

Connecting Cognitive Neuroscience with Conversation User Interface Design to Combat Loneliness in Aging Population

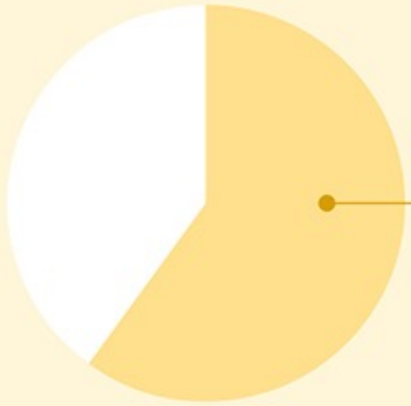


Signy Sheldon, Dept Psychology, McGill University

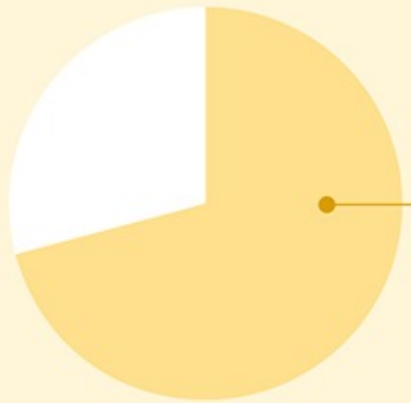
Kate Dupuis, Innovation Leader in Arts and Aging, Sheridan College

David Usher, ReImagine AI

The problem: A loneliness epidemic



60% of men
over 65 say they are more
lonely now than before the
pandemic



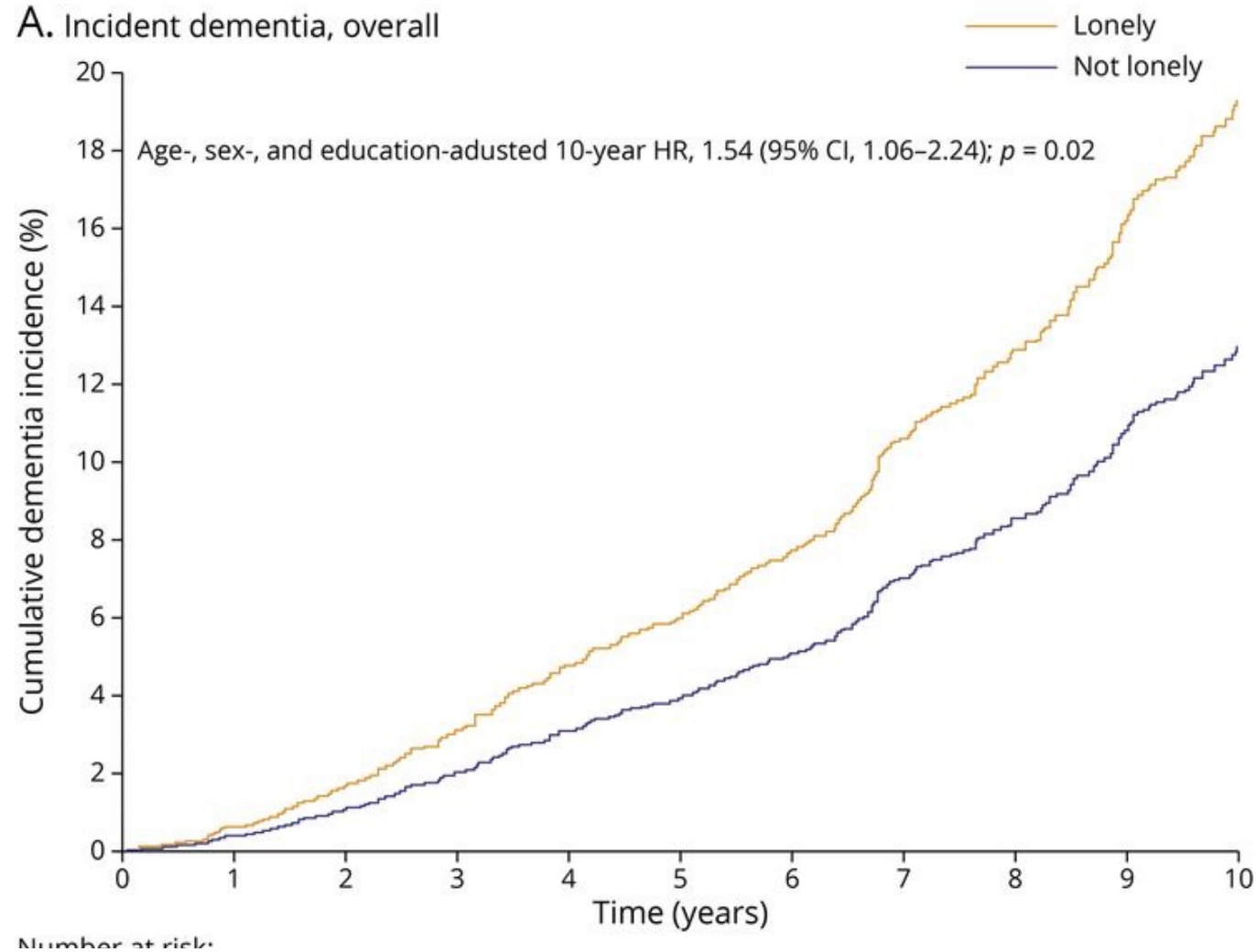
71% of women
over 65 say they are more
lonely now than before the
pandemic



