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# The Spaced Retrieval Technique: A How-To for PTs

Megan L. Malone, M.A. CCC-SLP

# Speaker Bio

- Megan Malone is a speech-language pathologist working as a clinical faculty member in Kent State University's Department of Speech Pathology & Audiology and as a clinician and consultant in home health care. She previously worked for 9 years as a senior research associate and lead trainer at Myers Research Institute, in Cleveland, OH where she oversaw federally/privately funded grants focused on implementing interventions with older adults with dementia. She is the co-author of the book, Here's How to Treat Dementia (Plural Publishing, 2013), has spoken numerous times at the annual conventions of the American Speech and Hearing Association, Gerontological Society of America, American Society on Aging, and the Alzheimer's Association, along with several state speech and hearing conventions. She has published articles in the Journal of Communication Disorders, Alzheimer's Care Quarterly, The Gerontologist, and Dementia.

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- Content Disclosure: This learning event does not focus exclusively on any specific product or service.

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# Learning Outcomes

As a result of this course, participants will be able to:

- Describe the spaced retrieval technique and the evidence to support its use in rehabilitation contexts.
- Identify two examples of goals that could be addressed using the spaced retrieval technique in physical therapy.
- Identify at least three processes for implementing spaced retrieval in a therapy session.

# Acknowledgements


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  - Northern Speech Services
  - National Institute on Aging
  - Retirement Research Foundation

# Dementia Review

- Dementia is not a specific disease
- Dementia is a descriptive term for a collection of symptoms that can be caused by a number of disorders that affect the brain.
- Alzheimer's disease accounts for 60 to 80 percent of cases. Vascular dementia, which occurs after a stroke is the second most common dementia type.

- Alzheimer's Association 2020

# Research Tells Us…

- Dementia is the loss of mental functions involving thinking, memory, reasoning, and language to such an extent that it interferes with a person's daily living.
- Dementia is a group of symptoms that can include:
  - Language disturbances (e.g., aphasia, dysphasia, anomia)
  - Challenging behaviors (e.g., repetitive questioning, wandering)
  - Difficulties with activities of daily living (e.g., dressing, personal grooming)
  - Personality disorders (e.g., disengagement, aggressive behaviors)

- Alzheimer's Association, 2020

# Memory

- Memory is dependent on organizing incoming information (attention) and highly developed encoding skills

- Memory is critical to our ability to acquire language, develop high level thinking, and effectively make decisions

# Memory Stages

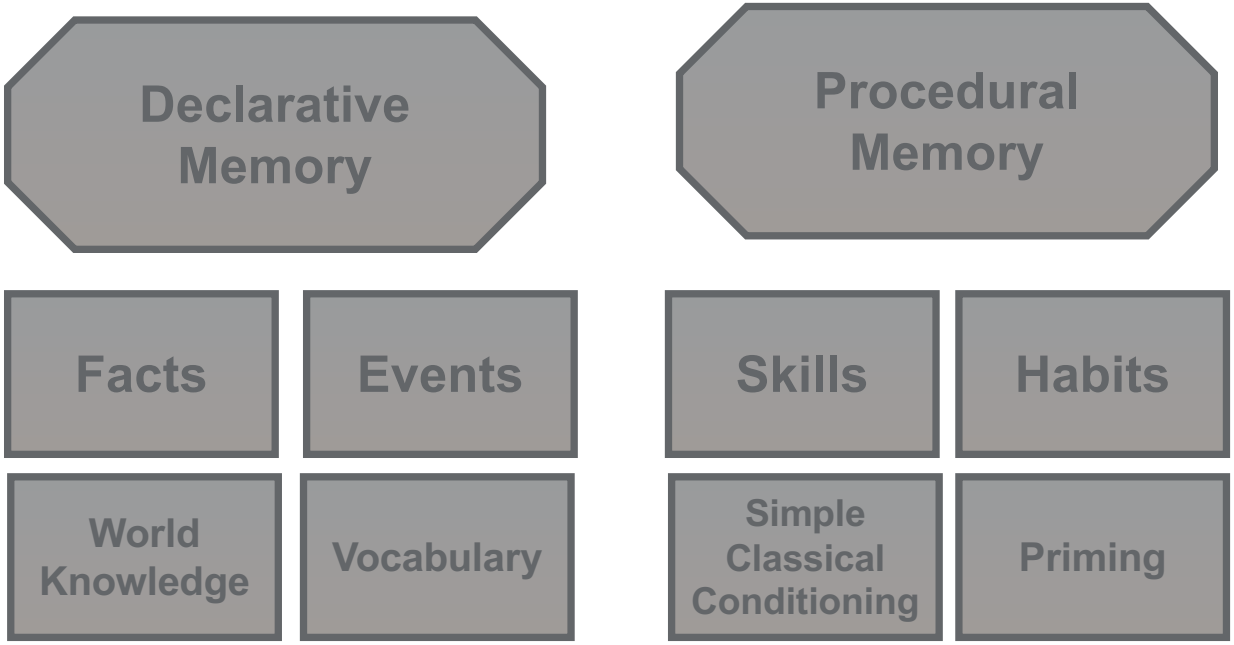
- Encoding, Storage and Retrieval are interactive processes
- The ability of one process affects the quality of another
  - Good encoding makes for good retrieval later on
- Deficit in one stage can lead to a deficit in another

