Eye Tracking while Assessing Cancer Risk

FedCASIC 2019 Workshops

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Agenda

1. *Introduction and Tools*
2. *Method Summary*
3. *Eye Tracking for Observational Purposes*
4. *Impact*

Introduction and Tools

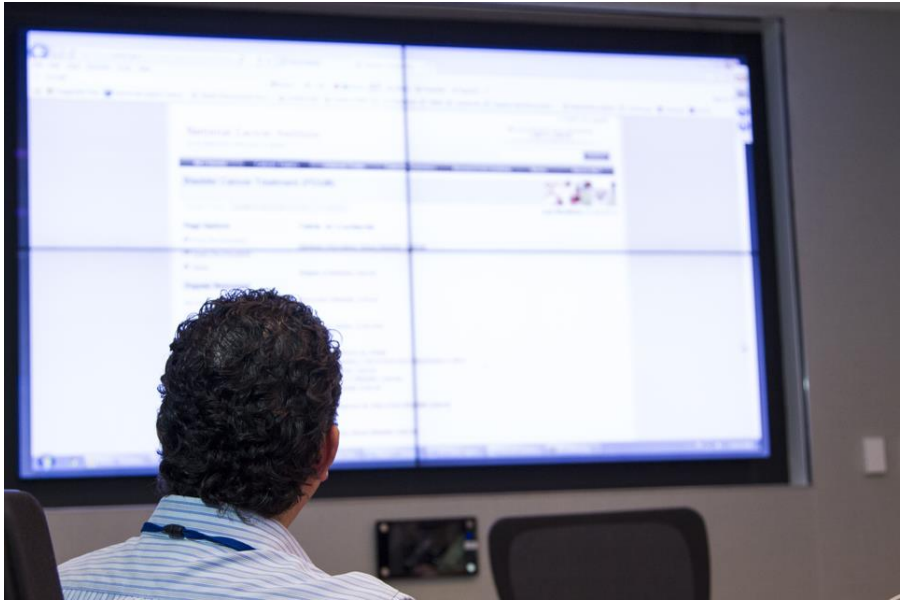
Introduction

- Melanoma Risk Assessment Tool (MRAT)
- Breast Cancer Risk Assessment Tool (BCRAT)
- Colorectal Cancer Risk Assessment Tool (CCRAT)
- The ten participants were clinicians who discuss information about cancer or cancer education with patients
- The UX testing incorporated eye tracking to allow those who were viewing live sessions to see where the participants were looking as they interacted with the tools on the desktop computer
- Eye-tracking for observational purposes only

