Conversational Agent framework to increase Subjective Well-Being and improve aging memory loss in older adults

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**Introduction**

In 2008, 1.3 million people in the United Kingdom were aged 85 and over, and this is projected to reach 3.3 million by 2033. Thus, as the population profile changes, aging memory impairment problems will become more acute. Improving memory impairment reduces distress for individuals and enhances well-being and independence. Quality of life in old age can be improved by increasing subjective well-being, which is concerned with how people experience the quality of their lives and includes both emotional reactions and cognitive judgments.

**Specific Aims**

We propose to develop and evaluate technologies to increase subjective well-being (SWB) and improve aging memory in older adults. To this end, we will develop a reminiscing conversational agent as a tool to be used in a series of experiments to evaluate the efficacy of different media and verbal and nonverbal conversational behaviour for increased SWB and improved memory by older adults with normal aging memory loss.

The specific aims of this project are to: (1) construct and develop the baseline conversational agent system; and (2) evaluate the hypotheses described below in a pilot study. The study will compare SWB and memory improvement provided by a conversational agent to the levels taken before the use of the conversational agent, and evaluate the efficacy of each on immediate (immediately prior to the intervention) and distal (at one-month follow-up after intervention) SWB and everyday memory by participants. Increases in SWB are expected to lead to better outlook of the participants and also improved memory and recall. The following hypotheses will be evaluated:

- Pre-use and distal everyday memory will be significantly improved when the participant takes part in “virtual reminiscence conversation” with the conversational agent, compared to no intervention at all, and the improvement will be most pronounced in older participants with longer exposure to the intervention.
- User satisfaction will be greater when SWB is increased by the intervention of the conversational agent, compared to no intervention at all.

**Our Approach**

Creation of the conversational agent with utilisation of an ontology of reminiscence is a novel approach. The conversational agent also utilises the WordNet ontology which provides content for the conversation. An ‘Aliza’ layer keeps the conversation on track and allows the conversational agent to encourage positive as well as discourage negative elements of conversation. This research is interdisciplinary in that it combines elements of computer science with psychology and health and well-being. Close working with experts from all fields as well as working within the community are all part and parcel of this project and research.

**References**

