


Memory for Actions in Stroke Survivors: A Rehabilitative Approach

Mohammed Nadar, PhD, OTR
Joan McDowd, PhD


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Stroke Statistics

- 15 million people suffer stroke worldwide each year (WHO, 2008)
- A leading cause of long-term disability.
- Physical and cognitive dysfunction.
- Memory impairments are the most common cognitive consequence


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Memory Rehabilitation

- Memory is difficult to rehabilitate.
- Remedial techniques work best in laboratory situations, but not in real life situations.
- The mainstay for managing memory dysfunction following stroke has been through compensatory strategies.


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Subject-Performed Tasks (SPT)

- Performing tasks results in better memory than reading tasks.
- SPT was found to be effective with different populations (e.g., Alcoholic Korsakoff syndrome, mental retardation, and healthy older adults).


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Research Question

Can the SPT encoding method be **clinically** effective in improving the memory performance of stroke survivors?

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Participants

- 18 stroke survivors & 18 healthy controls (n = 36)
 - No history of neurological disorders other than stroke,
 - Mini-Mental State Exam score of 24 +
 - No Apraxia (Florida Apraxia exam),
 - No aphasia (Bedside Evaluation Screening Test).

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Materials

- Sixty tasks were used in this study.
- Three sets of cards (20 cards).
- Each set contained
 1. **Occupation-based** tasks (e.g., "Remove an envelope from the box, then stamp it")
 2. **Skill-based** tasks (e.g., "Lift and hold the weight for 5 seconds").

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Procedure (Encoding Conditions)

- **VT**: Participants read the tasks aloud and attempted to memorize as many as possible.
- **SPT**: Participants read then performed the tasks and attempted to memorize as many as possible.
- **EPT**: Participants read then observed the experimenter perform the tasks and attempted to memorize as many as possible.

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Outcome Measure

- After the presentation of each set of tasks, a 5-minute memory test in the form of free-recall was administered
- Responses were recorded

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Analyses

- The data were analyzed in a series of between/within ANOVA
 - Group served as the between-subject variable
 - Encoding condition was the within-subject variable.

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Results

- A main effect of group was found where healthy controls recalled significantly more items than stroke survivors.
 - $(F(1,34) = 8.63, P = 0.006)$
- A main effect of encoding condition
 - Superior performance for SPT & EPT, followed by VT.
 - $(F(2,34) = 65.65, P < 0.001)$

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Results

	VT	EPT	SPT
Control	5.1 (1.9)	9.1 (2.9)	8.9 (2.7)
CVA	3.3 (1.9)	6.8 (2.2)	7.0 (2.7)

- The improvement from baseline to SPT/EPT conditions was similar in both groups,
 - Control = 3.9 tasks
 - CVA = 3.6 tasks

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Results (Task relevance)

- **Task relevance**
 - Occupation vs. Skill-Based Tasks
- A main effect of task-relevance
 - Superior recall of occupation-based tasks over skill-based tasks.
 - (F (1, 34) = 73.65, p < .001)

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Results (Task relevance)

		VT	EPT	SPT
Skill	Control	1.8 (0.7)	3.4 (1.0)	2.8 (0.9)
	Stroke	0.8 (0.6)	1.8 (0.9)	2.6 (1.2)
Occp.	Control	2.8 (0.9)	5.2 (1.1)	5.4 (1.2)
	Stroke	1.8 (0.9)	4.8 (1.0)	4.4 (1.0)

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Clinical Message

- Home programs and exercise regimens may be recalled better when performed at least once, relative to receiving verbal instructions only.
- Observing a demonstration on other patients may be as effective as having the patient perform the activity
- Functional everyday activities may be more memorable than clinical activities

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