

Capsule 01

Prise de notes et auto-évaluation

Prise de notes

Système Cornell

The following are not linear equations:

$$x + 3y^2 = 4, \sin x + y = 0, 3x + 2y - xy = 5, \text{ and}$$
$$\sqrt{x_1} + 2x_2 + x_3 = 1.$$

A finite set of linear equations is called a system of linear equations, or more briefly, a linear system. The variables are called unknowns. For example, the

system
$$\begin{aligned} 5x + y &= 3 \\ 2x - y &= 4 \end{aligned}$$
 has unknowns x and y .

The system
$$\begin{aligned} 4x_1 - x_2 + 3x_3 &= -1 \\ 3x_1 + x_2 + 9x_3 &= -4 \end{aligned}$$
 has unknowns x_1, x_2, x_3 .

A general linear system of m equations in the n unknowns x_1, x_2, \dots, x_n can be written as

$$\begin{aligned} a_{11}x_1 + a_{12}x_2 + \dots + a_{1n}x_n &= b_1 \\ a_{21}x_1 + a_{22}x_2 + \dots + a_{2n}x_n &= b_2 \\ \dots & \dots \dots \dots \dots \dots \\ a_{m1}x_1 + a_{m2}x_2 + \dots + a_{mn}x_n &= b_m \end{aligned}$$

A solution of a linear system in n unknowns x_1, x_2, \dots, x_n is a sequence of n numbers s_1, s_2, \dots, s_n for which

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Non-linear equations

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 $x + 3y^2 = 4$, $\sin x + y = 0$, $3x + 2y - xy = 5$, and
 $\sqrt{x} + 2x_2 + x_3 = 1$.

System of linear eqns

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Std form of linear system

Solution of linear system

* Linear system := finite set of linear eqns (equations of the form $a_1 x_1 + a_2 x_2 + \dots + a_n x_n = b$)

* Solution := set of numbers s_1, s_2, \dots, s_n that satisfy all equations (what you put into the x_i so that all equations are verified).

Prise de notes

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PowerPoint

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Sy

Solution d'un système linéaire I

Définition : Une **solution** d'un système d'équations linéaires est une liste ordonnée (s_1, s_2, \dots, s_n) (n -uplet) de nombres réels (ou rationnels, complexes, ...) qui font que chaque égalité du système est vraie (est satisfaite) quand x_1, \dots, x_n sont substitués par s_1, \dots, s_n dans l'ordre. On indique avec $\mathcal{S} = \{(s_1, \dots, s_n), (\bar{s}_1, \dots, \bar{s}_n), \dots\}$ l'ensemble des solutions d'un système d'équations linéaires donné.  more than one solution?

Exemples

■ $(-16, 1, 12)$ est-il une solution du système linéaire de l'exemple 1?

eqn. 1 $3(-16) + 2(1) + 4(12) \stackrel{?}{=} 2 \Rightarrow -48 + 2 + 48 \stackrel{ok}{=} 2 \Rightarrow (-16, 1, 12) \in \mathcal{S}$

eqn. 2 $(-16) + 8(1) + (12) \stackrel{?}{=} 4 \Rightarrow -16 + 8 + 12 \stackrel{ok}{=} 4$

