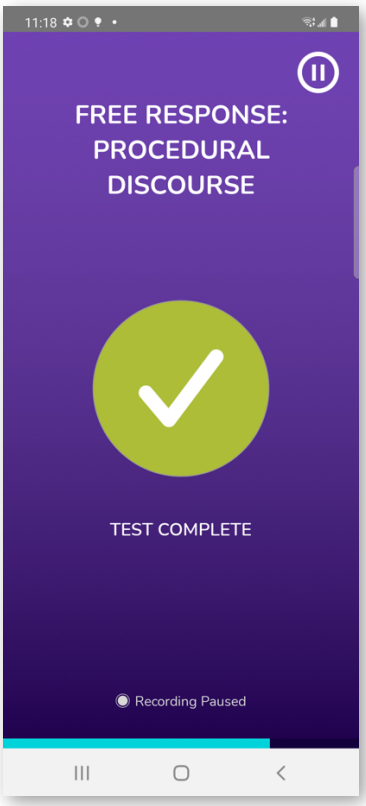
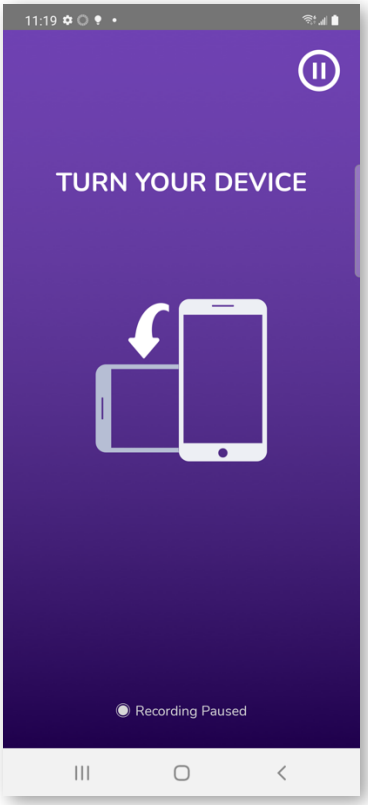


Verbal Fluency Success Upon completing the Verbal Fluency assessment, the success screen is displayed accompanied by the success chime and haptic.	
Assessment Four: Concentration SANA asks to count from 1 to 20. Then asks to count backwards from 50 by intervals of 3 as quickly and as accurately as possible. If SANA does not hear any response, it will repeat the instructions. If SANA does not hear any response twice, the exam will be cancelled.	

Concentration Success Upon completing the Concentration assessment, the success screen is displayed accompanied by the success chime and haptic.	
Assessment Five: **Free Response – Personal Discourse** SANA asks to hear about _____ . SANA may ask to hear about a favorite sport or game to play, a time where the user felt embarrassed, or a story about a memorable trip. If SANA hears a short answer and a pause, an additional prompt will be given. If SANA does not hear any response, it will repeat the instructions. If SANA does not hear any response twice, the exam will be cancelled.	

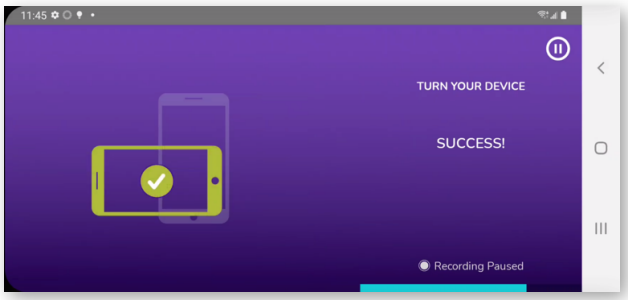
Free Response – Personal Discourse Success Upon completing the Free Response – Personal Discourse assessment, the success screen is displayed accompanied by the success chime and haptic.	
Free Response – Maximum Record Time If the maximum time allowed for free response is reached, a modal will display. In order to proceed with the exam, tap the Continue button. Note: Maximum record time is 5 minutes for all free response questions	

Assessment Six: **Free Response – Procedural Discourse** SANA asks how someone would _____. SANA may ask how someone would wrap a present, withdraw money from a bank account, get ready for work, or make a cup of tea. If SANA hears a short answer and a pause, an additional prompt will be given. If SANA does not hear any response, it will repeat the instructions. If SANA does not hear any response twice, the exam will be cancelled.	