# Memory Definitions

- Working Memory, Short Term Memory:
  - Ability to use information as it's being processed (remembering phone number)
  - Primarily affected first with Alzheimer's and other dementias
- Long Term Memory:
  - Information from short term memory that is retained permanently
  - Declarative and Procedural Memory
  - Procedural memory is relatively-spared through the progression of dementia (FOUNDATION FOR SPACED RETRIEVAL TECHNIQUE)
  - Long Term Memory can be affected by dementia in both storing information and retrieving it.

Q1, Q5

# Learning & Memory in Dementia: Model of Memory




Squire, 1994

# Mistaken Beliefs About Dementia

- Individuals with dementia cannot learn or remember information

- Best way to care for persons with dementia is to make them comfortable, accept their idiosyncrasies, and be patient with them.

Q3

# Circumvent the Deficits

- Persons with dementia do have weaknesses in the areas of learning and memory BUT a number of strengths exist as well.
  - Ability to learn procedures
  - Ability to read
- Research has shown that the learning of information and its retention depends heavily on how it is presented.
  - KEY: Be aware of the weaknesses but FOCUS ON THE STRENGTHS!!!

# Behavioral Interventions for Dementia

- Can be Direct or Indirect
- Direct
  - When a PT or other professional intervenes directly with individuals or group using an intervention
- Indirect
  - PT or other professional trains caregivers in an intervention, modifies the environment, or develops activities to maximize function
- Spaced Retrieval can be both Direct and Indirect
  - Mahendra & Hopper, et. al, 2008

# The Spaced Retrieval Technique

# The Spaced Retrieval Technique

- Spaced Retrieval (SR)
  - Technique used to help persons with cognitive impairments recall important information over progressively longer intervals of time.
  - First used to address face-name learning in non-impaired individuals
  - Has been used successfully with patients with Alzheimer's Disease, Traumatic Brain Injury, Parkinson's Disease, and Dementia related to HIV (Bourgeois et. al, 2001; Camp, et. al, 2008; Neundorfer, et. al, 2004; Malone et. al, 2007)
  - Is an effective tool that therapists can use to help clients reach their goals in rehab therapy and is billable and reimbursable.
  - Takes advantage of the procedural memory system and is success-based.

Q4, Q5

# The Spaced-Retrieval Technique

- The goal of SR:
  - To enable individuals to remember information for long periods (days, weeks, months, years) so that they can achieve long-term treatment goals.

- Therapists teach clients strategies that compensate for memory impairments, using procedural memory, including reading and repetitive priming.

- In addition, SR uses external aids to compensate for memory

Brush & Camp, 1998

# The Spaced-Retrieval Technique

- Begin with a prompt question for the target behavior and teach the client to recall the correct answer
- When retrieval is successful, the interval preceding the next recall test is *increased.*
- If a recall failure occurs, the participant is told the correct response and asked to repeat it
  - Errorless learning: minimization of error responses during the presentation of target stimuli (Sohlberg & Turkstra, 2011).
- The following interval length returns to the last *interval* at which recall was successful.

# Treatment: Spaced Retrieval

- **Goal:** "Client will independently recall location of daily schedule to complete prescribed exercises & improve attendance at therapy sessions 90% of trials."
  - **Question:** "Where should you look to find your daily schedule?"
  - **Answer:** "Look at my walker"

# Treatment: Spaced Retrieval

- Trial 1 (0 Seconds): Client Responds CORRECTLY
- Trial 2 (10 Seconds): Client Responds CORRECTLY
- Trial 3 (30 Seconds): Client Responds CORRECTLY
- Trial 4 (1 Minute): Client Responds INCORRECTLY

Therapist provides client with correct response (“:Look at my walker”), asks the client the prompt question again, allows the client to respond, and returns to the interval at which the client was last successful.

