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# Teaching information evaluation in self-paced e-learning mode: is distributed practice helpful?

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# Information evaluation

- Information evaluation: the process by which readers decide whether a document is relevant and reliable to their reading purposes (Rouet & Britt, 2011)
- The spread of misinformation on the Internet has increased the need to educate students for a critical appraisal of information quality and credibility online (Britt et al., 2019)
- Interventions aimed at developing students' evaluation skills have shown encouraging results (Bråten et al., 2019; Kammerer & Brand-Gruwel, 2020; Pérez et al., 2018; Wineburg et al., 2022)
  - Most of the studies were carried out in face-to-face or hybrid settings

# Distributed practice

- Distributed practice has been shown to boost students' performance across many tasks and educational contexts (Cepeda et al., 2006; Dunlosky et al., 2013)
- However, distributed practice is not a uniform construct
  - E.g., interstudy interval: from 5 minutes to 1 week (Grevin & Richter, 2021)
- Moreover, in self-paced e-learning, distributed practice cannot be imposed to students
  - Performance may depend on students' strategies (Burín et al., 2018; González et al., 2019; Moreno-Marcos et al., 2020)

# The present study

- Test the effects of an intervention embedded in the curriculum of an introductory course to critical reading in Psychology
- Explore how students' decisions regarding the distribution of tasks in time affect their learning

# Method

- Participants: 315 undergraduates in Psychology ( $M_{age} = 34$ ; 80% F)
- Materials:
  - 2 interactive slide-shows on evaluation strategies (lateral reading, criteria)
  - 4 practice exercises (with automatic feedback)
  - 2 e-learning platforms: Moodle, SELEN
- Pre and post-tests:
  - Two topics (counterbalanced)
  - Read three documents (authentic web pages)
  - Evaluate Reliability, Author Competence, Conflict of interest, Editorial filters

## Documents (web pages)

CAIRN | 116 P.0  
MAGASIN & REVISION

REVUES | OUVRAGES | QUE SAIS-JE ?? | REPÈRES | MAGAZINES | MON CAIRN

ACCUEIL > OUVRAGES > PSYCHOLOGIE DE LA MÉMOIRE > CHAPITRE 5. LES PROCESSUS DE RÉCUPÉRATION...

Chapitre 5. Les processus de récupération et l'oubli  
Alain Liétry  
DANS PSYCHOLOGIE DE LA MÉMOIRE (2022), PAGES 175 À 210

CHAPITRE | PLAN | AUTEUR | SUR UN SUJET PROCHE

Dans les ordinateurs, les informations sont munies d'une adresse (par l'intermédiaire du nom de fichier ou de programme) pour être retrouvées et récupérées parmi des millions d'informations. Ce mode de fonctionnement, similaire d'ailleurs à une bibliothèque, a servi de modèle à certains chercheurs qui ont suggéré que l'oubli pourrait être considéré non pas comme une destruction de l'information mais comme l'impossibilité de retrouver une information spécifique faute d'adresse.

DOC+

## Reliability

"Good"

Competent author  
No conflict of interest  
Validation pre/post publication by external reviewers

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Histoire de la Méthode Martinez

Cette méthode est au cœur de ma réussite en tant que championne en mathématiques. Elle m'a même permis de devenir championne de France de mémoire.

Le secret de ma méthode se trouve dans le titre : « **En Mathématiques** », car oui, la **motivation** et le **plaisir** sont deux moteurs essentiels pour pouvoir mémoriser tout ce que vous voulez et pour longtemps!

DOC+-

"Average"

Less competent author  
Conflict of interest (commercial)  
Internal validation

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Page 1 sur 7

PSYCHOLOGIE COGNITIVE	CM6-21-28/02
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CM n°6 : La mémoire

La mémoire est au centre de toute nos fonctions cognitives et au centre de toute notre vie psycho-affective.

La capacité de la mémoire est indéfinie et pratiquement infinie.

Un paradoxe : plus la mémoire est riche et plus on peut mémoriser de nouvelles informations.

