

Recollection and Familiarity influence Episodic Feeling-of-Knowing in Young and Older adults

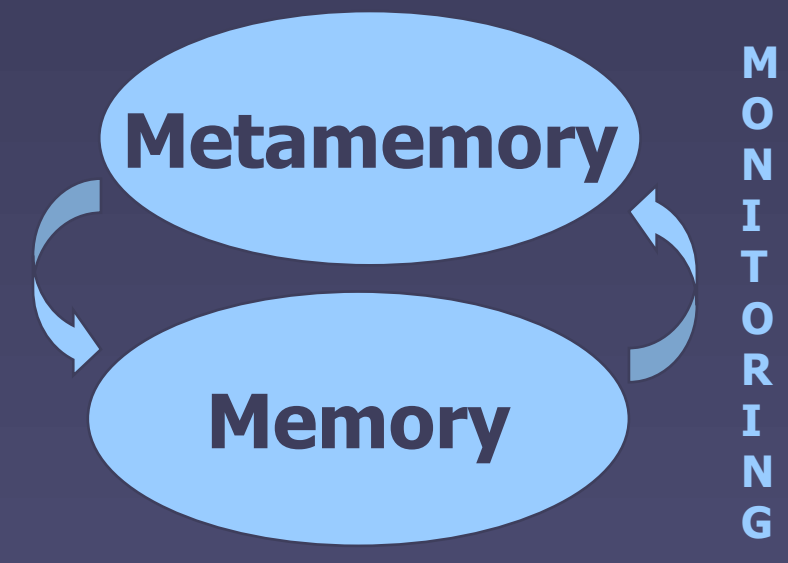
SACHER, M., BOUAZZAQUI, B., TACONNAT, L., & ISINGRINI, M.
UMR CNRS 7295, « Centre de Recherches sur la Cognition et l'Apprentissage »
Université François Rabelais, Tours, France



mathilde.sacher@orange.fr



INTRODUCTION



The **monitoring of memory** is a metamemory process which refers to the subjective assessment of one's memory functioning.
↳ **Feeling-Of-Knowing (FOK)** procedure in episodic memory : participants are asked to estimate the likelihood that they will subsequently recognize a piece of information that they had failed to recall earlier.

According to the accessibility account of FOK (Koriat, 1993) FOK judgment is based on an inferential process that uses a variety of cues (*i.e.* mnemonic cues) to determine the likelihood that the solicited target is retained in memory and will be recognized in the future. The accuracy of FOK should vary greatly with the many factors that affect retrieval and the quality of FOK judgment depends on the retrieval capacity of mnemonic cues, that is the ease with which information is accessed.

• Aging and episodic FOK :

- Episodic FOK judgments and accuracy decreased with aging (e.g., Sacher et al. 2015)
- Several studies have suggested that the age-related deficit in FOK accuracy could be due to a decline in recollection processes (e.g., Souchay et al., 2007)

The **noncritical recollection hypothesis** (Hertzog et al., 2014) suggests that recollection, defined as the explicit retrieval of learning contextual information, may be central in determining episodic FOK judgments and accuracy.

To better understand the effect of aging on episodic FOK, we have examined the **contribution of recollection and familiarity** as possible indexes of the retrieved of partial information **quality associated to FOK** judgments and to predictive accuracy.

An online remember-know-no memory procedure was combined with the episodic FOK procedure to directly assess recollection and familiarity processes associated to FOK predictions.

Objectives :

1. To confirm the effect of aging on episodic memory (cued recall) and metamemory performance (FOK magnitude and accuracy)
2. To examine the effect of aging on Remember and Familiarity responses associated to FOK judgments, recollection-based and familiarity-based magnitude and accuracy