- Trial 5 (30 Seconds): Client Responds CORRECTLY
- Trial 5 (1 Minute): Client Responds CORRECTLY
- Client continues session; Therapist then probes through other therapy activities to continue training/practice of desired skill.

# SR Screening Measure

- Complete Screening Process
  - Quick and Easy
  - Tests clients' responses to correctly recall a target name over 3 different time intervals (immediately after presentation, 10 seconds later, and 15 to 20 seconds after that)
  - Client has 3 trials at each time interval to recall the target name correctly to pass the screen
  - CAN FOLD SR SCREEN INTO INITIAL CLIENT EVALUATION/ADMISSION INTERVIEW

continued

**A. Spaced-Retrieval Screen**

(At each Trial, score as follows:
Correct response = + Incorrect response = - *and*
Record observations /
what the participant says that's useful)

Start the Screening by saying:

***"Today we are going to practice learning how to remember things better. We'll start by practicing remembering the name of this person." [Show photograph]***

Step 1 Say:

***"Her name (first and last) is Peggy Bailey.***

***What is her name?"***

Trial 1___ 2___ 3___

Observations:

_____

_____

_____

, Incorrect: Wait for about a minute, chatting with the participant, and then do a second trial of Step 1.

If incorrect on a second trial of Step 1, wait for about a minute, chatting with the participant, then do a third trial of Step 1.

If incorrect on a third trial of Step 1, then
PROCEED DIRECTLY TO "EXIT LINE."

[ If correct at Step 1 on any trial, say:

***"That's right. I am glad that you remembered."***

THEN, Go to Step 2.

Step 2 (SHORT DELAY -- about 10 seconds) Say:

***"Good. I will give you more chances to practice as I am working with you today. Let's try again. What is her name?"***

Trial 1___ 2___ 3___

Observations:

_____

_____

_____

, Incorrect: Record response and go back to Step 1 for a second or third trial at Step 1.

If incorrect on a third trial of Step 2, then
PROCEED DIRECTLY TO "EXIT LINE."

[ Correct: Say:

***"That's right. I am glad that you remembered."***

THEN Go to Step 3.

Step 3 (LONG DELAY -- about 15-20 seconds) Say:

***"You are doing well remembering her name for a longer period of time, and that's the idea. I would like you to always remember her name. I will be practicing this with you during therapy by asking you often. So, what is her name?"***

Trial 1___ 2___ 3___

Observations:

_____

_____

_____

, Incorrect: Say:

***"Actually, her name is Peggy Bailey. What is her name?"***

Go back to Step 2.

If incorrect on a third trial of Step 3, then
PROCEED DIRECTLY TO "EXIT LINE."

[ Correct: Say:

***"That's right you are remembering for a longer period of time. You did a great job remembering her name. We are going to continue practicing this later today."***

If you reach this point, continue with the study protocol.

EXIT LINE: ***"Thanks for trying so hard. Let's work on something else now."***

If the client has not mastered Step 1, Step 2 *and* Step 3 successfully, try again on another day using a card with the name printed on it.
If the client fails the second screen, start therapy WITHOUT doing more screening for the study.
DO NOT ENROLL a person in the study who has not passed this Spaced-Retrieval screen.

# SR Goals:
# Prompt Question/Answer Examples

- **Disorientation**
  - *"Where do you live?" (Answer: Name of Facility)*
  - *"What is your room number?" (Answer: Room #)*
  - *"What is your address?" (Answer: Client's address)*

- **Repetitive Questioning**
  - Dependent upon question being asked

Q6

# SR Goals:
## Prompt Question/Answer Examples

- Ambulation:
  - **Question:** “What do you need with you when you walk?”
  - **Answer:** “My cane”
  - **Question:** “How should you walk with your walker?”
  - **Answer:** “Inside the walker”
- Hip Precautions:
  - **Question:** ”How should you sit to protect your hip?”
  - **Answer:** “With my legs uncrossed”
- Transfers:
  - **Question:** “What should you do before you stand?”
  - **Answer:** “Lock my wheelchair brakes”
  - **Question:** “What should you do before you sit?”
  - **Answer:** ”Reach back for the chair”

Q6

# What Happens After the First SR Session?

- Therapist documents patient response to treatment and longest time interval attained
- The therapist begins (**Trial 1** of the next session) by asking the client the prompt question and seeing if the client is immediately able to give the correct response.
  - This provides the client with an opportunity to demonstrate recall since the last treatment session, which may be 24 hours or more.