Free Response – Procedural Discourse Success Upon completing the Free Response – Procedural Discourse assessment, the success screen is displayed accompanied by the success chime and haptic.	
Rotate Device Prompt For the rest of the exam, SANA requires the device to be in landscape mode. A prompt to turn the device is given.	

Rotate Device Success

Upon rotating the device, a new success screen is displayed accompanied by the success chime and haptic.



Assessment Seven:
Free Response – Descriptive Discourse

SANA asks to hear about everything that is going on in the picture.

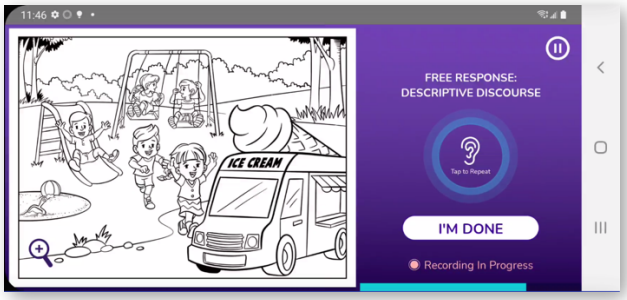
There are two parts to this assessment with two different pictures to describe. The first is a park scene, the second is a beach scene

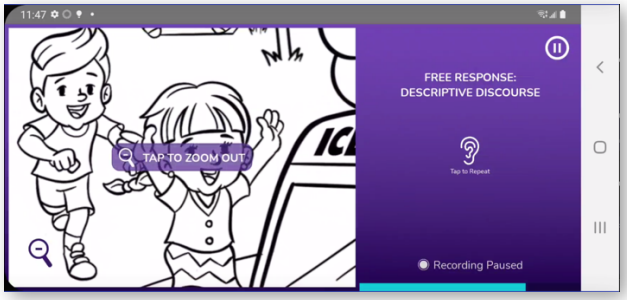
There is a capability to zoom in and out of the image to get a better look at the image. This is done by either using the magnifying glass icon as a button or using a pinching motion.

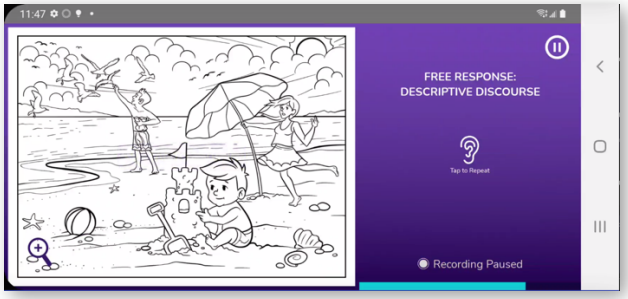
If SANA hears a short answer and a pause, an additional prompt will be given.

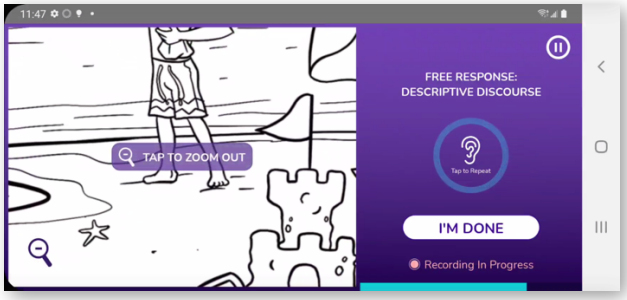
If SANA does not hear any response, it will repeat the instructions.

