UNIVERSITY OF ALBERTA

Design guideline for mobile applications for mental-health conditions in seniors

Peyman Azad K. (OT, PhD Candidate)
Noelannah Neubauer (BHK, MSc, CSEP-CPT), Lili Liu (OT, PhD)

AGEWELL

Depression in Older Adults

- Not a normal part of aging
  - Cognitive impairments (14.9%)[1]
  - Anxiety and Mood Disorders (5-10% in community and 30-40% in institutions)[2]
- Can easily go undetected
- 90% do not get the help they need[2]

Role for Mobile Apps

- Self- assessment and monitoring
- Machine assisted therapy

Explosive *increase* in the number of mental health apps!

What is the problem?

- Older adults' needs not accommodated
- No design guidelines
- No standard scale to rate quality of apps for seniors

Objective

- Perform an environmental scan of self assessment apps for depression
- Evaluate their quality
- Identify senior friendly design features

Review of Android and iOS App Market

- Search term: Depression
- Inclusion criteria:
  - Available in English
  - Designed for self-identifying symptoms of Depression
- Exclusion criteria:
  - Designed for health care professionals and/or Education

Mobile Application rating Scale (MARS)[3]

- Developed by Stoyanov et al. (2015)
- 23 Items, 5 point Likert
- 4 objective Sub scales (Engagement, Functionality, Aesthetics, Information quality) and one subjective subscale (recommending, willing to buy the app, frequency of use, star rating)

Focus Groups

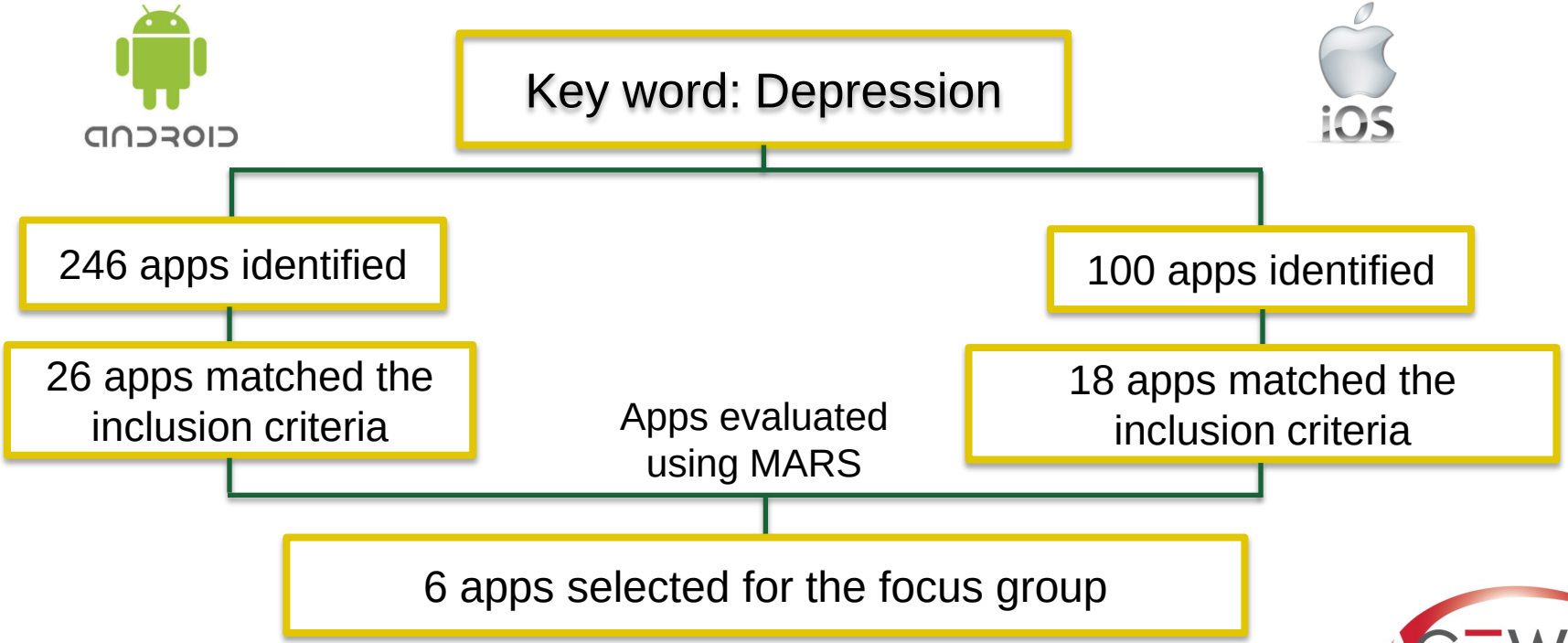
Inclusion/Exclusion Criteria

- Inclusion:
  - At least 60 years
  - Familiar with tablets or smartphones
  - Spoke English
- Exclusion:
  - Severe hearing or vision impairment
  - Severe cognitive or mental disorder