METHOD

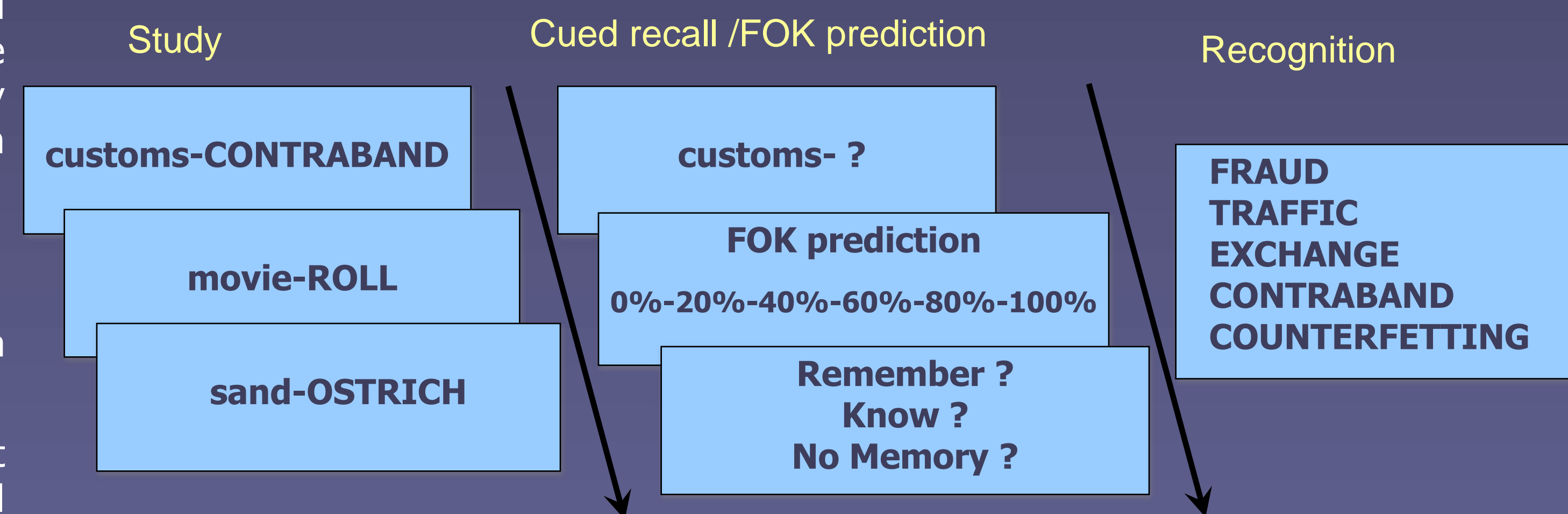
• Participants:

26 young adults (20-40 years)
33 older adults (60-80 years; MMSE > 28)

• Material:

A list of 80 weakly associated cue-target words pairs

• Episodic FOK Task



FOK prediction: predict the degree of certitude to recognize the target among 4 distractors
R : explicit retrieval of learning contextual details of the cue and the corresponding unrecalled target
K : felt confident that the cue word and the corresponding unrecalled target had been presented
N : no conscious recollection nor feeling of familiarity

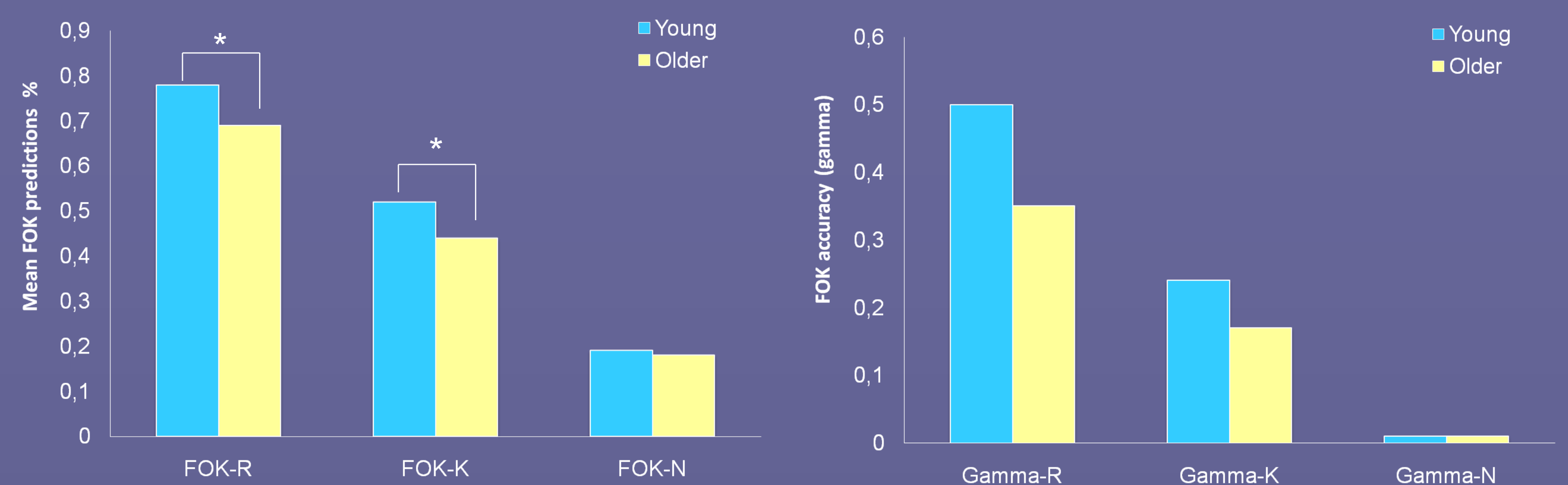
• Measures:

