

Introduction

The Face-Name Associative Memory Exam (FNAME) is a sensitive measure of memory and age-related cognitive decline, with scores declining in parallel with markers of preclinical Alzheimer's disease [1-3]. We describe here the California FNAME (C-FNAME), an automated and brief computerized test normed for remotely administered in-home or in-lab testing that uses advanced automatic speech recognition (ASR) and automatic scoring for **rapid and objective assessment**. We examine the performance of healthy adults, with an emphasis on the relationship of gender and age with C-FNAME recall.

Methods

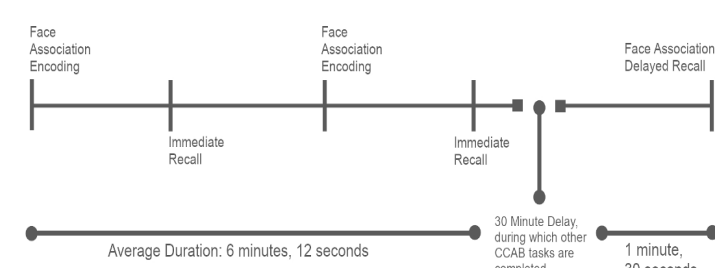
Participants: The C-FNAME was administered to 436 healthy adults. ~ 43% of participants were female, with a mean age of 64.8, ± 14.7 .

Technology: Participants were tested using a tablet computer with circumaural headphones and head-mounted microphone. Instructions and stimuli were delivered using text-to-speech (TTS) with intensities adjusted to the participant's auditory threshold. Responses were **automatically scored** using consensus ASR (CASR) with performance scores displayed in real time. An examiner telemedically monitored participant performance over audio and visual feeds.

Task: During encoding, participants saw six faces presented individually, associated with first names, last names, and occupations for a duration of 6 seconds. After each individual presentation they were given between 6-15 seconds to repeat the names and occupations.

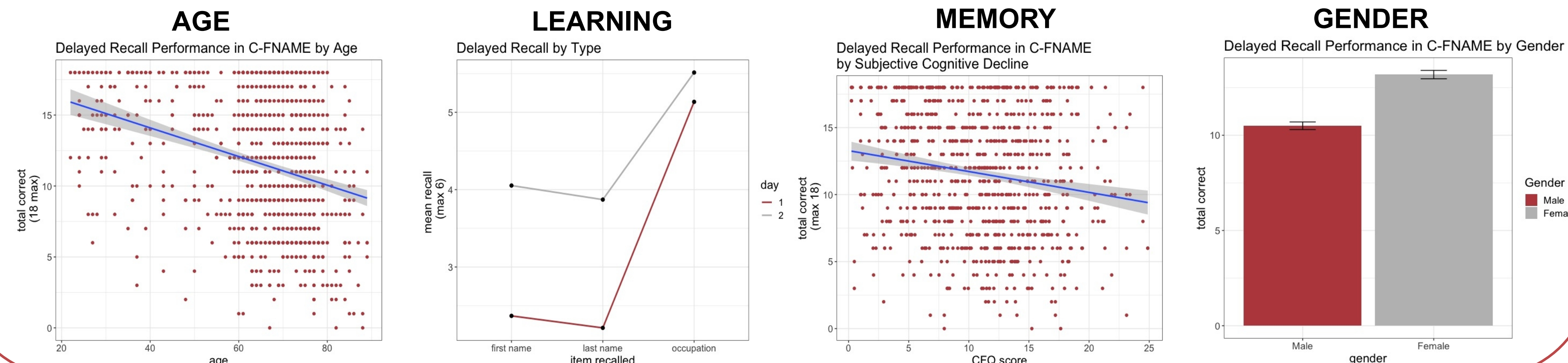
After each encoding trial, they were asked to say the associations out loud when presented with the face alone. Audio responses were recorded and scored using CASR.

A delayed recall task occurred ~30 minutes after encoding



The C-FNAME was given as part of a larger battery being **used for longitudinal testing**, the California Cognitive Assessment Battery (CCAB) developed by Neurobehavioral Systems

Results



Summary

- Increased age resulted in decreased delayed recall scores
- Higher subjective cognitive decline scores predicted lower delayed recall scores
- Higher vocabulary scores predicted better delayed recall
- Female participants had higher recall scores
- More educated participants had higher delayed recall scores

	B	SE	t-value	LL 95%	UL 95%	p-value
Gender***	1.391	0.343	4.053	0.717	2.066	<.001
Age***	-0.096	0.012	-7.722	-0.120	-0.072	<.001
Vocabulary***	0.152	0.022	6.828	0.108	0.195	<.001
Education*	0.23	0.096	2.399	0.0416	0.418	0.017
Subjective Memory**	-0.087	0.034	-2.595	-0.153	-0.021	0.001

The C-FNAME demonstrated excellent test-retest reliability: $r = .75$ for immediate recall and $.82$ for delayed recall

Discussion

Our results are consistent with previous laboratory-based assessments, and indicate that the brief, telemedically administered C-FNAME is a sensitive metric of associative memory.

Current results demonstrate that vocabulary, age, and gender are strong predictors of C-FNAME recall performance.

The high test-retest reliability of C-FNAME demonstrates that automated associative memory tests can be reliable and accurate. Integrated telemedical monitoring assures the quality of remote assessments and enables largescale testing even during pandemic conditions.

References

- [1] Rentz et al. (2011) DOI: 10.1016/j.neuropsychologia.2011.06.006
- [2] Papp et al. (2014) DOI: 10.1080/13854046.2014.911351
- [3] Amariglio et al. (2012) DOI: 10.1080/13803395.2012.666230

Contact us

kat_hall@neurobs.com for reprints
ccabresearch.com
neurobs.com