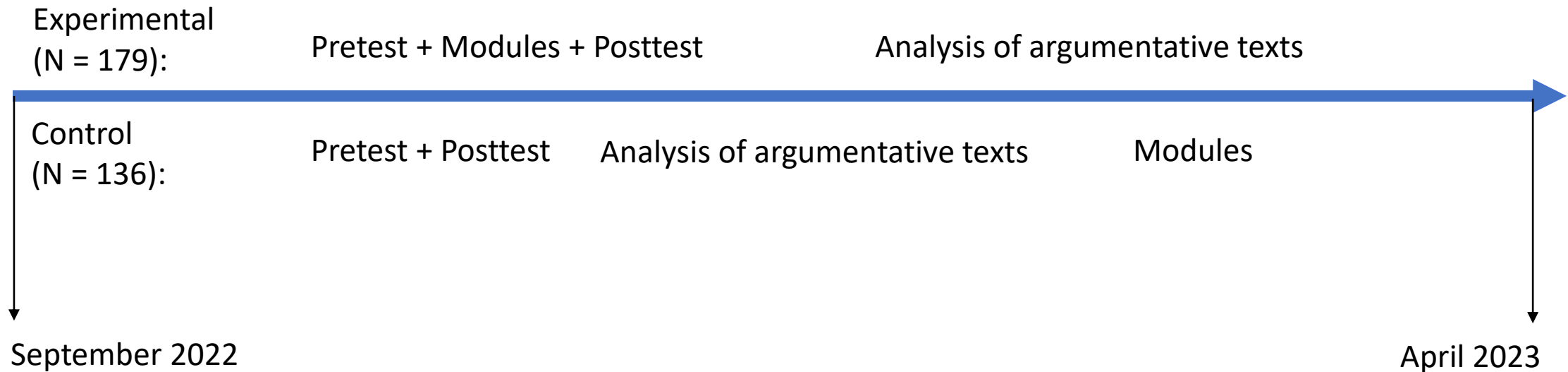
La mémoire est absolument nécessaire à la vie : si nous sommes privés de mémoire nous sommes handicapés et incapables de vivre en autonomie.

DOC-

"Poor"

No author credentials  
Conflict of interest (low)  
No validation

# Implementation



Participants were randomly assigned to a group.  
They could complete the activities at their own pace.