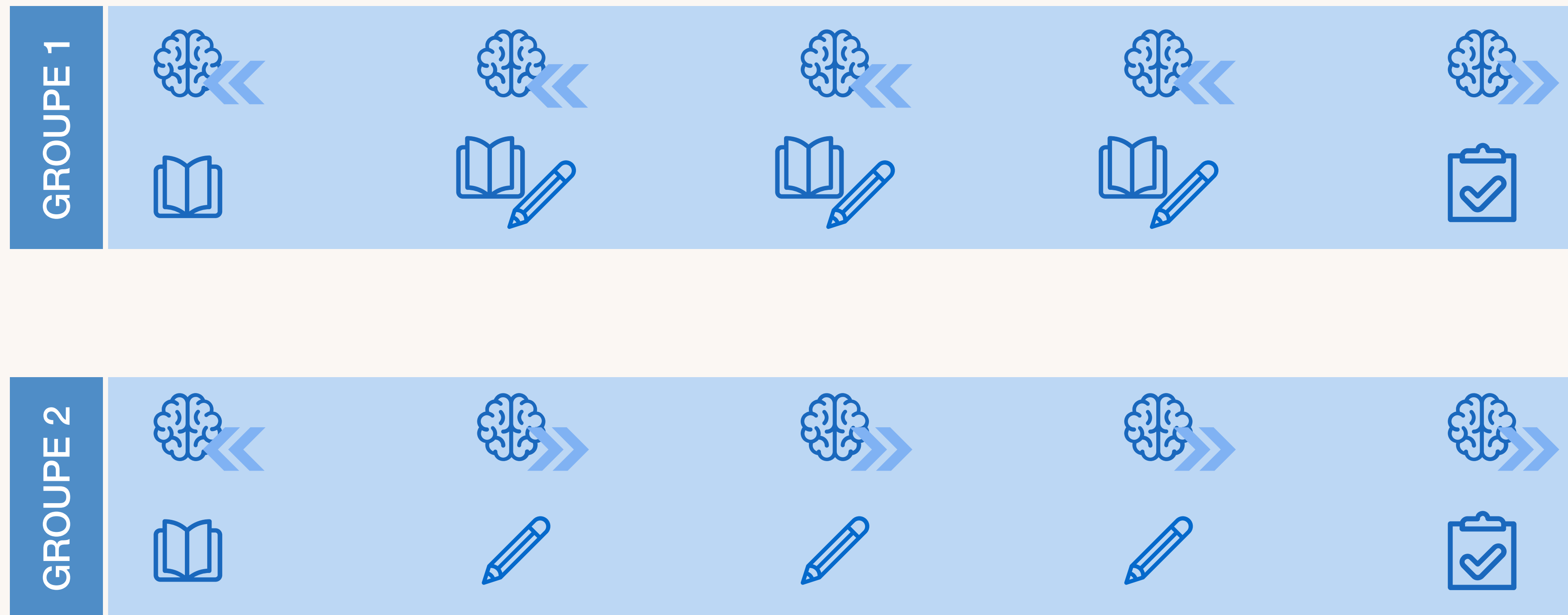
$x_1 \quad x_2 \quad x_3$

S. Deparis, SCI-SB-SD EPFL Algèbre linéaire 9 / 38

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