

Adam T. Perzynski, PhD<sup>1,2</sup>, Misty Harris, MPH<sup>2</sup>, Gultekin Ozsoyoglu<sup>3</sup>, Sandra Andrukat<sup>2</sup>, & Joseph J. Sudano, PhD<sup>1,2</sup>  
 Case Western Reserve University, Center for Health Care Research & Policy<sup>1</sup> The MetroHealth System<sup>2</sup>, CWRU Department of Electrical Engineering and Computer Science<sup>3</sup>

## Research Objective

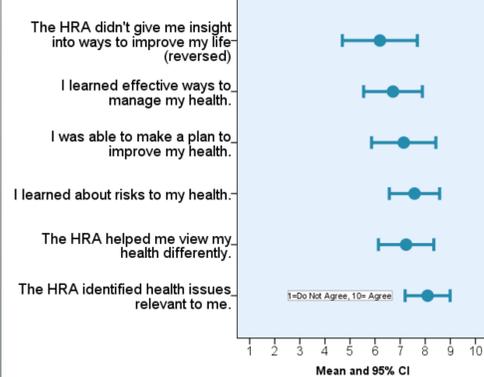
We used an agile development process to design health risk assessment (HRA) software that meets the needs of diverse users. We hypothesized that empowerment, satisfaction and usefulness as rated by HRA users would be high and that participants with poor vs. adequate numeracy would have similar ratings.

## Methods

- A convenience sample of 40 patients, visitors and employees completed a health risk assessment (available at <http://healthylifeHRA.org>).
- Computer malfunctions prevented 7 from completing the HRA and survey (final N=33).
- Participants had the option of using a laptop or tablet for completing the HRA.
- A brief self-report survey measured:
  - Engagement (4 items; 1-not at all to 5-very)
  - Perceived usefulness (9 items; 1-disagree to 10-agree)
  - End User Computer Satisfaction (12 items; yes/no).
- A three item measure screened participants for poor/adequate numeracy.

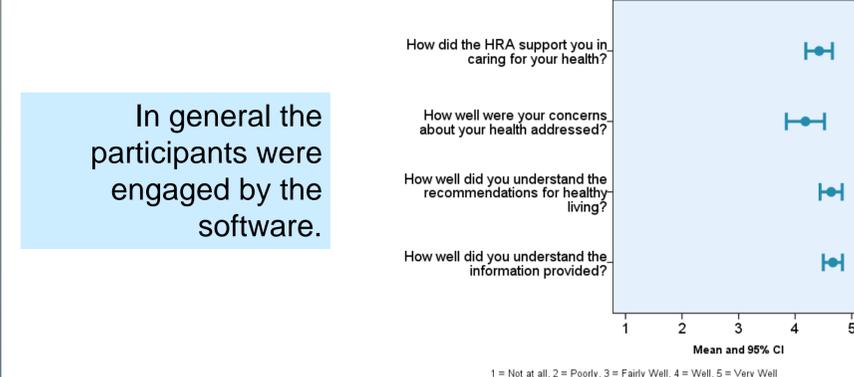


Figure 1. Perceived Usefulness of the HRA (N = 33)



Participants overall rated the software as useful and relevant.

Figure 2. HRA Patient Engagement Results (N=33)



In general the participants were engaged by the software.

Figure 3. Results of the End-User Computer Satisfaction Scale (N=33)

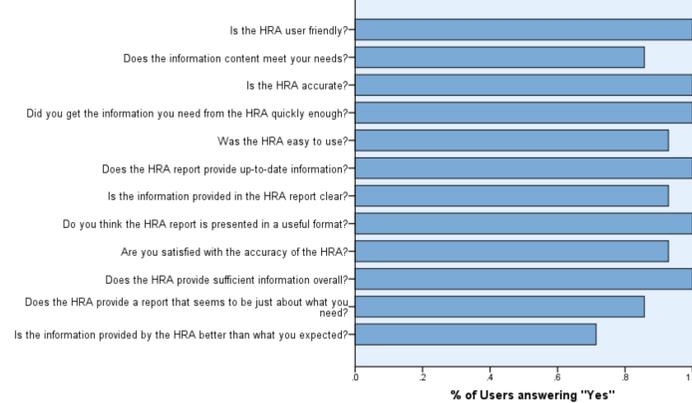
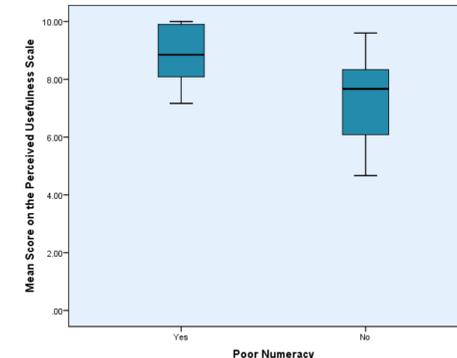
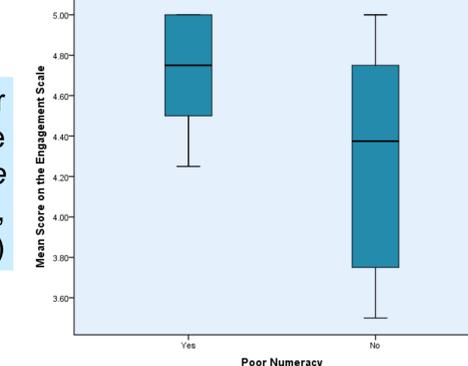


Figure 4. Perceived Usefulness by Numeracy



Participants with poor numeracy rated the software as *more useful* (8.9 vs 7.1, p=.007)

Figure 5. Engagement by Numeracy



Participants with poor numeracy rated the software as *more engaging* (4.7 vs 4.3, p = .017)

## Results

Participants were 64% female, 41% white, 29% black, 12% other, 18% did not respond; average age was 46 (SD=10).

Participants were highly satisfied with the software; 97% responded "yes" on "easy to use," and 100% yes on "quick enough", useful format and clear report.

Participants rated the software as engaging them in caring for their health Mean=4.5, SD=0.5 on the 1-5 scale. The majority of patients agreed that the software is useful (Mean=7.8, SD=0.9).

Numeracy screening indicated that 63% had adequate and 37% poor numeracy. There was no difference in participant satisfaction between the two numeracy groups.

## Conclusion

Health risk assessment software can be successfully designed to meet the needs of users with poor numeracy. While satisfaction was similar, in contrast to prior studies, users with low numeracy rated the software as more useful and more engaging than those with adequate numeracy. Future work is necessary to examine whether this difference is explained by differences in health behavior risks and health states between low and adequate numeracy groups.