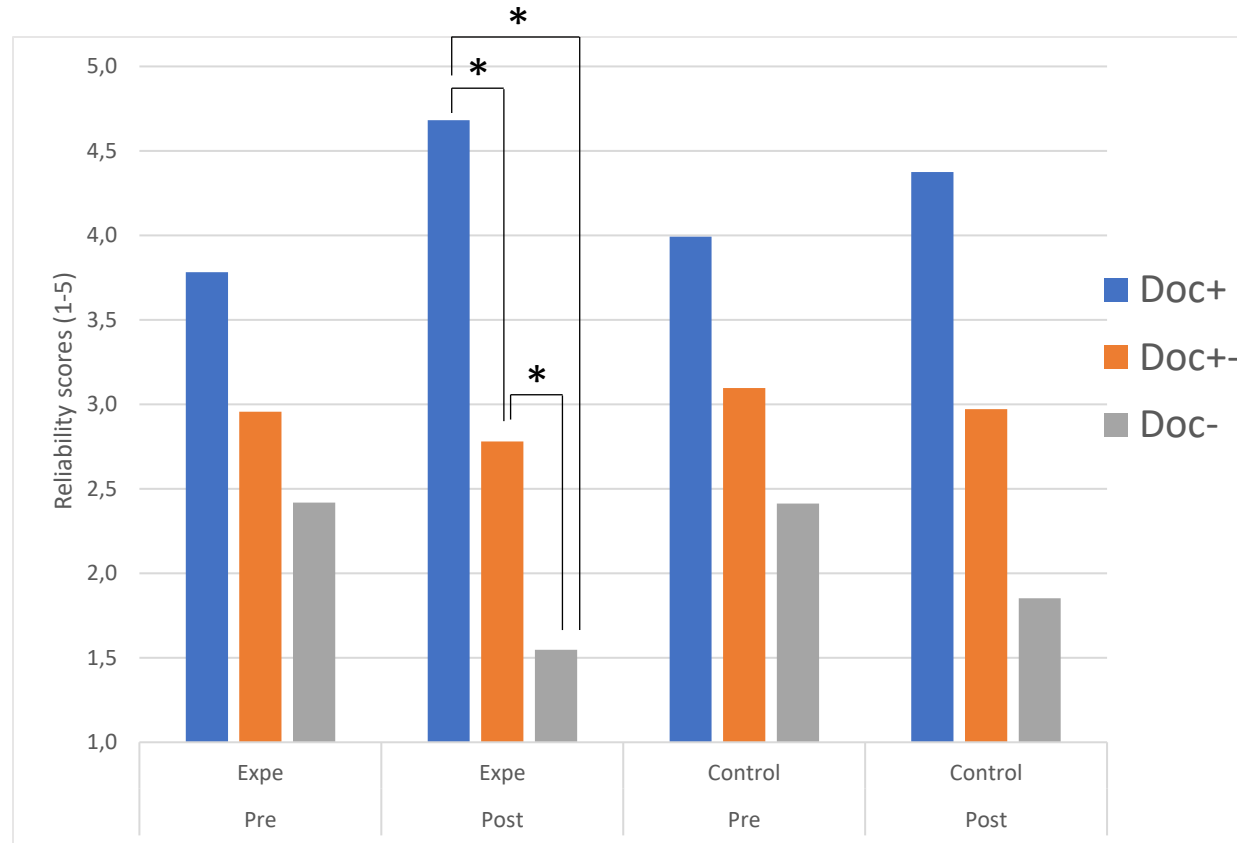
# Hypotheses

- The intervention will increase trained students' ability to evaluate information quality and credibility as compared to a control group
- Distributed practice will be positively related to evaluation performance in the experimental group, in terms of:
  - Number of days between pre and post
  - Starting date (period in the semester)