Auto-évaluation

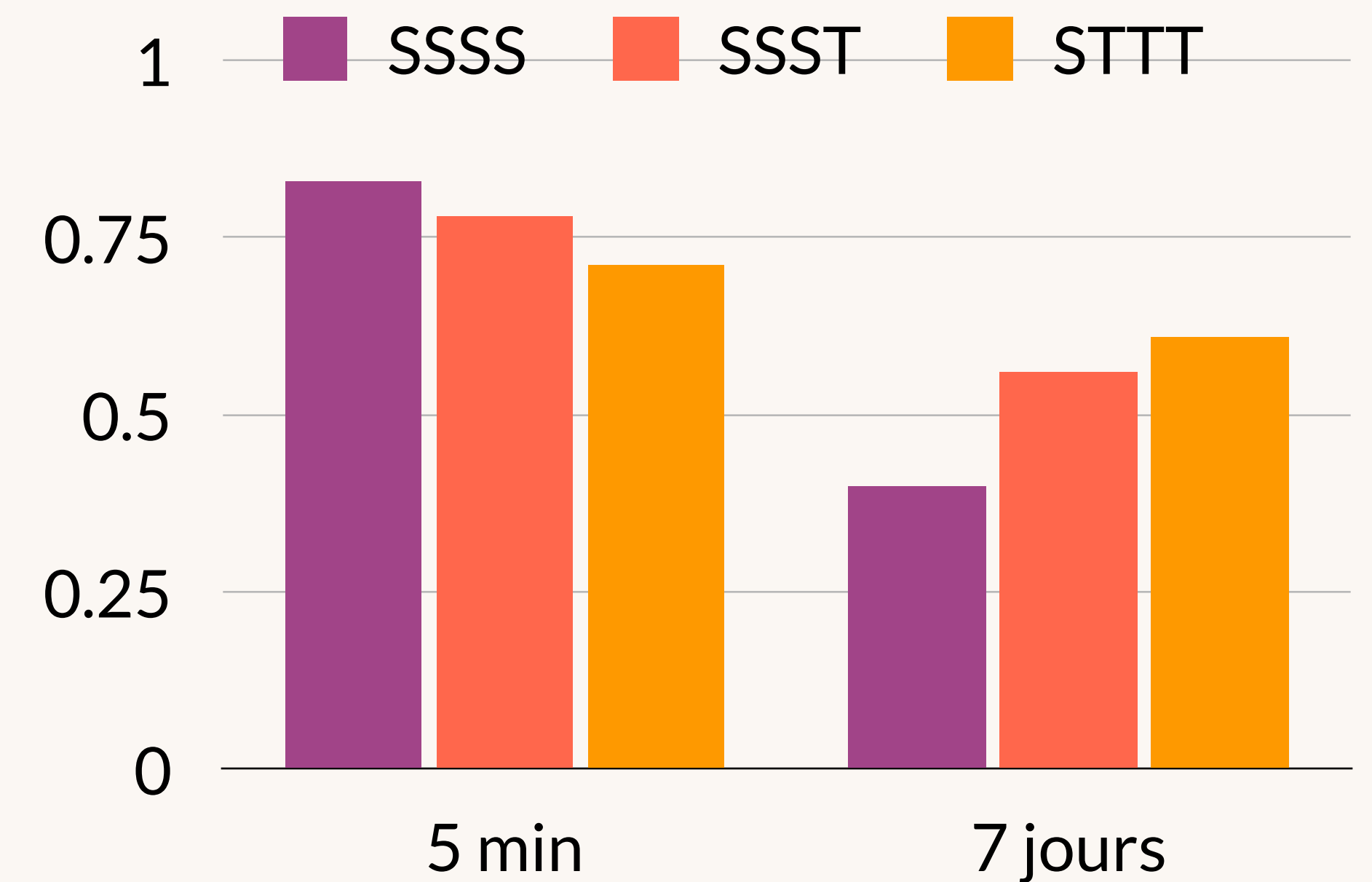
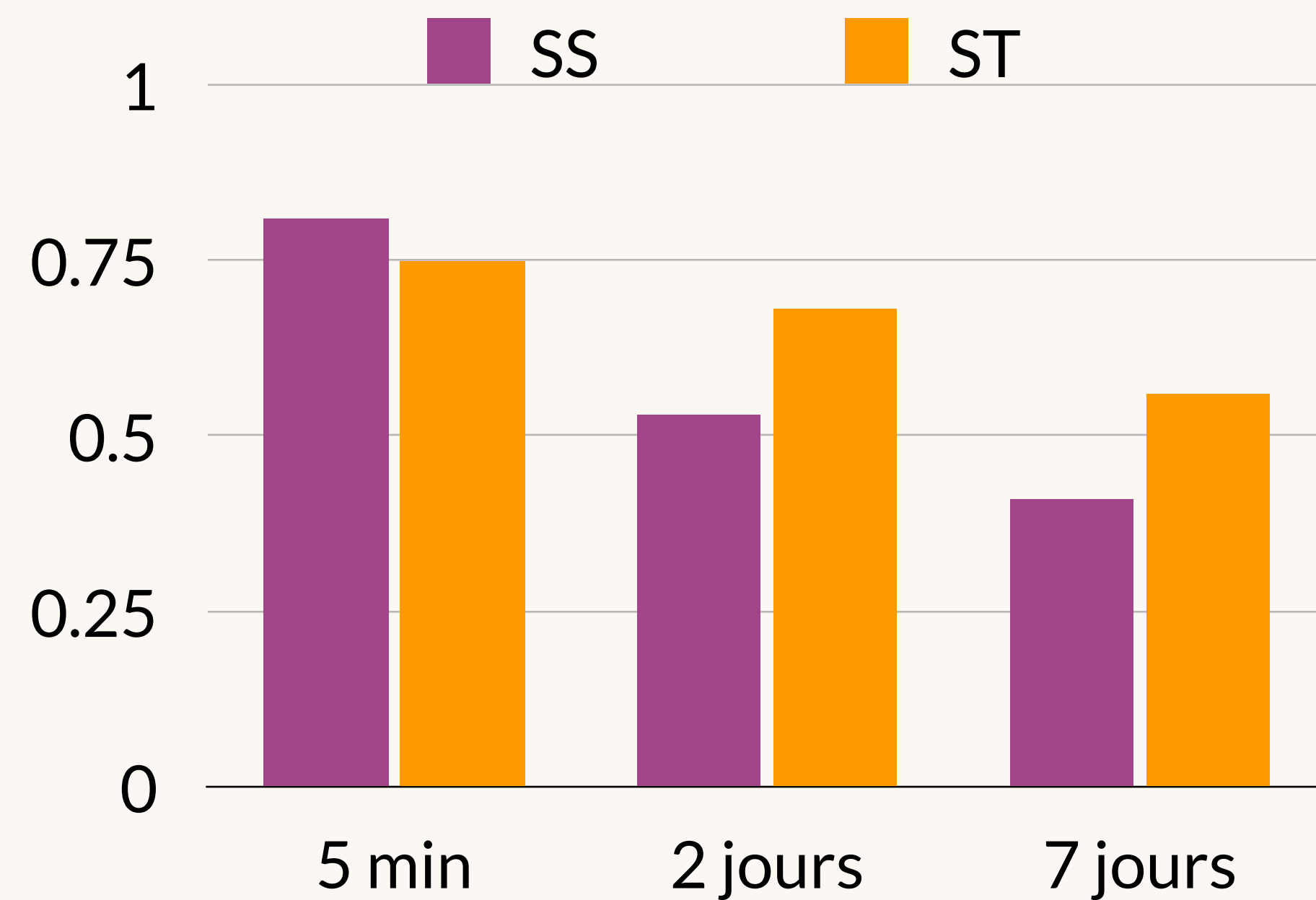
L'effet de récupération (retrieval effect)