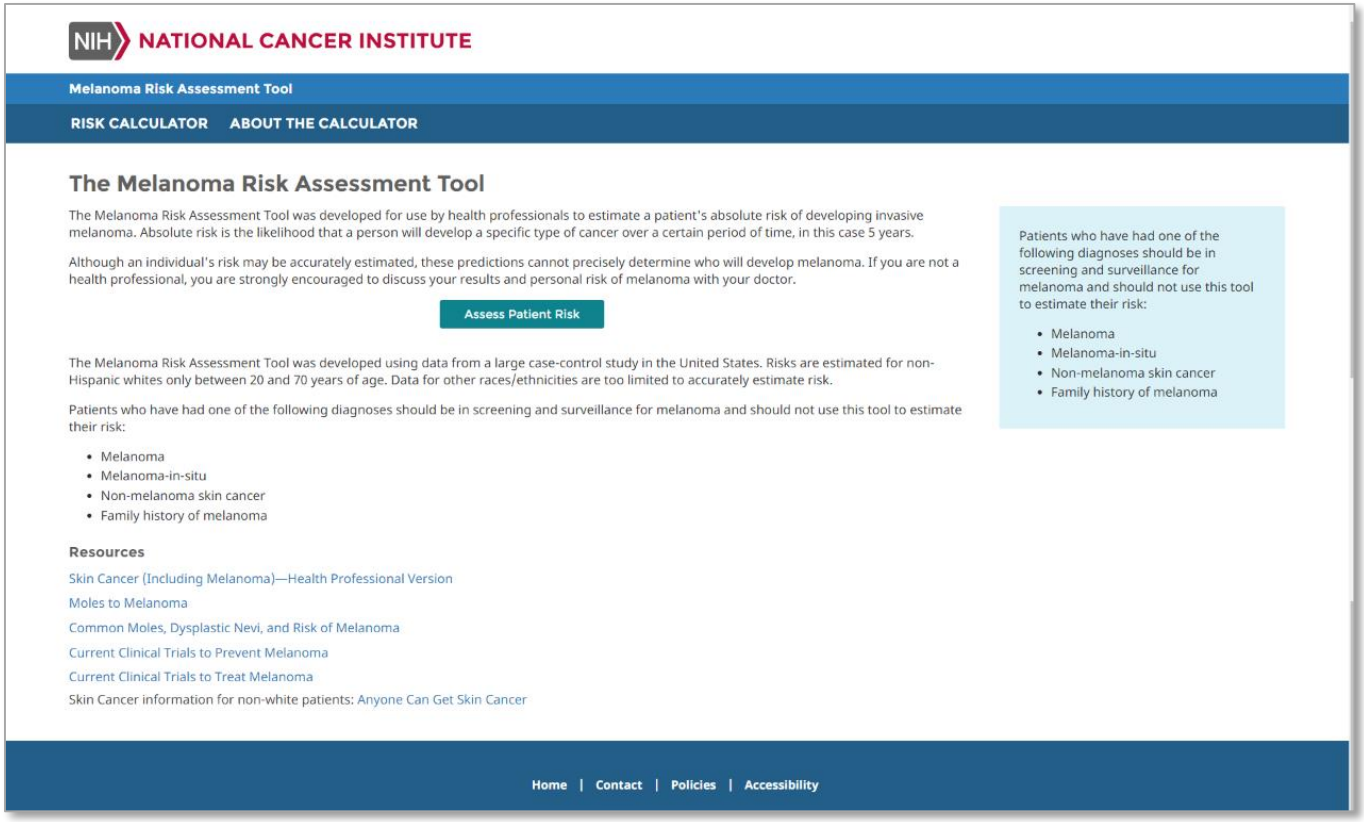
Cancer Risk Assessment Tool: Research Questions

- The intended audience is clinicians who discuss information about cancer or cancer education with patients, patients, and people interested in assessing their risk of cancer.
- How can we make the risk assessment tools easier to use?
- How can we best write the questions so they are clear and easy to understand?
- How can we best use visuals and graphics to present results?

NCI Audience Research Lab



Melanoma Risk Assessment Tool: Introduction Page



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Melanoma Risk Assessment Tool

RISK CALCULATOR ABOUT THE CALCULATOR

The Melanoma Risk Assessment Tool

The Melanoma Risk Assessment Tool was developed for use by health professionals to estimate a patient's absolute risk of developing invasive melanoma. Absolute risk is the likelihood that a person will develop a specific type of cancer over a certain period of time, in this case 5 years.

Although an individual's risk may be accurately estimated, these predictions cannot precisely determine who will develop melanoma. If you are not a health professional, you are strongly encouraged to discuss your results and personal risk of melanoma with your doctor.

Assess Patient Risk

The Melanoma Risk Assessment Tool was developed using data from a large case-control study in the United States. Risks are estimated for non-Hispanic whites only between 20 and 70 years of age. Data for other races/ethnicities are too limited to accurately estimate risk.

Patients who have had one of the following diagnoses should be in screening and surveillance for melanoma and should not use this tool to estimate their risk:

- Melanoma
- Melanoma-in-situ
- Non-melanoma skin cancer
- Family history of melanoma

