DA 5

Identifying reliable change using cognitive tests in ageing and dementias research.				
Start date: 1 Jun 2018		**Completion date: Sep 2019 (with papers to be submitted by end of 2019)**		
Overall Discovery Award objectives:				
1. To fully evaluate the methods used to investigate individual level change in cognitive measures for dementia research.				
2. To apply IRT models to as fuller set of item level data as is possible from the DPUK cohorts to investigate individual level change.				
3. To train dementia researchers in the application of optimal methods for the study of individual level change.				
4. To use the enhanced empirical understanding from (2) to design and plan a study using the trials simulation approach.				
Deliverables	**Milestones**	**Milestone deadline**	**Work package dependencies**	**Person(s) responsible**
Objective 1:				
D1.1 Article: A review of the application of models for individual level change in dementias research.	M1.1.1 Submission of article	M1.1.1 Complete	None	TB/AM
Objective 2:				
D2.1 Article: Detailing the main results of the IRT analyses of cognitive measures.	M2.1.1 Submission of the article	M2.1.1 Apr 2019	None	TB/AM, GMT
Objective 3:				
D3.1 Training workshop on IRT models for individual level change.	M3.1.1 Training day organised and advertised.	M3.1.1 Complete	None	TB, GMT
	M3.1.2 Training day run.	M3.1.2 Complete		
Objective 4:				
D4.1 Meeting to share to the results and discuss input/impact on trial simulator work.	M4.1.1 Meeting organised and held.	M4.1.1 Complete	None	TB, GMT
Key updates on delivery against milestones since last report				
• **M1.1.1:** Paper currently being considered by the editor of Alzheimer's and Dementia as an invited review. To be posted on pre-print server in the next couple of weeks, Milestone Complete				
• **M2.1.1:** Manuscript draft close to completion. Final analyses being conducted.				
• **M3.1.1 & M3.1.2:** Complete				
• **M4.1.1 Meeting organised and held:** Complete				
Summary of plans for the future				
• On hearing from the editor of Alzheimer's and Dementia, we will either submit the review there, or elsewhere.				
• Finalise analyses and submit second paper				

Risks	Mitigation
1) None at this stage. Time has been an ongoing issue, but we are now close to completion	1)

Team members underlined funded (full or part-time) by DPUK

Tom Booth, Aja Murray, Graciela Muniz-Terrera

Team members involved with the project but not funded by DPUK

Marlena Volmer: Volunteer research assistant at Dept. Psychology University of Edinburgh who helped with some literature search relating to M1.1.1

Prof. Steven Reise: Steven was initially contacted about potential co-authorship. He is not able to contribute to the work, but has engaged in a number of discussions. These have been very useful. Similarly, we have had discussions with a number of other IRT field experts (Prof's Klaas Sijtsma and Wilco Emons) about a number of technical issues. None of these individuals will formally be co-authors.

Outcomes

See below

Project narrative

Review Paper

The review paper is essentially complete. The paper discusses methods for analysing reliable change, and includes an empirical example based on the NART in the Lothian Birth Cohort 1936. It demonstrates how the use of different methods yields different conclusions on whether reliable change has occurred for given individuals.

As method reviews are not a typical form of paper in content area journals, we made preliminary contact with four leading journals. All were interested in the empirical paper, only one – Alzheimer's and Dementia – expressed potential interest in the review. As such, we sent an early draft for the editor for consideration. Since then, the paper has been completed. I intend to send the now complete paper to the editor early next week if we have not heard back with a decision.

Empirical Paper

The paper implements the primary methods discussed in the review – in short IRT approaches to individual change. The key issue with this paper has been the lack of item level cognitive test data. The paper focuses in on the MMSE using CFAS and CFAS II. The introduction, methods, and analytic approach are all complete. The script for analysis is complete. There is a small amount of data sorting to do, and models to be run, before the final write up can be completed. This is scheduled to be completed in the next 10 days.

Training Day

The IRT course was run on 30 August 2019 at the University of Edinburgh. We had ~25 attendees from across the UK. As per our proposal and the DPUK funding, we provided three travel bursaries (all that were requested), to PhD students and ECRs that attended. The course was well received and was highly enjoyable.

Trial simulator collaboration

The meeting to discuss the final results is yet to be held, however, this has been an on-going dialogue throughout the project. I have been in discussion with Dr Kevin McRae-McKee about our work and their on-going projects. I intend to arrange a meeting with Kevin early in 2020 (based on both of our commitments and schedules) to update and push forward on potential collaborative work.