Procedure

- 15 minutes to try each mobile application
  - Devices used: iPhone 5s, iPhone 6, and Samsung Galaxy 8.9 LTE Tablet
- Discussion (recorded)
- Transcripts evaluated qualitatively using directed coding method

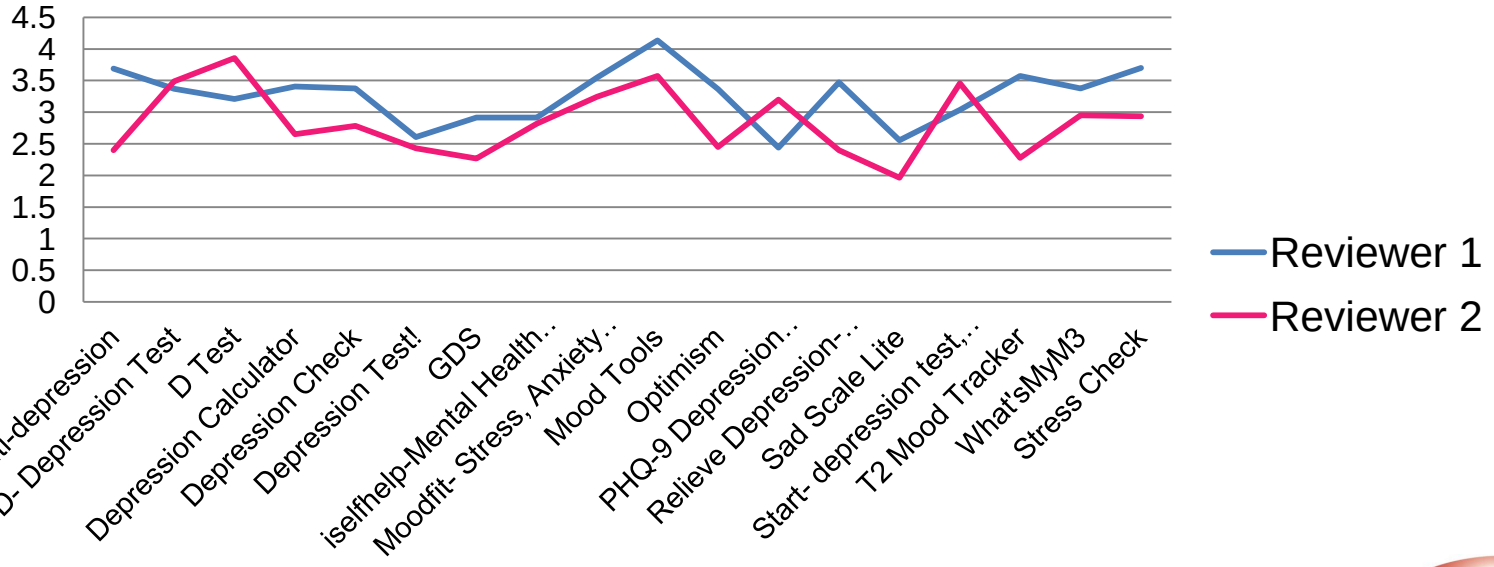
Results: App Market Review (Canada only)