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Resources

Skin Cancer (Including Melanoma)—Health Professional Version

Moles to Melanoma

Common Moles, Dysplastic Nevi, and Risk of Melanoma

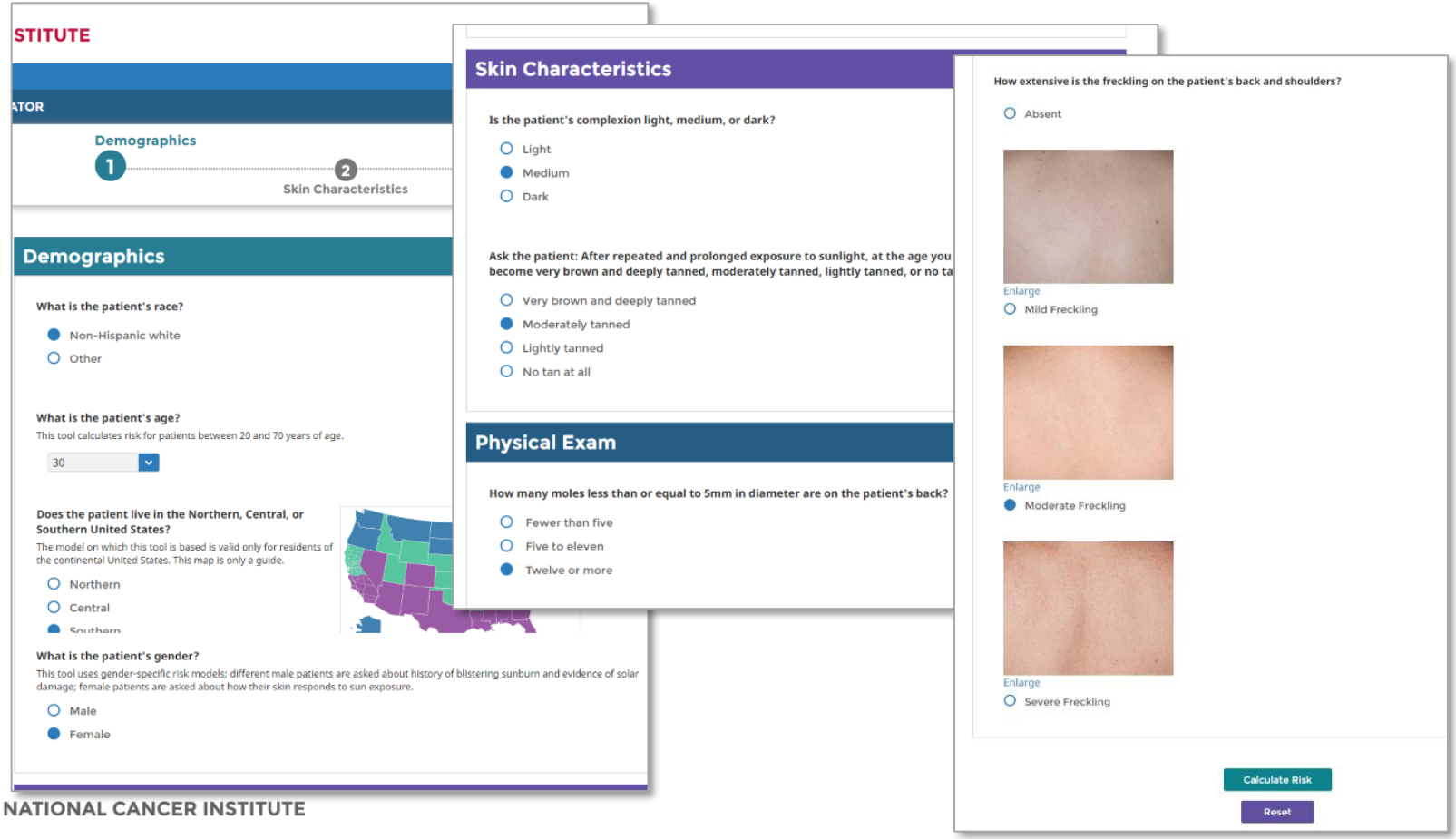
Current Clinical Trials to Prevent Melanoma

