

## Research Task / Overview

- Dementia Caregivers experience more negative effects when compared to caregivers of other diseases [1].
- A system called Behavioral and Environmental Sensing and Intervention (BESI) is being developed through a collaborative research project to help caregivers [2].
- Caregivers are highly vulnerable to survey fatigue and easily overwhelmed.
- Focus was to integrate a measurement tool to use during system development that would minimize risk of additional fatigue and stress.

## Data & Analysis

- Qualitative data analysis was performed using
  - Microsoft Excel
  - HyperRESEARCH Software
- A word cloud was generated by coding based on Grounded Theory using HyperRESEARCH Software.

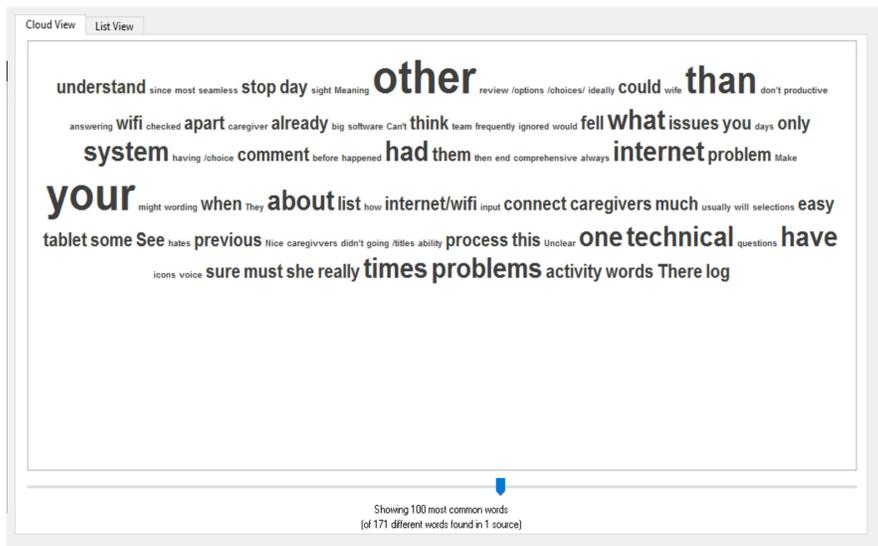


Figure 3. Word Cloud for Pilot Usability Questionnaire Data

- Based on this analysis, users experienced the inability to understand some of the questions.
- Revised questionnaire was tested with another user and word cloud was generated using this data.

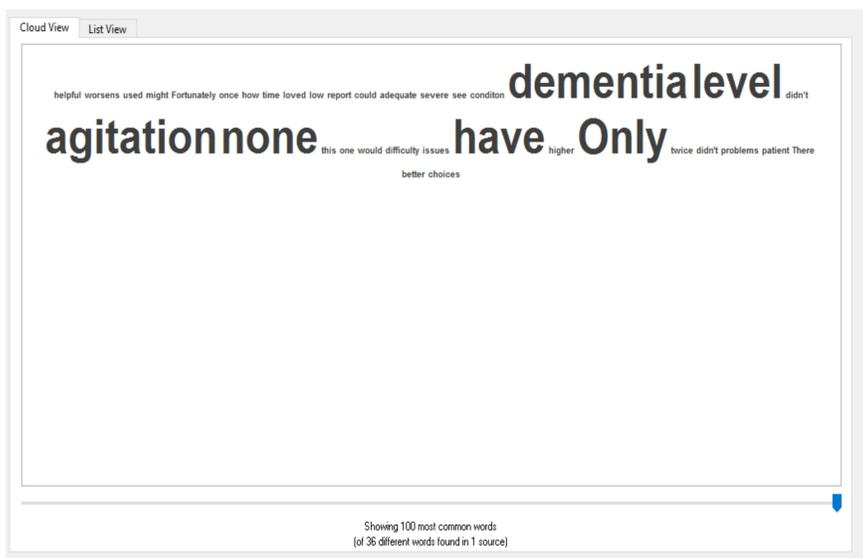


Figure 4. Word Cloud for Revised Usability Questionnaire

- There were no concerns expressed by the user with the revised questionnaire.

## Goals & Objectives

- To develop a valid usability questionnaire to evaluate the BESI system.
- To assess the user during the system development.
- To address UX in the context of ecological validity.

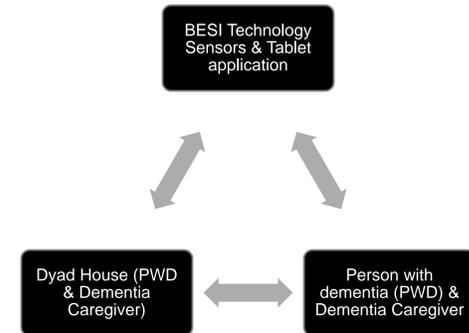


Figure 1. The BESI System

## Methodology

- Initial pilot BESI Usability Questionnaire contained three sections with a total of 37 questions to evaluate the entire BESI system.
  - 10 questions with 6 point scale and followed with an open-ended question
  - 16 questions with Likert Scale Rating
  - 11 open ended- questions
- Based on review, the questionnaire was revised and the number of questions were reduced.
- Final BESI questionnaire was reduced to 25 questions.
  - 10 questions with 6 point scale and followed with an open-ended question
  - 9 questions with Likert Scale Rating
  - 6 open ended- questions



Figure 2. Process for Designing the Usability Questionnaire

## Future Research

- The BESI Usability Questionnaire will be further tested with other users.
- The BESI Usability Questionnaire will be modified in the future based on the system requirements.
- The BESI Usability Questionnaire will be incorporated with the system to obtain dependable data during development and meet the system requirements

## Contacts/References

1. Hooker, K., Monahan, D. J., Bowman, S. R., Frazier, L. D., & Shifren, K. (1998). Personality counts for a lot: Predictors of mental and physical health of spouse caregivers in two disease groups. *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 53(2), P73-P85.
2. Bankole, A., Anderson, M., Smith-Jackson, T., Knight, A., Oh, K., Brantley, J., ... & Lach, J. (2012). Validation of noninvasive body sensor network technology in the detection of agitation in dementia. *American journal of Alzheimer's disease and other dementias*, 27(5), 346-354.
3. Meda, H., Belay, M., Nama, R., Smith-Jackson, T., Anderson, M., Newbold, T., Bankole, A. (2016). BESI Usability Questionnaire Pilot
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