# Results

# Evaluation performance

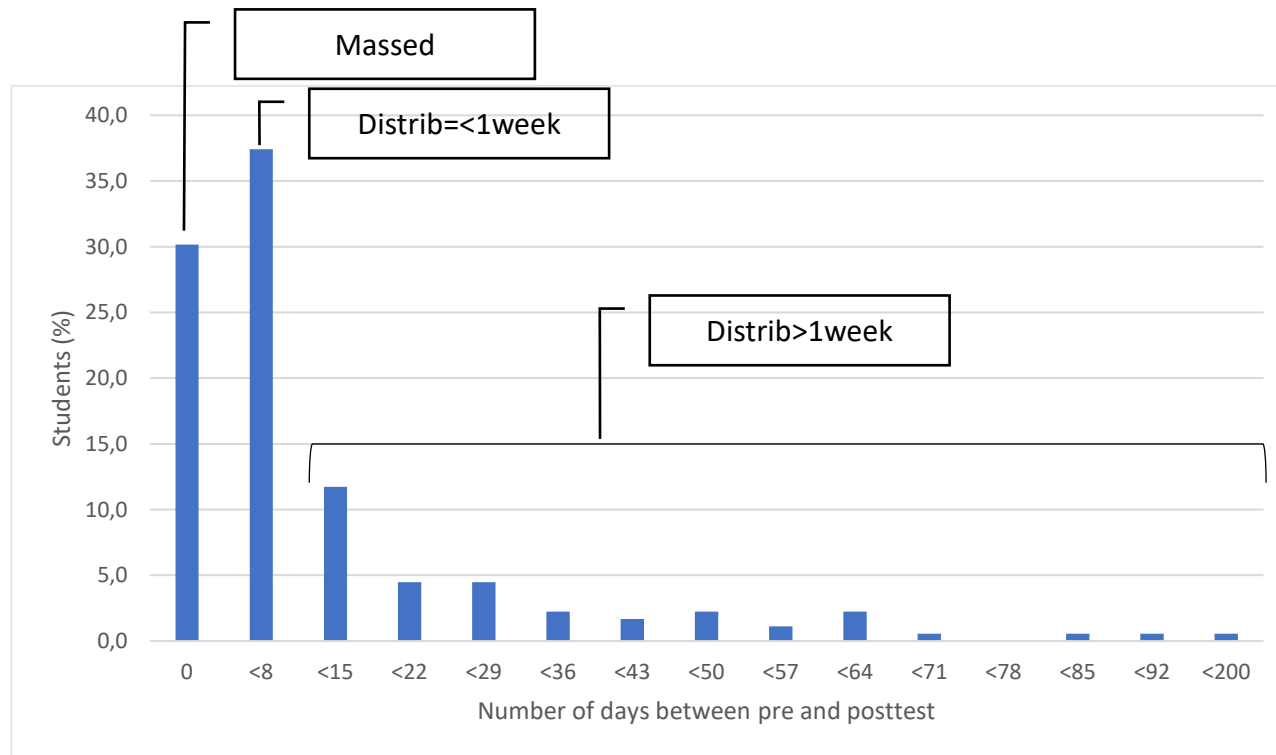


Interaction: Phase\*Document\*Condition

The intervention had a significant effect on students' evaluation of the reliability of the web documents,  $F(1, 313) = 5.293$ ,  $p = .006$ , partial  $\eta^2 = .017$ .

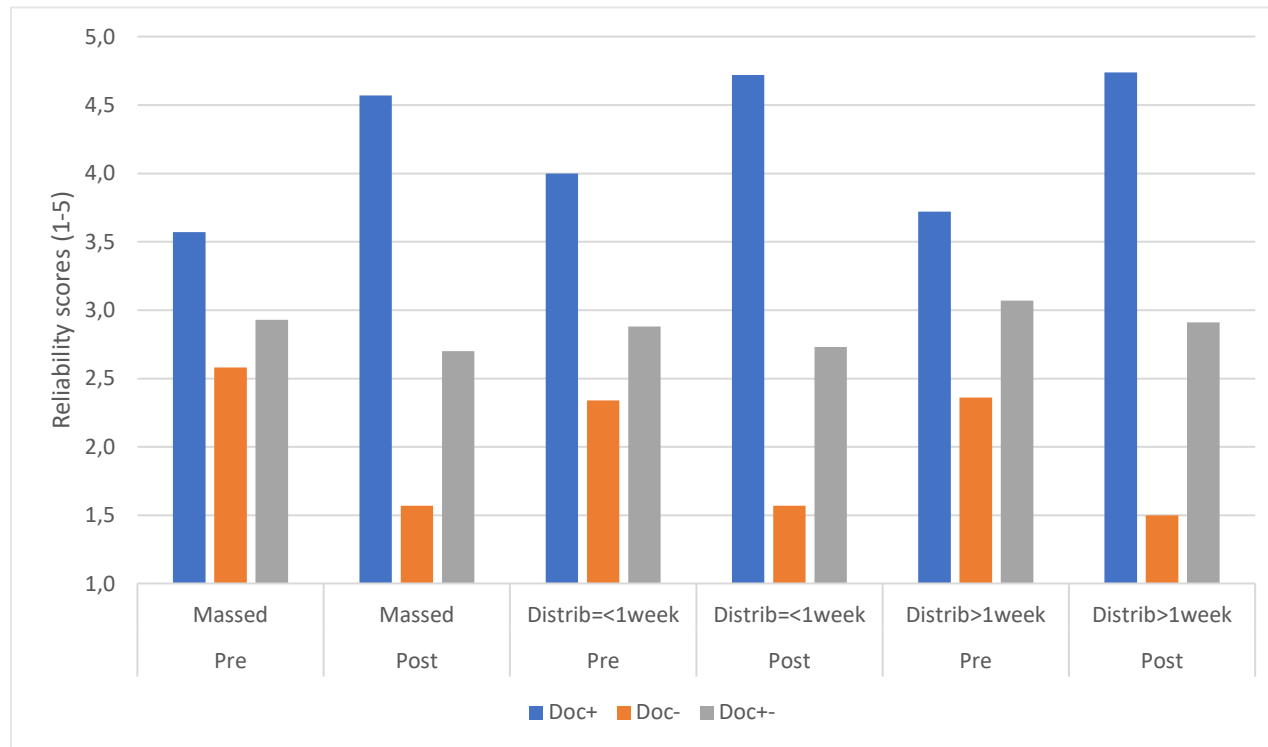
Trained students performed better in distinguishing good and poorly reliable web documents after instruction.

# Days between pre and post



Students in the experimental group completed the tasks in widely different lapses of time, from 0 (same day) to 92 days.