Current Clinical Trials to Treat Melanoma

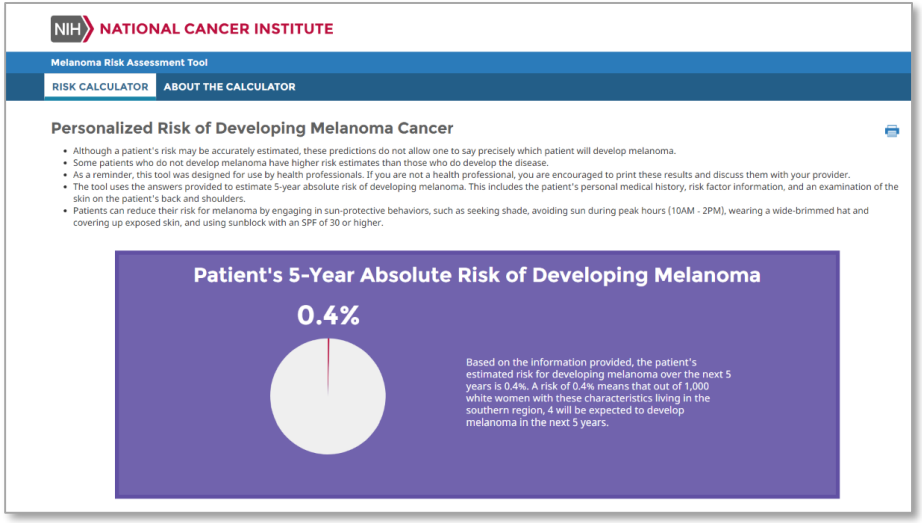
Skin Cancer information for non-white patients: Anyone Can Get Skin Cancer

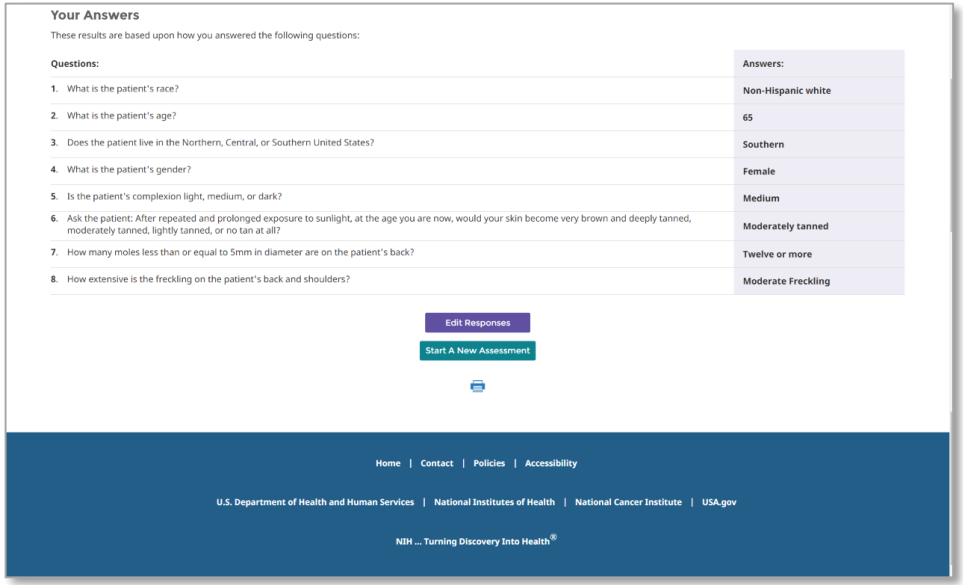
Home | Contact | Policies | Accessibility

