

Title: Practice effects in repeated cognitive testing - an investigation of the stability of cognitive task performance over time

Dates: 2013-2014

Funding organisation: ESRC (Grant no. 1371582)

Dataset accompanying the paper entitled Bell, L., Lamport, D. J., Field, D. T., Butler, L. T., & Williams, C. M. (2018). Practice effects in nutrition intervention studies with repeated cognitive testing. *Nutrition and Healthy Aging*, 4(4), 309-322, <https://doi.org/10.3233/NHA-170038>. Created by Lynne Bell, School of Psychology and Clinical Language Sciences, University of Reading, Reading RG6 6AL, UK

Description: This dataset was collected as part of a PhD investigating the impact of a nutrition intervention on cognitive function in young adults. The dataset was collected to investigate practice-related improvements in cognitive task performance occurring from repeated cognitive testing alone, irrespective of any intervention. Participants performed 6 sessions of cognitive testing (2 sessions spaced 1 hour apart, on 3 separate visits each spaced 1 week apart). The cognitive tasks investigated were episodic memory recall, Stroop, serial subtraction, and Sternberg tasks. Mood changes were recorded using mental fatigue and PANAS questionnaires. All tasks were programmed and performed on a personal computer using E-Prime software. In addition to performing the cognitive tasks, participants were asked to rate their motivation and the difficulty of each task on a separate questionnaire. The dataset was used to inform on the stability of cognitive task performance over time.

Dataset publication Year: 2019

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Rights-holder: Lynne Bell

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Filename Repeated_cognitive_testing_dataset.xlsx

Contains cognitive data recorded in 29 healthy young adult participants, across 6 repeat test sessions. The sessions were structured such that 2 sessions were performed 1 hour apart on each of 3 visits, spaced 7 days apart. The cognitive tasks included: immediate and delayed episodic memory recall, mental fatigue, PANAS, Stroop, Sternberg, and serial subtraction in 3s and 7s. Subjective ratings of perceived task difficulty, and motivation during the cognitive task, were recorded for each task at each test session. Multiple dependent variables were recorded for each cognitive task:

<i>Cognitive task</i>	<i>Dependent variable</i>	<i>Units</i>	<i>Notes</i>
Immediate and delayed recall	Score	Number of correct words out of 15	Only coded scores are archived here. Participants' written responses are not provided
	Interference errors	Number of incorrect words recalled from previously presented lists	
Serial 3s and 7s subtraction	Score	Number of correct responses in 2 minutes	Average reaction times were calculated for correct responses only

	Reaction time	Milliseconds	
	Errors	Number of incorrect responses in 2 minutes	
Sternberg	Accuracy	Number of correct responses out of 96	Scanning rate and extrapolated RT were calculated as the slope and intercept for the regression of RT on memory set size
	Scanning rate	Milliseconds per item	
	Extrapolated reaction time	Milliseconds	
Stroop	Accuracy	Number of correct responses out of 96	Average reaction times were calculated for correct responses only. Interference effect was calculated by subtracting Congruent RT from Incongruent RT
	Reaction time for congruent trials	Milliseconds	
	Reaction time for incongruent trials	Milliseconds	
	Interference effect	Milliseconds	
Mental fatigue		Subjective rating out of 9	
PANAS	Positive affect	Subjective rating out of 50	Calculated by summing ratings out of 5 for 10 positive or negative adjectives, respectively
	Negative affect	Subjective rating out of 50	
Difficulty		Subjective rating out of 9	Recorded immediately after completing each cognitive task
Motivation		Subjective rating out of 9	Recorded immediately after completing each cognitive task

Sheet 1 Summary of means

Contains a formatted summary table giving the mean and standard deviation for each cognitive task score at each test session. Values were calculated omitting outlier participant scores with a standardised z score exceeding 3.29.

Sheet 2 Summary by participant

Contains a formatted table giving the individual scores for each cognitive task and test session, for each participant. Outlier participant scores with a standardised z score exceeding 3.29 are highlighted.

Sheet 3 Raw Stroop data

Contains trial level cognitive data extracted from E-Prime. Please see paper for full task description.

<i>Column</i>	<i>Variable Name</i>	<i>Description and Units</i>	<i>Notes</i>
A	Subject	Participant identifier	
B	Session	Repeat session number (1-6)	
C	Trial type	Practice or Test	12 practice trials were presented at the beginning of

			each test session, for which data was not included in subsequent analysis
D	Congruency	Congruent or Incongruent	For congruent trials the font colour and semantic meaning of the presented word were matched. For incongruent trials they were different
E	Practice trial accuracy	0 (incorrect) or 1 (correct)	
F	Practice trial RT	Milliseconds	
G	Test trial accuracy	0 (incorrect) or 1 (correct)	
H	Test trial RT	Milliseconds	

Sheet 4 Raw Sternberg data

Contains trial level cognitive data extracted from E-Prime. Please see paper for full task description.

<i>Column</i>	<i>Variable Name</i>	<i>Description and Units</i>	<i>Notes</i>
A	Subject	Participant identifier	
B	Session	Repeat session number (1-6)	
C	Trial type	Practice or Test	12 practice trials were presented at the beginning of each test session, for which data was not included in subsequent analysis
D	Memory set size	Length of presented digit string (1-6)	
E	Probe digit type	Positive or negative	For positive trials, the probe digit was present in the memory set of digits. For negative trials, the probe digit was not present in the memory set
F	Probe digit accuracy	0 (incorrect) or 1 (correct)	
G	Probe digit RT	Milliseconds	

Sheet 5 Raw Serial 3s data and Sheet 6 Raw Serial 7s data

Contains trial level cognitive data extracted from E-Prime. Please see paper for full task description.

<i>Column</i>	<i>Variable Name</i>	<i>Description and Units</i>	<i>Notes</i>
A	Subject	Participant identifier	
B	Session	Repeat session number (1-6)	
C	Trial type	Practice or Test	A single 30 second practice trial was presented at the beginning of each test session, for which data was not included in subsequent analysis
D	Accuracy	0 (incorrect) or 1	Number of correct responses in 2 minutes

(correct)

E	RT	Milliseconds
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Sheet 7 Raw PANAS data

Contains trial level cognitive data extracted from E-Prime. Please see paper for full task description.

<i>Column</i>	<i>Variable Name</i>	<i>Description and Units</i>	<i>Notes</i>
A	Subject	Participant identifier	
B	Session	Repeat session number (1-6)	
C	PANAS item	Mood adjective	20 different mood adjectives were presented. 10 were of positive dimension and 10 were negative
D	Rating	Rating out of 9	