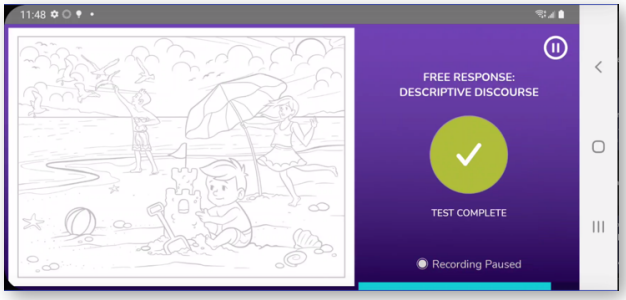
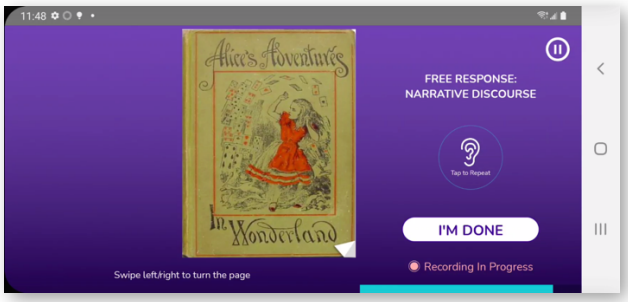
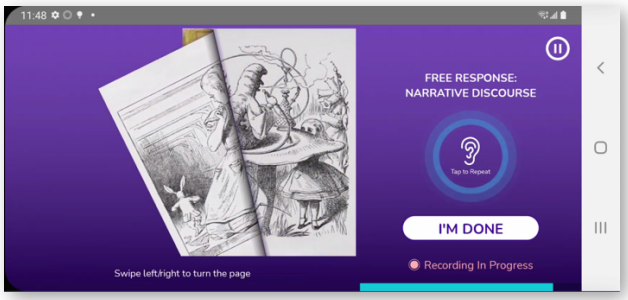
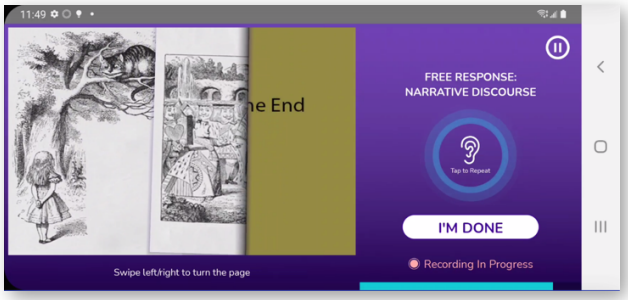
If SANA does not hear any response twice, the exam will be cancelled.

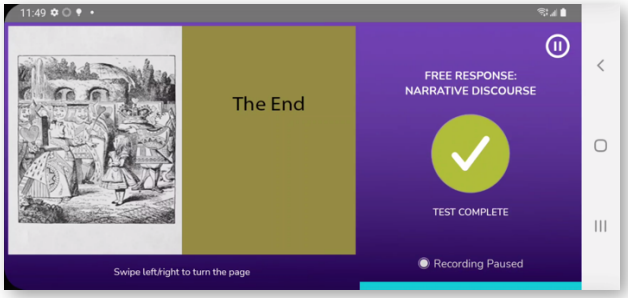








Free Response – Descriptive Discourse Success Upon completing the Free Response – Descriptive Discourse assessment, the success screen is displayed accompanied by the success chime and haptic.	
Assessment Eight: **Free Response – Narrative Discourse** SANA asks to hear the story of _____ by using the pictures in the book provided. SANA may provide the story of Little Red Riding Hood, The Wizard of Oz, or Alice in Wonderland. If unfamiliar with the story provided, a story can be made up by using the pictures provided. The pages of the book can be swiped through to see different images. If SANA hears a short answer and a pause, an additional prompt will be given. If SANA does not hear any response, it will repeat the instructions. If SANA does not hear any response twice, the exam will be cancelled.	  

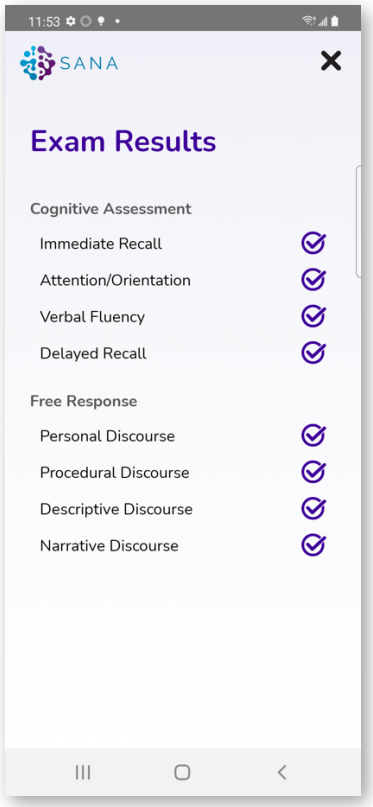
Free Response – Narrative Discourse Success Upon completing the Free Response – Narrative Discourse assessment, the success screen is displayed accompanied by the success chime and haptic.	