Relevance to Neuroscience: The impact of loneliness

- Risk of premature death, mental health and cognitive problems
- Exacerbates age-related cognitive decline (memory)
- Brain atrophy in hippocampus and amygdala
 - Regions associated with age-related episodic memory decline
 - Targets of dementia
- Associated with increased risk of dementia

Relevance to Neuroscience: Dementia risk



Novel Research Direction: Conversational User Interfaces (CUIs)



Reimagine Health

COMPANIONS FOR LIFE

A Memory Care AI CUI platform that integrates conversation and applications for engagement, tuned to help combat loneliness ...



Novel Research Direction: Conversational User Interfaces guided by neuroscience

- Develop a CUI with high user acceptance and effective interventions for older adults and those living with dementia
- Techniques to offset **deficits**
 - Episodic memory (core component of engagement and communication)
 - Perceptual and processing speed
- Techniques that target **spared neurocognitive processes**
 - Spared semantic knowledge and memory for older events
 - Better recognition memory than recall

A New Collaboration



Dr. Signy Sheldon

- McGill University
- *The necessary insights cognitive neuroscience of aging and dementia (memory)*



Dr. Kate Dupuis

- Sheridan College
- *Knowledge to assess the impact (connection and recreation)*

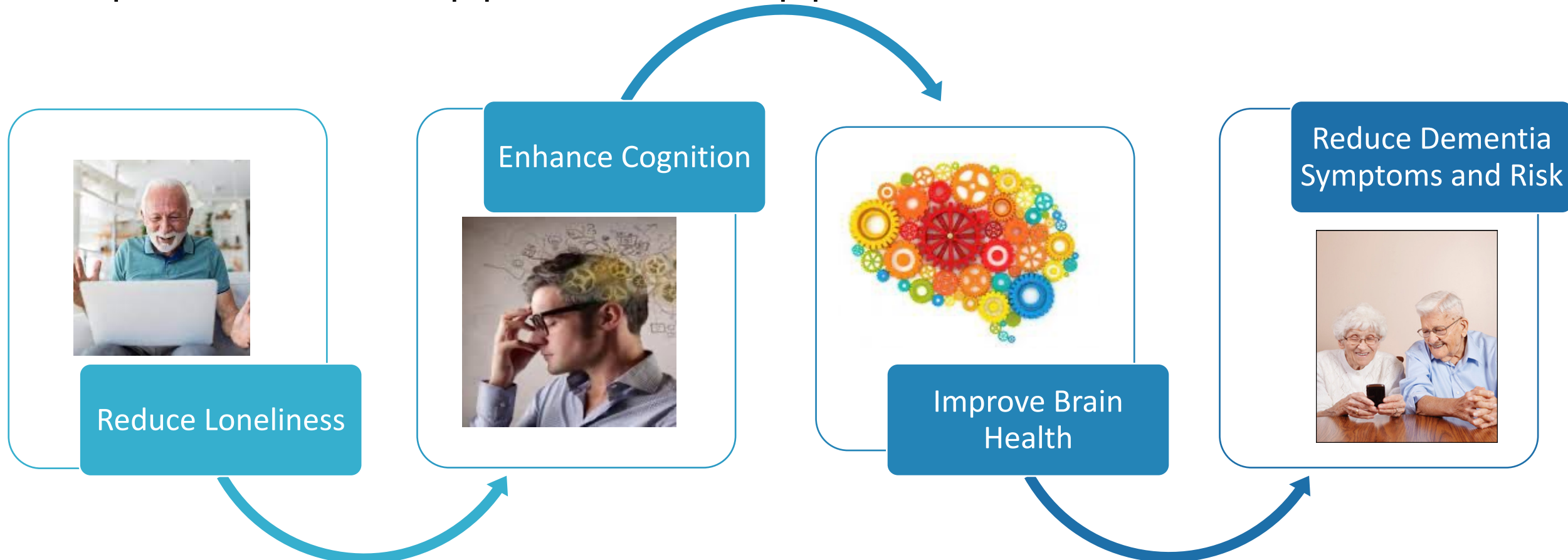


David Usher

- CEO ReImagine AI
- *The tools to integrate and implement insights and knowledge into a CUI*