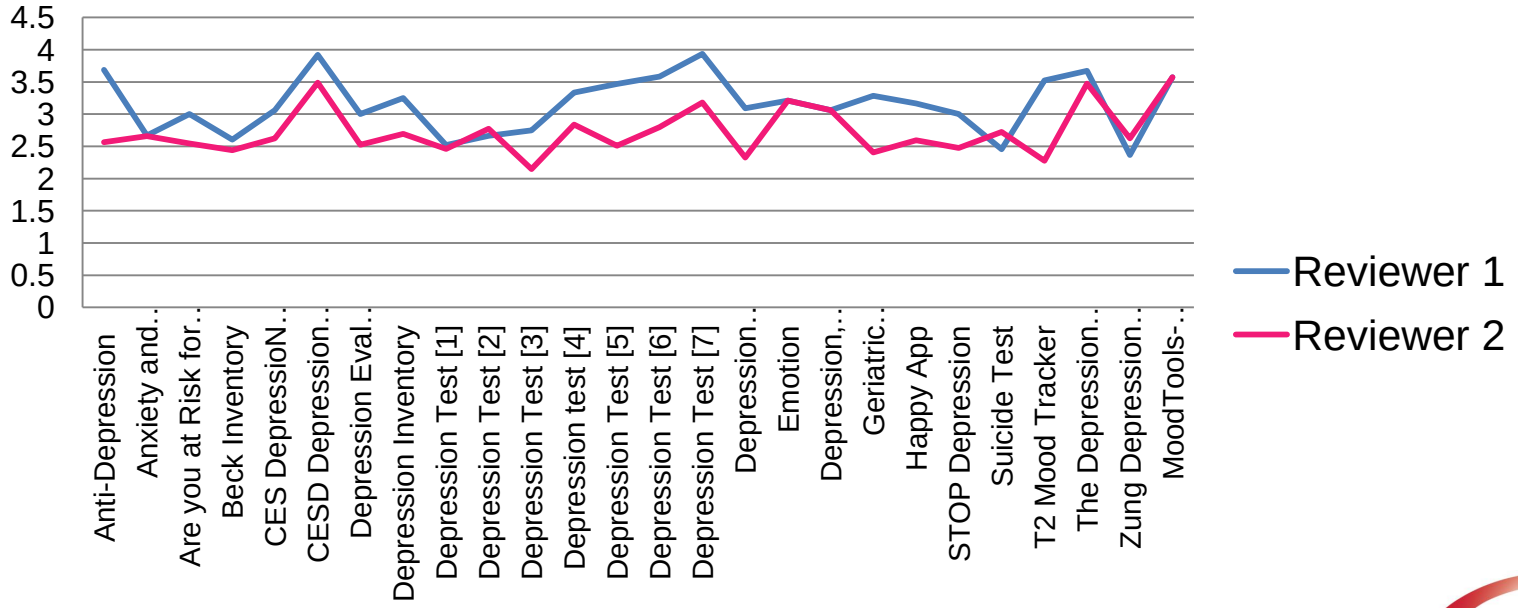
Average MARS objective mean score for all apps reviewed