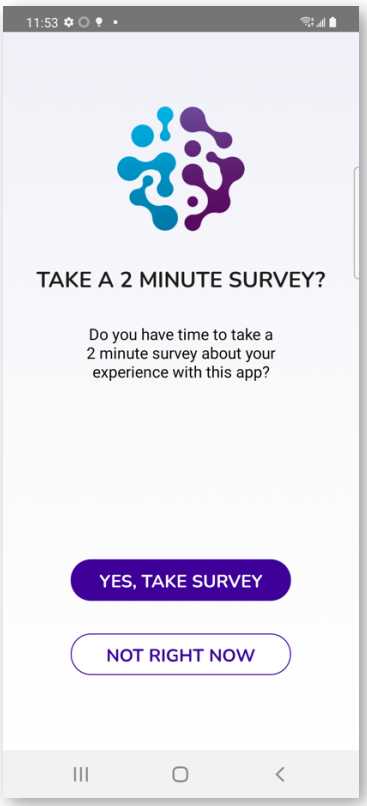
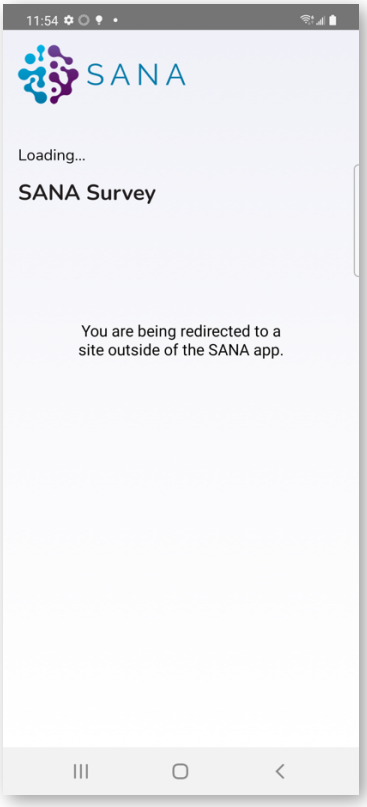
Completed Exam

Exam Results

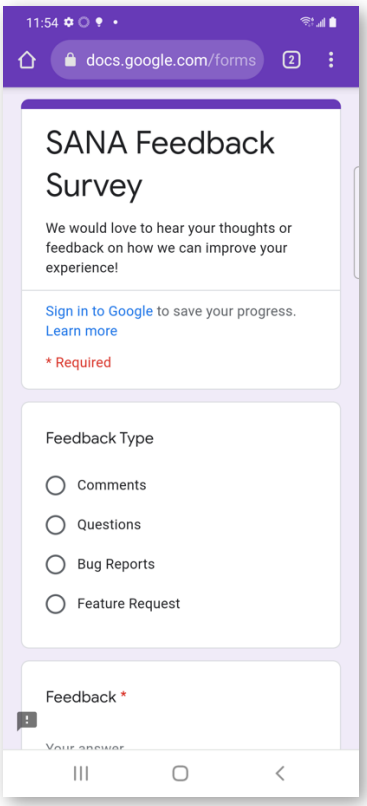
Upon completing the last of the SANA assessments, the results of the exam are shown. The only results per assessment shown are completion results.

The results screen is accompanied by a new success chime and haptic.



Survey Option After the results page, there is an option to take a survey. “Yes, Take Survey” launches a web browser on the device and the user is taken to a survey for the SANA app. “Not Right Now” returns back to the SANA home page. The survey can be accessed later through the “about this app” button on the home page.	
Survey Launch SANA provides a notification that it is navigating outside of the app while a web app is launched.	

SANA Survey

The SANA Feedback Survey provides SANA with comments, questions, bug reports, and feature requests.

The survey can be changed and edited at the discretion of Bio1 Systems and its affiliates.