Accessible Touchscreen Apps for People Living with Dementia

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Centre for Assistive Technology and Connected Healthcare

- Translational research centre at The University of Sheffield
- 70 academics; 17 departments; 5 faculties
- Focus on co-production
CATCH Projects

- Collaboration Aiming to Build Occupational Therapy research (CABOT)
- INdependent LIving support Functions for the Elderly (IN LIFE)
- Technology for Healthy Ageing and Well-being (THAW)
- Accessible Touchscreen apps for people living with dementia (AcTo Dementia)
Facilitating independent activity for people living with dementia can:

- Increase positive emotions (Leng et al. 2014)
- Reduce boredom (Leng et al. 2014)
- Alleviate distressed behaviour (Department of Health 2015)
- Minimise dependence on caregivers (NICE–SCIE 2007)
Background

Touchscreen tablet computers are accessible for people living with dementia (Armstrong et al., 2010)
Apps

Over 2 million apps available
(Statista, 2016)

Growing by 1,000 apps each day
(IB Times, 2015)

Where to start?
AcTo Dementia

Improving the accessibility of touchscreen apps for people living with dementia

1. **Identify** key design features that increase accessibility
2. **Develop** an evidence-based framework to find apps
3. **Collaborate** with developers to improve their apps
4. **Share** app recommendations with people living with dementia and professional/family care providers
1. Identify design features


Study involving sixty participants testing four apps at two sites (Sheffield & Toronto)
Study design

Thirty participants independently playing one of the two apps on three occasions – 84 sessions in total (six sessions missed)

<table>
<thead>
<tr>
<th></th>
<th>Female</th>
<th>Male</th>
<th>Age (SD)</th>
<th>MoCA score /30 (SD)</th>
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<tbody>
<tr>
<td><strong>Solitaire</strong></td>
<td>n = 15</td>
<td>12</td>
<td>87.53</td>
<td>13.07 (2.84)</td>
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<tr>
<td></td>
<td></td>
<td>3</td>
<td>(5.89)</td>
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<tr>
<td><strong>Bubble Explode</strong></td>
<td>n = 15</td>
<td>13</td>
<td>87.13</td>
<td>13.73 (3.22)</td>
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<tr>
<td></td>
<td></td>
<td>2</td>
<td>(4.93)</td>
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</tbody>
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Video analysis

84 video recorded sessions analysed and every interaction with the screen coded
AcTo Dementia

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2. Develop a framework

Two stage, evidence-based app selection framework:

Stage 1. Finding apps

Stage 2. Evaluating apps
Stage 1. Finding apps
Stage 2. Evaluating apps
App Evaluation Tool

1. Interaction
2. Feedback
3. Aesthetic design
4. App design
5. Customisation
6. Obstacles
7. Age appropriateness
8. Game specific (if applicable)
1. Interaction

- Gesture controls
- Responsive
- Assumed knowledge
2. Feedback

- Animated
- Audio
- Text
- Haptic

Screenshot from ‘Mahjong!!’, ©Byterun