

Application of Behaviour Change Theory to the Design, Development, and Implementation of Camera-Based Systems for Active and Assisted Living

Research Challenge

Population ageing presents significant challenges for the welfare of societies globally. By helping older adults to age-in-place, **camera-based active and assisted living (AAL) technologies** have the potential to alleviate the accruing costs of an increasingly aged population. However, these technologies are hardly



accepted by older adults. There is thus a pressing need for **strategies aimed at increasing the acceptance of camera-based AAL technologies**.

Research Aim

To use behaviour change theory to understand how best to **facilitate acceptance of camera-based AAL technologies**, and to locate, understand, and empirically validate mechanisms of action through which **interventions** can enhance said acceptance.

Methodology

An Experimental Medicine Approach to Behaviour Change

This PhD employs a **theory-led, mechanisms-focused** approach to increase older adults' acceptance of camera-based AAL technologies. It does so through four key steps:

1 Identify target for behaviour change

Scoping review (n = 47 included articles) to answer **RQ1**: What are the **barriers and facilitators** to older adults' acceptance of camera-based AAL technologies?

→ **future self-continuity** – i.e., the subjective sense of connection between one's present and future selves – was identified as a determinant of acceptance

2 Measure target

Cross-sectional survey-based study (n = 183 older adults) to answer **RQ2**:

What is the association between future self-continuity and older adults' acceptance of camera-based AAL technologies?

3 Manipulate target

Qualitative interview-based study (n = 7 older adults) to answer **RQ3**:

Can we develop a **future-self intervention** – i.e., an intervention designed to enhance the salience of the future self – that is effective, feasible, and acceptable to older adults?

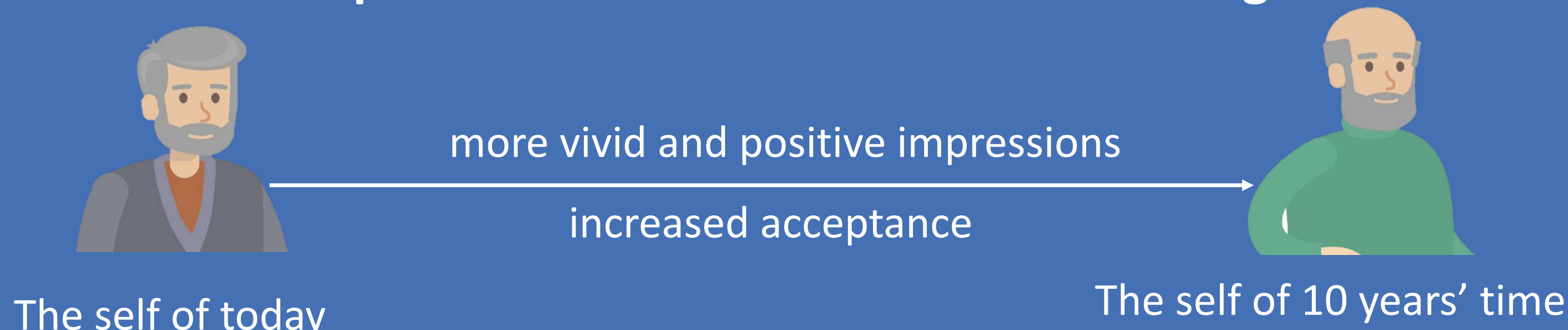
4 Validate target

Randomised controlled experiment (n = 181 older adults) to answer **RQ4**:

Does a future-self intervention increase older adults' acceptance of camera-based AAL technologies, and if so, how?

Preliminary Results

Future self-continuity is associated with older adults' acceptance of camera-based AAL technologies



The more **vividly** and **positively** older adults envisage their future selves, the greater their acceptance of camera-based AAL technologies

A future-self intervention increased acceptance of camera-based AAL technologies in older adults aged < 65 years

What would you like to do more of in the future, when you are older?

In the future, where would you want to live?

Why there?

Is it important to you that you can continue living at home in the future?

☐ Yes

☐ No

When I am older, I would like to spend more time painting and reading.
In the future, I would like to live in my own home because I designed it to my preferences. It is important to me to continue living at home in the future.
In the future, I want to be able to help myself and manage life on my own. If I had to depend on others for care, I would feel hopeless.....

Positivity to the future self mediated effectiveness of the intervention

Questions about the future → Personalised story about the future

Research Implications

- Older adults' non-acceptance of camera-based AAL technologies can be partially attributed to **future self-discontinuity** – that is, non-acceptance arises in part due to **vague and/or negative impressions of the future self**.
- Targeting future self-continuity may promote acceptance of said technology. **Future-self interventions** that increase the **vividness and positivity** with which the future self is envisaged may be particularly beneficial.
- It remains unclear why the effectiveness of the future-self intervention did not extrapolate to older adults aged ≥ 65 years. Future studies should investigate strategies to promote acceptance across older adults on the whole.

Researcher Profile and Aspirations



Natalie Tham An Qi

Psychology and Behavioural Economics graduate and current **PhD candidate in Health Psychology** at Trinity College Dublin.

Platforms: Qualtrics, Amazon MTurk, Prolific Academic, Covídence

Quantitative: R, SPSS, G*Power

Qualitative: NVIVO, Think-aloud/Semi-structured interviews

Languages: English, Mandarin, Malay

Passionate about applying insights from behavioural science and nudge theory to solve complex global challenges across various sectors including health, finance, sustainability, etc.

Particular interest in mixed-methods approaches to developing (digital) behaviour change interventions for enhanced health and wellbeing.



CV



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