- **FOK magnitude:** Mean FOK judgments
- **FOK accuracy:** correlation gamma between FOK predictions and recognition performance

RESULTS

	Young	Older	t(57)
Memory measures			
Cued recall correct	.38 (.17)	.27 (.14)	2.89**
Remember (R) judgments	.34 (.14)	.22 (.13)	3.45***
Know (K) judgments	.39 (.12)	.54 (.19)	-3.59***
No memory (N) judgments	.27 (.13)	.23 (.16)	NS
Feeling-of-knowing measures			
Magnitude of FOK judgments	.54 (.17)	.43 (.17)	2.46*
FOK accuracy (gamma)	.28 (.21)	.13 (.25)	2.28*

* $p < .05$, ** $p < .01$, *** $p < .001$



• FOK magnitude

- The type of responses affects FOK judgments
FOK-R > FOK-K > FOK-N [$F(2,114)=393.31$ $p < .001$]
- The age effect differs according to the type of responses
[$F(2,114)=3.13$, $p < .05$]

• FOK accuracy

- No age effect on FOK accuracy
- The type of responses affects FOK accuracy
gamma-R > gamma-K > gamma-N [$F(2,114)=393.31$ $p < .001$]
Gammas for N responses were close to zero, indicating no correlation

DISCUSSION

1. Our results, in line with previous studies, confirm that:

• Aging decreases both episodic memory performance and FOK judgments and accuracy

➔ Older participants estimate their ability to recognize newly learned items less accurately than younger adults

2. This study reveals that :

Remember and Know responses together represented the majority of judgments in the two age groups (Young:73% vs. Older: 76%)

• Aging decreases the proportion of Remember judgments and increases the proportion of Know judgments during the FOK phase

➔ When participants try to retrieve a target, they usually experience a recollection or a familiarity process

➔ Moreover, these findings suggest that FOK predictions are less based on recollection process in the older group

3. This study reveals that :

• Recollection leads to greater FOK magnitude and FOK accuracy than familiarity

➔ Participants make more accurate FOK predictions associated with recollection than familiarity

• Aging decreases only recollection- based and familiarity-based FOK magnitude

➔ Older adults are less confident in their FOK predictions associated with recollection or familiarity than young adults

4. These results support the idea that :

• Recollection, defined as the explicit retrieval of learning contextual information, is central in determining episodic FOK judgments and accuracy supporting the noncritical recollection hypothesis

• Older participants make less FOK predictions associated with recollection, leading to reduced FOK magnitude and accuracy

Hertzog, C., Fulton, E. K., Sinclair, S. M., & Dunlosky, J. (2014). Recalled aspects of original encoding strategies influence episodic feelings of knowing. *Memory & Cognition*, 42, 126-140.

Koriat, A. (1993). How do we know that we know? The accessibility model of the feeling-of knowing. *Psychological Review*, 100, 609-639.

Sacher, M., Landré, L., & Taconnat, L. (2015). Age-related differences in episodic feeling-of-knowing arise from differences in memory performance. *Memory*, 23 (2), 119-126.

Souchay, C., Moulin, C. J. A., Clarys, D., Taconnat, L., & Isingrini, M. (2007). Diminished episodic memory awareness in older adults: Evidence from feeling-of-knowing and recollection. *Consciousness and Cognition*, 16, 769-784.