

# **The SAMS\* Project: A protocol to capture early changes in cognitive and functional ability detected by daily computer use.**

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*(\*Software Architecture for Mental Health Self-Management)*

## **Introduction**

Early diagnosis of dementia facilitates interventions which can significantly improve long term outcome. Rather than relying on conventional means of detection and diagnosis, novel approaches are needed to recognise initial signs of cognitive change.

Computer use is a complex task that relies on cognitive and functional abilities. Increasing numbers of older adults are using computers, which provide opportunities to develop sensitive and effective methods for detecting underlying cognitive impairment.

The overall aim is to develop software that can detect change in daily computer use as a marker of cognitive and functional ability in two studies.

## **Materials and Methods**

Study 1: A proof of concept study in 30 older computer users with mild cognitive impairment (MCI) or mild Alzheimer's disease (AD), compared to 30 healthy control participants. Cognitive and functional assessments and semi-passive computer tasks are administered on one occasion.

Study 2: An on-going 9-month longitudinal study in 60 older adult computer users with subjective cognitive impairment (SCI) or MCI. Cognitive and functional assessments are conducted at three time points. The SAMS software, installed on participants' computers, will continuously record daily computer use.

## **Results**

We have developed a comprehensive protocol to examine the nature and rate of change in an individual's computer use behaviour in relation to cognitive decline. The SAMS software can detect changes in computer use behaviour such as typing speed, mouse movements and general errors. We are currently analysing the association between computer use patterns and cognitive function (i.e. MCI/SCI).

## **Conclusions**

The development of the SAMS software is an iterative process informed by the results of these studies. Ultimately, there is potential for an unobtrusive and low-cost self-monitoring tool allowing the opportunity for prompt clinical interventions.