ICC=0.42
P>0.05

MARS Objective Scores for iOS Depression Screening Apps



MARS Objective Scores for Android Depression Screening Apps



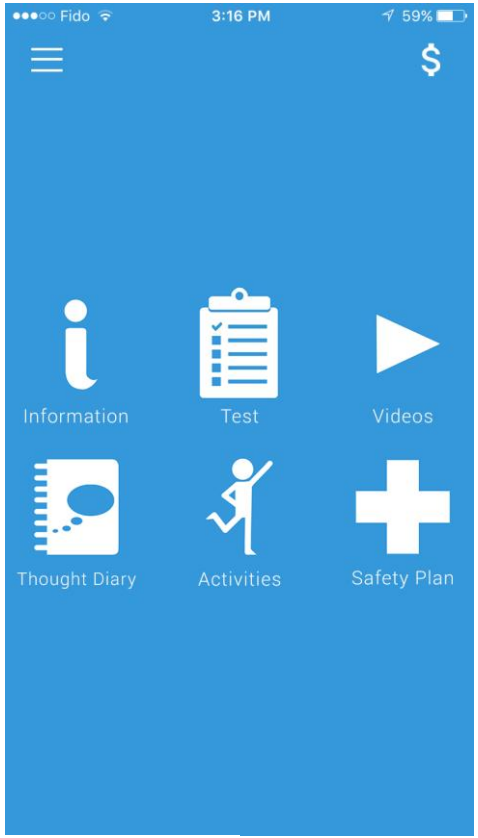


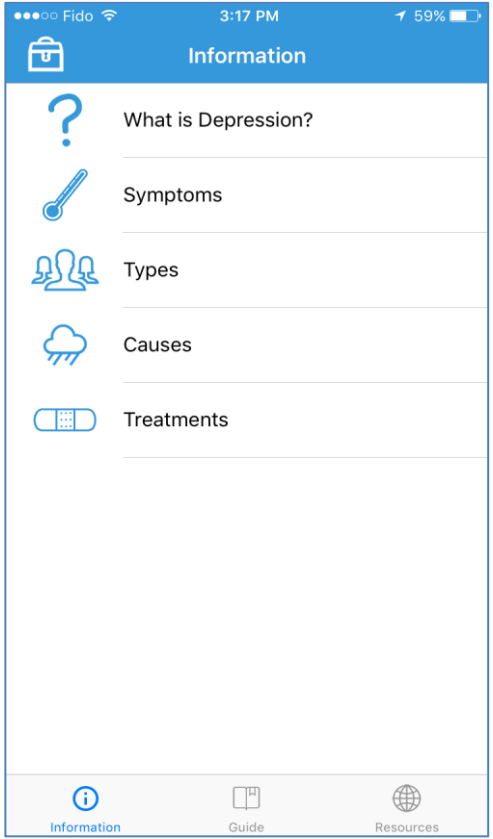


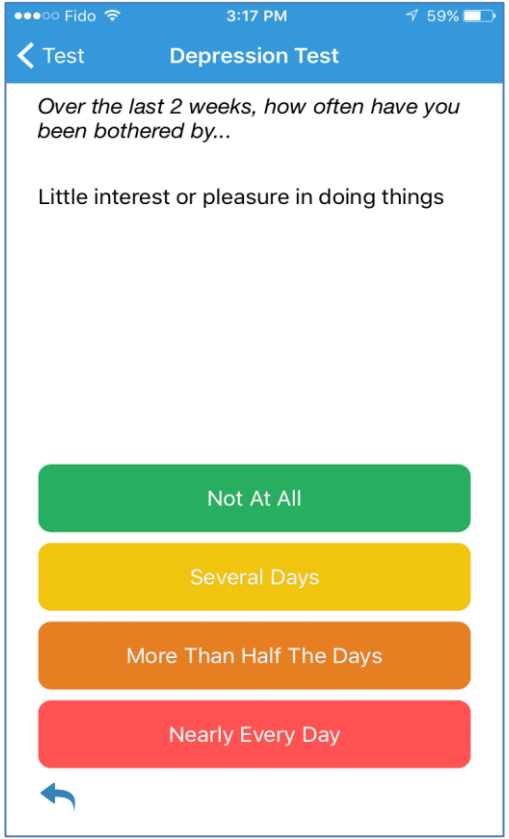
Apps' Name		Mood tools	CESD Depression Test	Booster Buddy	Start	Zung Depression Scale	Sad Scale
Operating system		iOS	Android	Android	iOS	Android	iOS
MARS Objective Score	Rev1	4.1	3.9	3.8	3.03	2.3	2.5
	Rev2	3.5	3.4	4.4	3.45	2.6	1.9
MARS Subjective Score	Rev1	4.7	3.7	4	1	1	1
	Rev2	2.5	1.75	3.7	3	1	1
Total Score	Rev1	4.4	3.8	3.9	2	1.6	1.7
	Rev2	3	2.6	4.1	3.2	1.8	1.4

Most favorite app: *Mood Tools*

Usefulness	Ease of Use	Engaging	Design
1. Relevant info 2. Useful links 3. Various topics	1. Easy directions 2. Easy to pick an answer 3. Questions were easy to understand	1. Newsletter 2. Link to info 3. Connecting with a clinician 4. Test result history	1. Large print 2. Colour coding 3. Good layout







UNIVERSITY OF ALBERTA

AGEWELL

Other themes

1. **Security**: Password protection, Device vs. cloud storage
2. **Credibility**: Approval by an official organization
3. **Engagement:**
   - Show results in a graph for trend analysis
   - Prompt to check on the user
   - Using reward systems to encourage adherence
   - Use gaming principles in a simple but sophisticated manner

4. **Colours**: A combination of orange, blue, light green, and yellow.

5. **Screen size** matters

6. **Affordability** can be an issue (preferring a tablet but may settle for a smart phone)

7. **Passive mental health monitoring systems**: seniors are willing to accept them

Conclusion

1. Seniors are willing to use smart technology for mental health

2. Most important design factors are: visibility of icons, ease of use, and sophistication of the app

3. Credibility and security, price value, and relevance of information are also of great importance

Future work

1. Further focus groups with other stake holders (care givers, seniors with mental health issues, clinicians)
2. Development of a design frame work
3. Development of a scale to help users or clinicians identify apps that are acceptable to older adults
4. Apply this knowledge to clinical apps

Acknowledgements

This projects was funded through

AGE-WELL NCE (Work Package 6.1)

Presenters express gratitude to Faculty of Rehabilitation Medicine, Faculty of Graduate Studies and Research, and Graduate Students Association at University of Alberta that provided travel funding for this conference.

References

1. Alzheimer Society of Canada (2015), Retrieved from URL: http://www.alzheimer.ca/en/About-dementia/What-is-dementia/Dementia-numbers

2. Mood Disorders society of Canada (2016), retrieved from URL: http://www.mooddisorderscanada.ca/documents/Consumer%20and%20Family%20Support/Depression%20in%20Elderly%20edited%20Dec16%202010.pdf

3. Stoyanov, S. R., Hides, L., Kavanagh, D. J., Zelenko, O., Tjondronegoro, D., & Mani, M. (2015). Mobile app rating scale: a new tool for assessing the quality of health mobile apps. *JMIR Mhealth Uhealth, 3*(1).