Melanoma Risk Assessment Tool: Information Entry Page

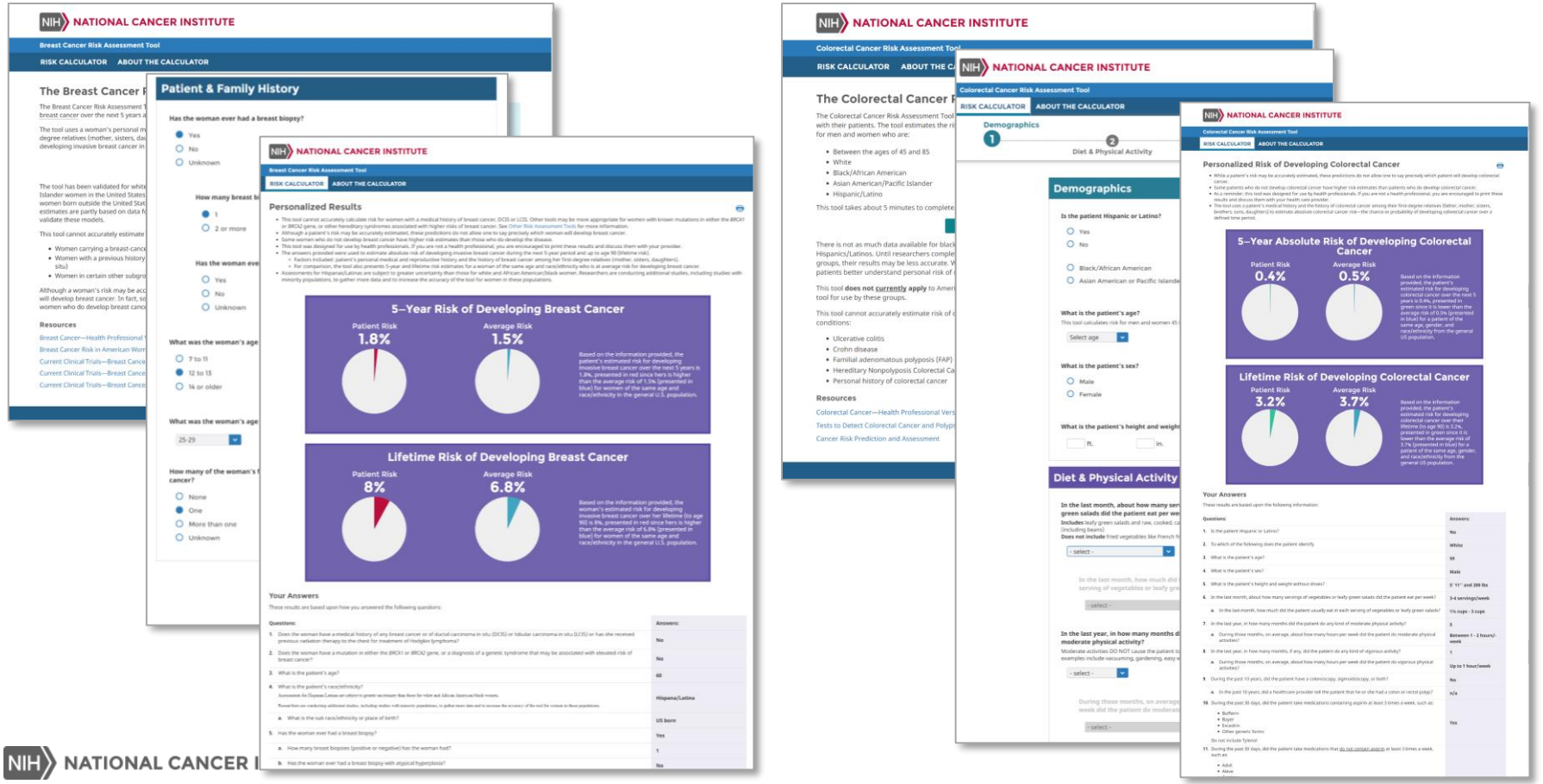


Melanoma Risk Assessment Tool: Results Page





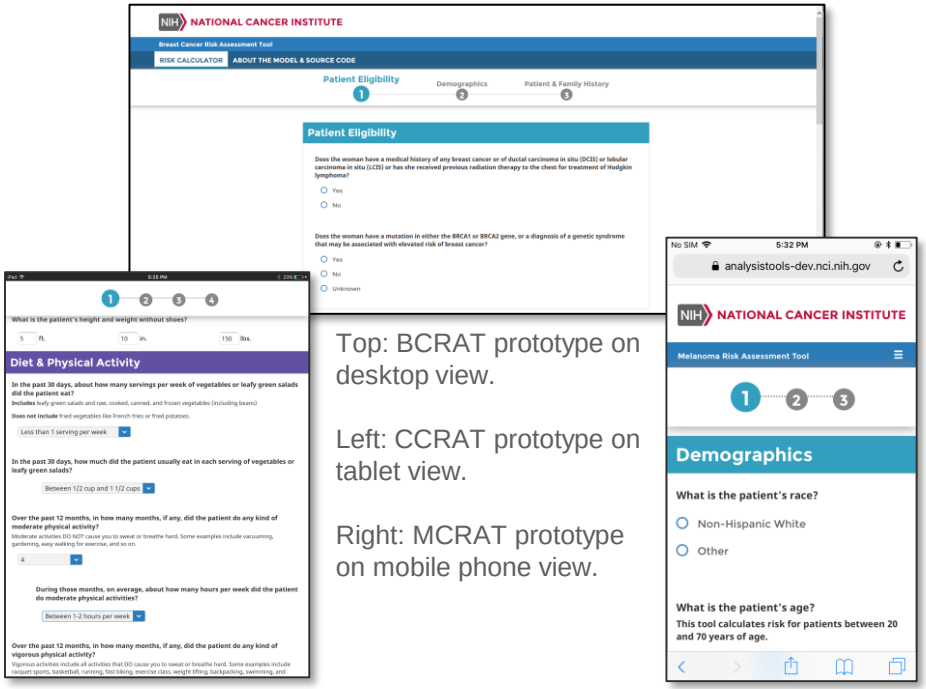
Breast Cancer and Colorectal Cancer Risk Assessment Tools