Roediger, H. L., & Karpicke, J. D. (2006). Test-Enhanced Learning: Taking Memory Tests Improves Long-Term Retention. *Psychological Science*, 17(3), 249-255. <https://doi.org/10.1111/j.1467-9280.2006.01693.x>

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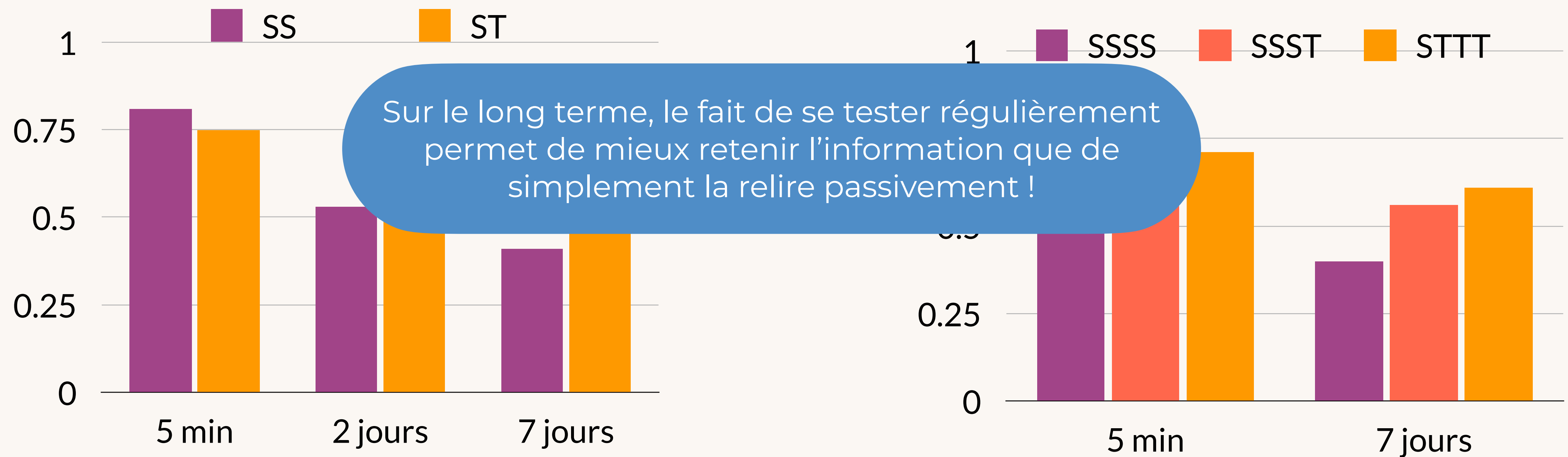
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Auto-évaluation

Comment s'y prendre?

- Testez-vous en utilisant les mots-clés que vous avez identifiés grâce à la méthode Cornell.
Cela vous aide à vérifier ce que vous avez réellement retenu et à renforcer votre mémoire active.
- Avant de commencer les exercices, essayez de rappeler par vous-même tous les nouveaux termes et formules vus cette semaine.
Cet effort de rappel sans support est l'un des moyens les plus efficaces pour consolider durablement vos apprentissages.
- Faites chaque exercice sans consulter vos notes au départ. En cas de difficulté, dressez une liste de tout ce qui pourrait vous aider — uniquement à partir de vos souvenirs, sans utiliser vos notes.
Cela vous permet d'identifier précisément vos zones d'incertitude et de transformer vos erreurs en opportunités d'apprentissage.

Résumé

Sem.	Sujet	Tâche	Livre AAE	MOOC AAE	LC
1	Prise de notes & Auto-évaluation	Essayer la méthode Cornell; s'auto-évaluer pendant la séance d'exos	Chap. 1	Chap. 1	Quiz 1 + 3
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					

Liens Utiles



Livre Apprendre à
Étudier



MOOC Apprendre à
Étudier



Learning Companion