# What Happens After the First SR Session?

- If the client can recall the correct answer to the prompt question (and the associated behavior, if applicable) then training on the question can cease for that session.
- If the client cannot recall the correct response, the clinician provides the correct answer, asks the client the prompt question again, allows the client to respond to demonstrate immediate recall and then training should resume, returning to the last time interval the client correctly recalled the response to in the previous session.

# What Happens After the First SR Session?

- Subsequent session example:
- At start of any session following the initial training session on a prompt question/response, the clinician should allow the client to demonstrate recall of the information by asking the prompt question.
- Prompt ?: “What should you do before you stand?”
- Trial 1: ”Lock my wheelchair brakes”

- **Response Correct:** Reinforce action or complete action & discontinue training for remainder of session (may choose to “spot check” retention of response throughout but formal timing of trials not necessary)
- **Response Incorrect:** Say, “Actually, you lock your wheelchair brakes before you stand”. (*provide correct response*); “What should you do before you stand? (*ask prompt question again*). Client responds “Lock my wheelchair brakes.” “Good. Let’s lock your brakes”. Let’s keep practicing (*return to last successful time interval attained in previous session (e.g. 8 min*), continue SR training based on client’s responses.

# When is an SR goal considered mastered?

- If a client is able to correctly respond to the prompt question and/or perform the targeted strategy at the beginning of **3 consecutive therapy sessions**, the goal is considered mastered.

- It is important to make sure that the client is consistently performing the targeted strategy or response before discharging the goal.

# How much SR training does a client usually need?

- The amount of training required by a client will vary.
- The number of sessions is dependent upon:
  - Level of cognitive impairment of an individual client
  - Frequency of the sessions
  - Number of goals are being addressed using SR.

Clients enrolled in more frequent SR treatment sessions (i.e. 5 days week vs. 2 days/week) are likely to attain their goals more quickly.

# Spaced Retrieval Goals

- Goal possibilities are endless
- SR goals are NOT written any differently than other goals (SMART goals; ICF) (CMS, 2020)
  - https://www.cms.gov/Medicare/Billing/TherapyServices/Downloads/Mapping_Therapy_Goals_ICF.pdf
  - FUNCTIONAL GOAL = SR GOAL

Q10

# Spaced Retrieval Goals

- Measurement of goal attainment can be determined by area of focus & what allows for best measurement of progress.
  - by percentage or number of trials (“80% of time”; 4/5 trials)
    - “Patient will recall and demonstrate proper use of walker to decrease fall risk 90% of trials. ”

OR

  - Recalling or demonstrating target response for a set number of sessions (3 sessions recommended)
    - “Patient will recall and demonstrate strategy of properly using grab bar to transfer to shower at the initial trial of of 3 consecutive therapy sessions using SR”

# SR & Documentation

- SR is considered to be a MODALITY or APPROACH that therapists may use to help clients reach their goals.

- SR does not fit one particular diagnosis category
  - Use the ICD 10 Code that corresponds to the goal area you are addressing

# SR Decision Making

- Questions to ask yourself when preparing to begin SR with a client:
  - What are the strengths of the client? What are the weaknesses (physical impairment, vision, etc.)?
  - What are the challenging behaviors being exhibited?
  - What prompt question & response will be used and is it and the answer meaningful for the client?
  - What other staff/family members will be involved in the training/carryover?

# SR: An Interdisciplinary Process

- Caregiver/Family Input:
  - Consult with family/caregivers for possible goal ideas = INCREASES BUY IN AND COOPERATION
  - Work on incorporating the patient and family's personal goals if possible.
  - Share prompts/responses with caregivers/staff after patient has demonstrated consistent success to increase generalization.

# Case Study

- 75 year-old male; resident of assisted living facility. Diagnoses include Parkinson's disease and CVA 3-months prior. Referred by physician to receive physical therapy services through home health upon discharge to home.
- Patient experiencing cognitive decline, is at risk for falls and is experiencing decline in independence in ADL/IADLs.
- Patient Goal: "To remain in home and as independent as possible"

# Case Study

- Examples of goal areas:
  - Ambulation/Gait
  - Transfers
  - Manage freezing episodes when completing mobility-related activities to reduce fall risk
  - Completion of home exercise program
- SR goal: “Patient will recall and demonstrate strategies to manage freezing episodes during movement to reduce fall risk at the initial trial of 3 consecutive sessions using the spaced retrieval technique.”