UNIVERSITY OF ALBERTA

Questions?

AGEWELL

MARS Item #5: Is the app content (visual information, language, design) appropriate for your target audience?

(1) Completely in appropriate

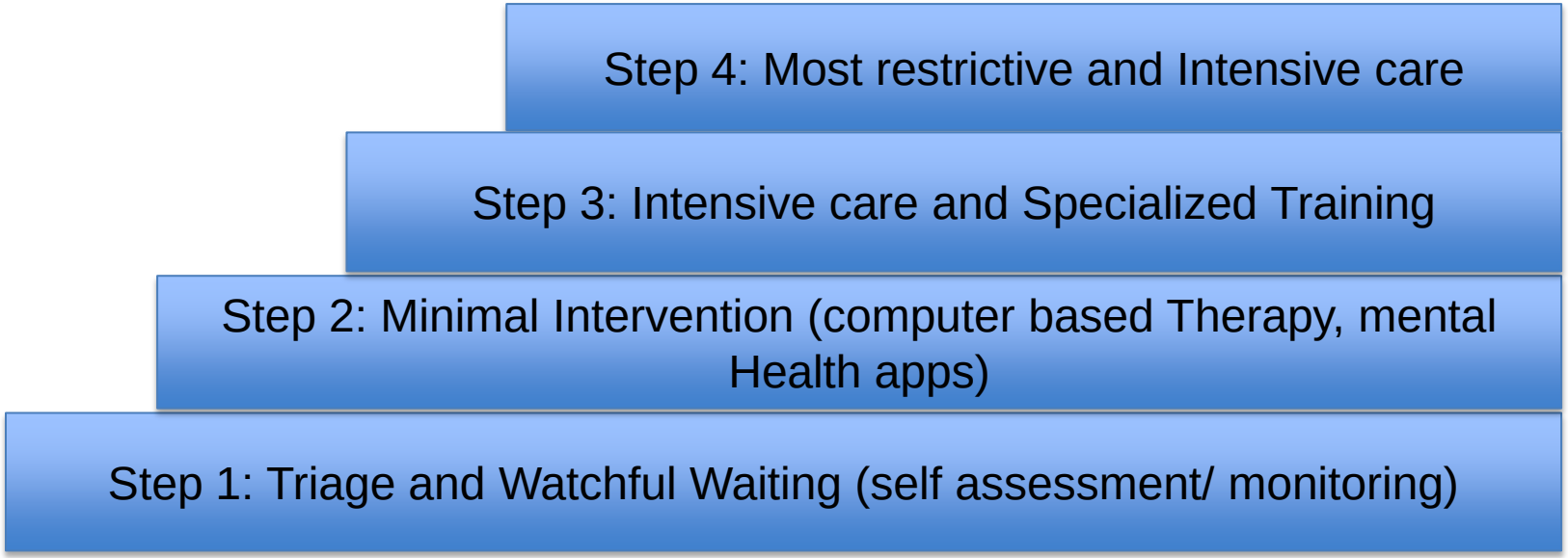
(2) Mostly inappropriate

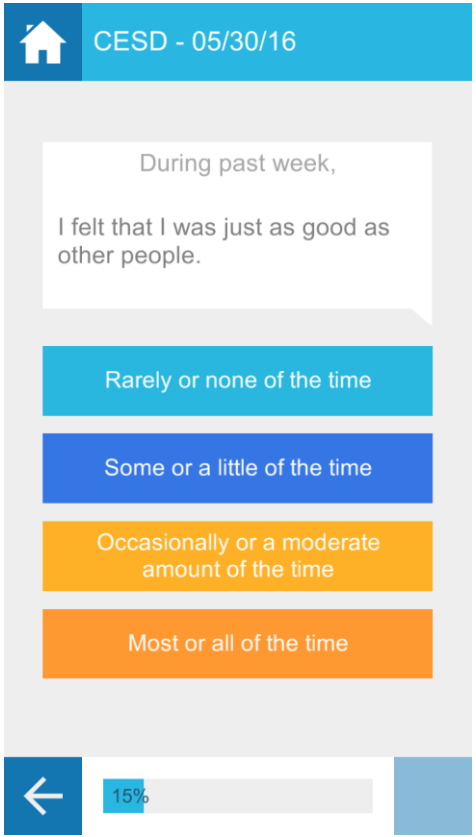
(3) Acceptable but not targeted. Maybe inappropriate/Unclear/confusing

(4) Well-targeted, with negligible issues

(5) Perfectly targeted no issues found

Stepped Care for Depression





An example of simple vs. confusing flow