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The influence of planning and interruptions on multitasking assessment in healthy aging

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Introduction

- In neuropsychological assessment, measures which reflect the demands imposed in everyday life are thought to be better predictors of an individual's performance in daily life (Chaytor & Schmitter-Edgecombe, 2003).
- Performance on everyday tasks such as preparing a meal or shopping is typically assessed in clinical and research settings using multitasking paradigms.
- In these paradigms, individuals attempt several tasks within a limited time period by switching between the tasks and planning the best order to perform them.
- While multitasking is thought to decline in healthy aging (Kliegel et al., 2000; Levine et al., 1998), how it might be improved remains poorly understood.

Aim

- We present two experiments investigating the influence of planning (Experiment 1) and unexpected interruptions (Experiment 2) on multitasking in healthy aging.

Experiment 1 (Plan versus No Plan)

Participants

		Age	Education
Younger (n = 16)	Plan	25.44 (4.16)	16.69 (2.50)
(n = 16)	No Plan	22.88 (3.26)	16.63 (2.06)
Older (n = 15)	Plan	70.67 (4.50)	
(n = 15)	No Plan	72.20 (4.90)	14.80 (2.93)

Greenwich Test

A modified version of the **Greenwich Test** will be used to assess multitasking ability (Law et al., 2004).

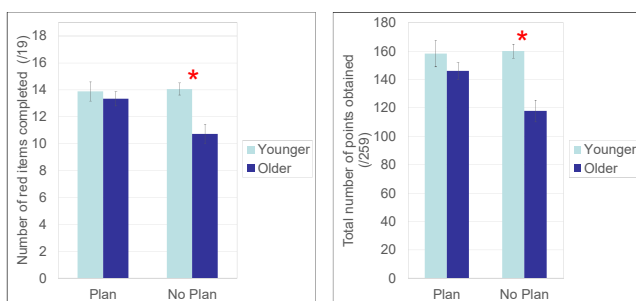
- 10 minutes to score as many points as possible
- Red items worth 10 points. Other colours worth 1 point.

Four sub-tasks

<p>Envelope Task</p> <p>Fold sheets and place in envelopes (One sheet per envelope)</p>	<p>Beads Task</p> <p>Thread beads onto a piece of string. (Replicate the example)</p>
<p>Telephone Task</p> <p>Look up phone numbers corresponding to names on a list</p>	<p>Brick Construction Task</p> <p>Replicate structure using Lego™ bricks (Each layer is a uniform colour)</p>

- Individuals in "plan" condition will get 3 minutes to write a plan

Results



Experiment 2 (Interruption versus No Interruption)

Participants

		Age	Education
Younger (n = 9)	Interrupt	26.33 (4.64)	16.60 (2.46)
(n = 10)	No Interrupt	27.50 (5.84)	16.11 (1.45)
Older (n = 12)	Interrupt	66.83 (4.93)	15.18 (3.28)
(n = 10)	No Interrupt	66.50 (5.87)	13.50 (3.14)

Interruption condition:

Silly Sentences (Baddeley et al., 1985)

"Bananas are often made by carpenters." True/False?

"Flies are insects." True/False?

"Lions are eaten in salads." True/False?

A modified version of the **Greenwich Test** will be used to assess multitasking ability (Law et al., 2004).

- 10 minutes to score as many points as possible
- Red items worth 10 points. Other colours worth 1 point.

Four sub-tasks

<p>Envelope Task</p> <p>Fold sheets and place in envelopes (One sheet per envelope)</p>	<p>Beads Task</p> <p>Thread beads onto a piece of string. (Replicate the example)</p>
<p>Telephone Task</p> <p>Look up phone numbers corresponding to names on a list</p>	<p>Brick Construction Task</p> <p>Replicate structure using Lego™ bricks (Each layer is a uniform colour)</p>

A modified version of the **Greenwich Test** will be used to assess multitasking ability (Law et al., 2004).

- 10 minutes to score as many points as possible
- Red items worth 10 points. Other colours worth 1 point.

Four sub-tasks

<p>Envelope Task</p> <p>Fold sheets and place in envelopes (One sheet per envelope)</p>	<p>Beads Task</p> <p>Thread beads onto a piece of string. (Replicate the example)</p>
<p>Telephone Task</p> <p>Look up phone numbers corresponding to names on a list</p>	<p>Brick Construction Task</p> <p>Replicate structure using Lego™ bricks (Each layer is a uniform colour)</p>

7 minutes → 1 minute → 3 minutes

No Interruption condition:

A modified version of the **Greenwich Test** will be used to assess multitasking ability (Law et al., 2004).

- 10 minutes to score as many points as possible
- Red items worth 10 points. Other colours worth 1 point.

Four sub-tasks

<p>Envelope Task</p> <p>Fold sheets and place in envelopes (One sheet per envelope)</p>	<p>Beads Task</p> <p>Thread beads onto a piece of string. (Replicate the example)</p>
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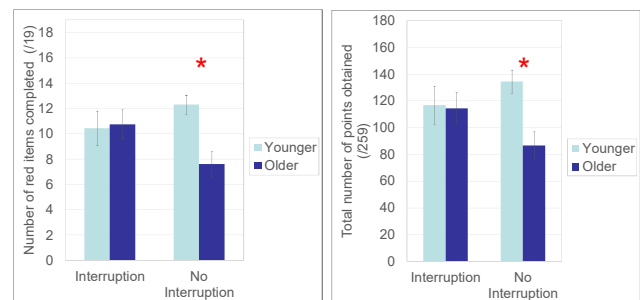
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10 minutes

Results



Discussion

- These findings suggest that older adults' multitasking is improved when encouraged to formulate a plan or take a break mid-task, allowing them to focus and refocus on the task at hand.
- The findings from Experiment 2 are in line with multitasking studies involving individuals with traumatic brain injury or stroke who have been found to be resistant to interruptions (Law et al., 2004) or even improve in their performance (Manly et al., 2002).

References

- Baddeley et al. (1985). Components of fluent reading. *Journal of Memory and Language*, 24, 119-131.
- Chaytor, N., & Schmitter-Edgecombe, M. (2003). The ecological validity of neuropsychological tests: A review of the literature on everyday cognitive skills. *Neuropsychology Review*, 13, 181-197.
- Kliegel et al. (2000). Plan formation, retention, and execution in prospective memory: A new approach and age-related effects. *Memory and Cognition*, 28(6), 1041-1049.
- Levine et al. (1998). The effects of focal and diffuse brain damage on strategy application: Evidence from focal lesions, traumatic brain injury and normal aging. *Journal of the International Neuropsychological Society*, 4, 247-264.
- Law et al. (2004). Resistance to the impact of interruptions during multitasking by healthy adults and dysexecutive patients. *Acta Psychologica*, 116(3), 285-307.
- Manly et al. (2002). Rehabilitation of executive function: Facilitation of effective goal management on complex tasks using periodic auditory alerts. *Neuropsychologia*, 40, 271-281.