Method Summary

UX Test Method Summary

- Participants were asked about their healthcare profession and their role in discussing information about cancer or cancer education with patients.
- Participants were shown the three cancer risk assessment tools in random order on either a mobile phone, tablet, or desktop computer.
- Participants were asked to input hypothetical patient scenarios into the tools and then provide feedback about the tools' functionality, clarity, and usefulness.



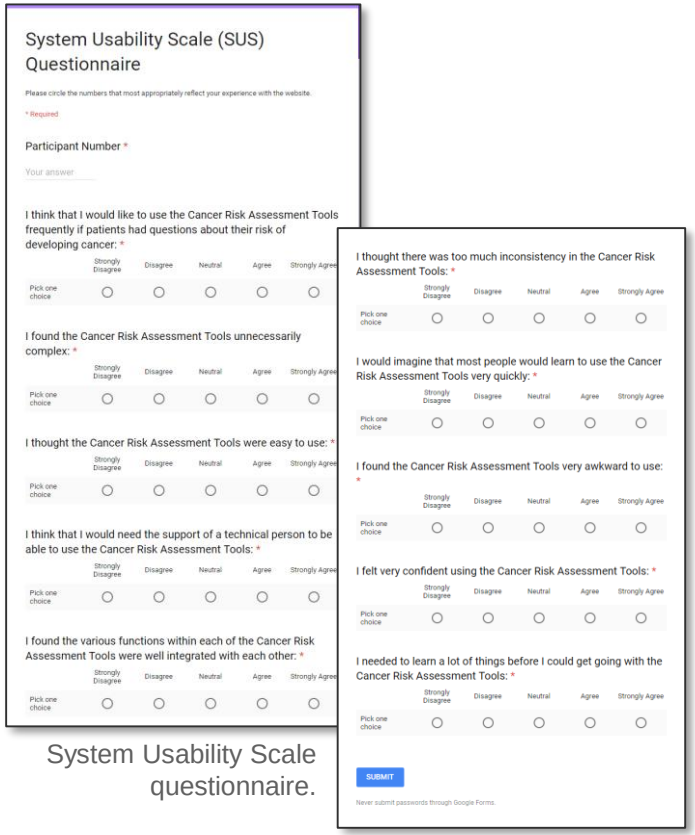
Top: BCRAT prototype on desktop view.

Left: CCRAT prototype on tablet view.

Right: MCRAT prototype on mobile phone view.

UX Test Method Summary, cont'd

- Following their interaction with the three cancer risk assessment tools, participants completed the System Usability Scale* (SUS) questionnaire to evaluate their perceived usability of the tools.
- Participants were then asked a few debriefing questions to close the interview.



System Usability Scale questionnaire.

*Brooke, J. (1986). System Usability Scale (SUS): A quick-and-dirty method of system evaluation. Journal of User Information Architecture Advanced Development Group, DEC, Reading, UK.

Eye Tracking for Observational Purposes

Live Viewer

Benefits

1. Viewing the gaze data live informs observers about eye movement patterns
   - F-shaped reading pattern
   - Noticeability
   - Order of information entry
2. Increases stakeholder observation and participation
3. Increases support and buy-in for the research

Impact

Impact

1. Time to enter information into the tool was much shorter than expected.
2. The pages for the tools were updated iteratively as high impact issues were identified.
3. The questions and text were revised to use more plain language and areas were identified to provide further information and instructions.
4. Participants found it easier to use the tools on a desktop than on a tablet or mobile phone.
5. Changes were made to optimize information input on mobile devices.
6. Participants enjoyed using the tools and viewed them as valuable resources to use both at home and in a clinical setting.

www.cancer.gov **www.cancer.gov/espanol**