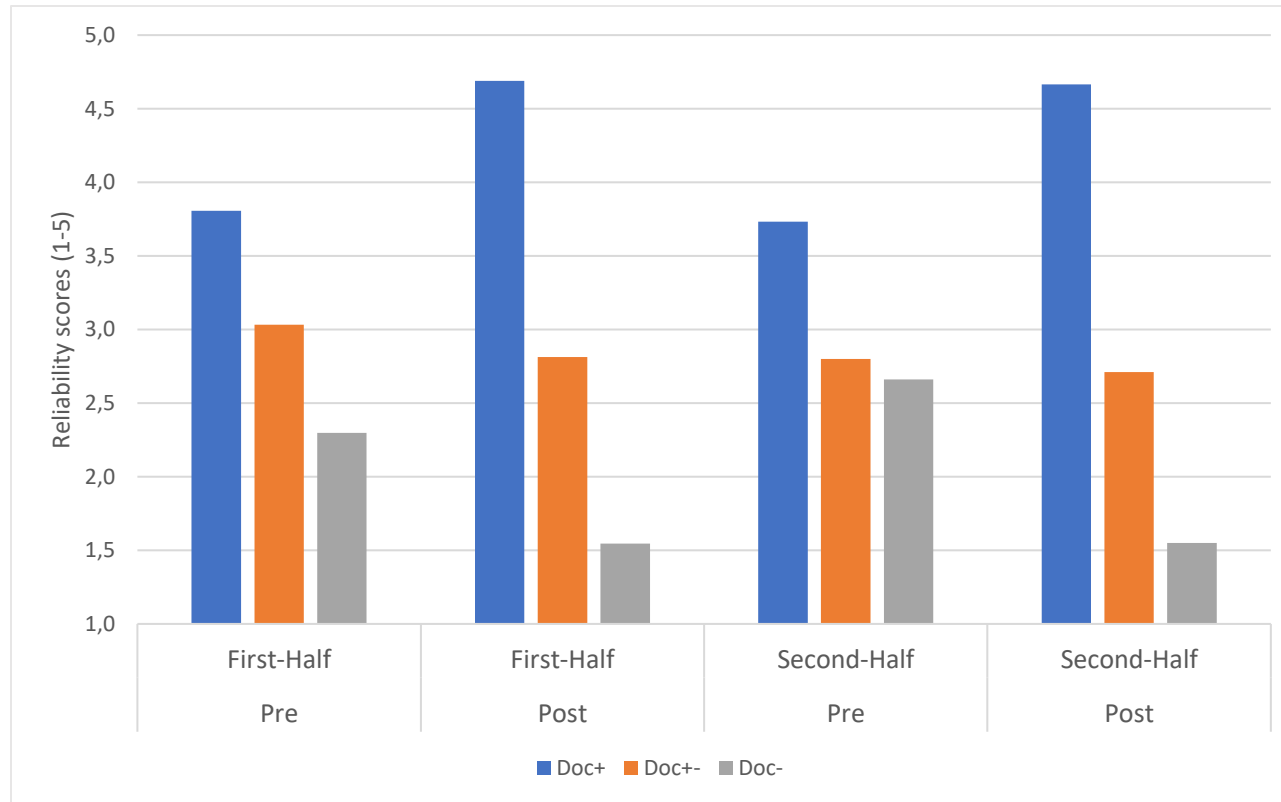
# Days between pre and post



The distribution of tasks between pre and post-tests did not have a significant effect on trained students' evaluation of the reliability of the web documents,  $F(1, 176) = 5.293$ , n.s.

Only the Phase\*Document interaction was significant,  $F(1, 176) = 52.391$ ,  $p < .001$ , partial  $\eta^2 = .233$ .

# Starting date



Similarly, students started the tasks in two different periods in the semester : First-half, Second-half.

The starting date of tasks between pre and post-tests did not have a significant effect on trained students' evaluation of the reliability of the web documents,  $F(1, 176) = .922, n.s.$

# Discussion

- The intervention had a modest, but significant effect on students' evaluation of multiple web documents' reliability
- No significant effect of distributed practice in evaluation performance
  - Students' self-regulation strategies? (González et al., 2019; Moreno-Marcos et al., 2020)
  - Tasks with non-repeated materials? (Grevin & Richter, 2021)
  - Attrition biases?
- Next steps and analyses:
  - Students' justifications and evaluation criteria
  - Other trace-data (% of exercises completed, combination slides-exercises)

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