The Real World Impact

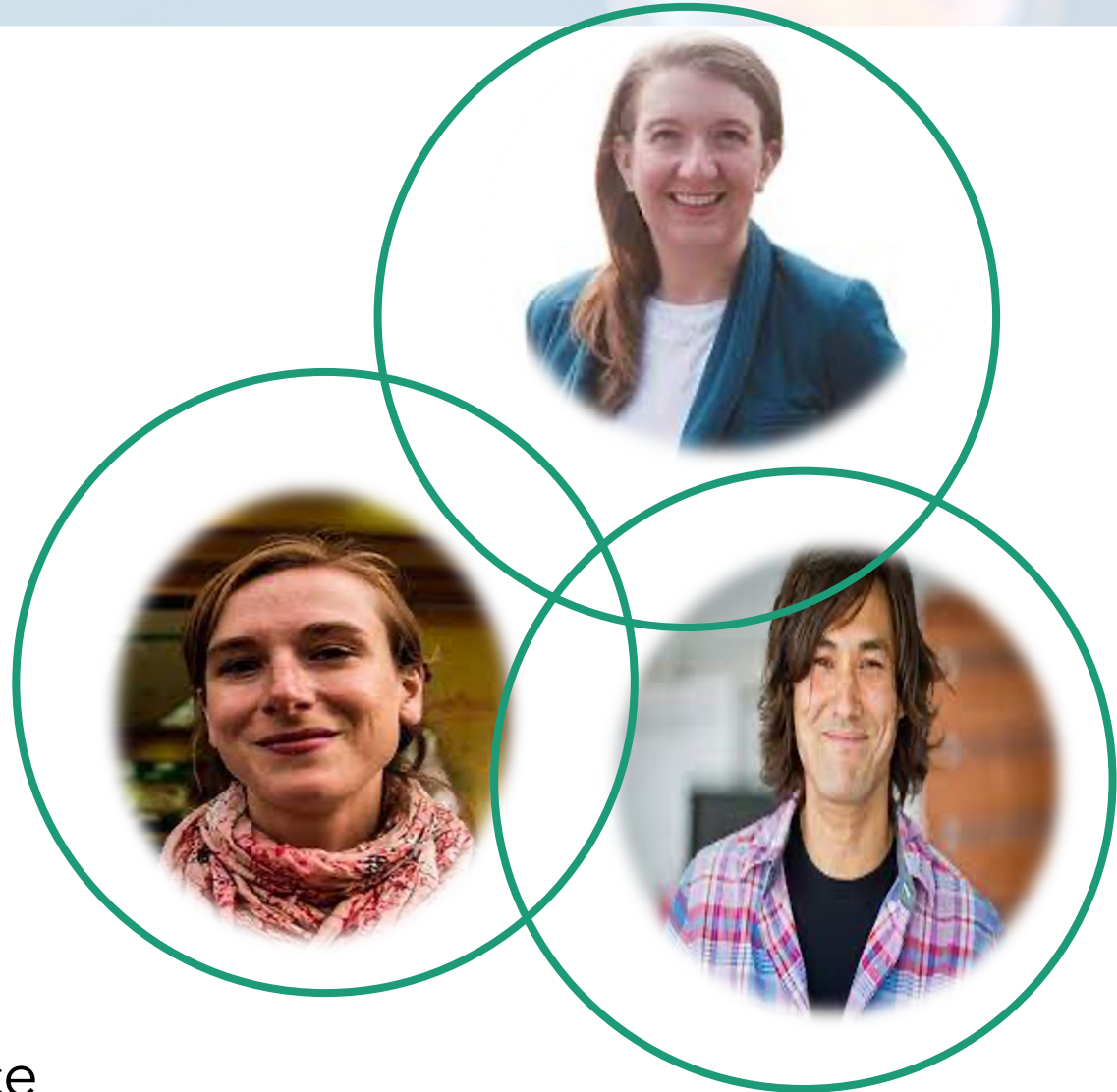
- A preventative approach to support brain health in older adults



The Real World Impact

- **Homes:** CUIs can alleviate care partner burden as the majority of people living with dementia receive family care
- **Long term care:** CUIs can address known lack of social interaction and staffing issues in these facilities
- **Research:** CUIs can act as tool to study the neural mechanisms of loneliness and social engagement

Budget: What we need



A Postdoctoral User Interface