# Thank you!

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# References


- Alzheimer's Association (2020). What is Dementia? Accessed at https://www.alz.org/alzheimers-dementia/what-is-dementia
- Bourgeois, M.S., Camp, C., Rose, M., White, B., Malone, M., Carr, J., & Rovine, M. (2003). A comparison of training strategies to enhance use of external aids by persons with dementia. Journal of Communication Disorders, 36, 361-378.
- Brush, J.A. & Camp, C.J. (1998). A therapy technique for improving memory: Spaced retrieval. Beachwood, OH: Menorah Park Center for the Aging.
- Camp, C. (1999). Montessori-based Activities for persons with dementia. Volume 1. Beachwood, OH: Menorah Park Center for the Aging.
- Camp, C., Schneider, N., Orsulic-Jeras, S., Mattern, J., McGowan, A., Antenucci, V., Malone, M., Gorzelle, G. (2006). Montessori-based activities for persons with dementia. Volume 2. Beachwood, OH: Menorah Park Center for Senior Living.

# References


- Benigas, J.E. & Bourgeois, M. (2016). Using spaced retrieval with external aids to improve use of compensatory strategies during eating for persons with dementia. American Journal og Speech-Language Pathology, 25(3), 321–334.
- Bourgeois, J., Laye, M., Lemaire, J. et al. Relearning of activities of daily living: A comparison of the effectiveness of three learning methods in patients with dementia of the Alzheimer type. J Nutr Health Aging 20, 48–55 (2016).
- Camp, C. J., & Malone, M. L. (2008) Mise en œuvre d'interventions de récupération espacée auprès de personnes atteintes de la maladie d'Alzheimer. Cahiers de la Fondation Médéric Alzheimer, number 3.
- CMS (2020). PT, OT, and SLP Services and the International Classification of Functioning, Disability, and Health (ICF). Accessed at https://www.cms.gov/Medicare/Billing/TherapyServices/Downloads/Mapping_Therapy_Goals_ICF.pdf
- Han, J.W., Son, K.L., Byun, H.J. et al. Efficacy of the Ubiquitous Spaced Retrieval-based Memory Advancement and Rehabilitation Training (USMART) program among patients with mild cognitive impairment: a randomized controlled crossover trial. Alz Res Therapy 9, 39 (2017).
- Hopper, T.,Mahendra, Nn., Kim, E., Azuma, T., Bayles, K.A., Cleary, S.J., et al. (2005). Evidence-based practice recommendations for working with individuals with dementia: Spaced-retrieval training. Journal of Medical Speech-Language Pathology, 13(4), 27-34.
- Loehr, J. & Malone, M. (2013). Here's how to treat dementia. San Diego: Plural Publishing.

# References


- Malone, ML, Skrajner, MJ, Camp, CJ, Neundorfer M, Gorzelle, GJ: Research In Practice II: Spaced-Retrieval, A Memory Intervention. Alzheimer's Care Quarterly. (2007); 8(1): 65-74.
- Neundorfer, M.M., Camp, C.J., Lee, M. M., Malone, M. L., Carr, J. R., & Skrajner, M. J. (2004). Compensating for cognitive deficits in persons aged 50 and over with HIV/AIDS: A pilot study of a cognitive intervention. Journal of HIV/AIDS & Social Services, 3(1), 79-97.
- Small, J. A., & Cochrane, D. (2020). Spaced Retrieval and Episodic Memory Training in Alzheimer's Disease. Clinical interventions in aging, 15, 519–536.
- Sohlberg, M.M., & Turkstra, L.S.(2011). Optimizing cognitive rehabilitation: Effective instructional methods. New York: Guilford Press.
- Squire, LR. Declarative and nondeclarative memory: multiple brain systems supporting learning and memory. In: Schacter, DL, Tulving, E, eds. Memory Systems. Cambridge, MA: MIT Press; 1994: 203-232.
- Walmsley, C., & Fuqua, W. (2018). Memory deficits in older adults: Evaluating spaced retrieval with multiple probe techniques. Behavior Analysis: Research and Practice, 18(1), 62-77.