

Improving Face-Name Recall Among Survivors of Traumatic Brain Injury

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Abstract

Many survivors of traumatic brain injury (TBI) have difficulty recalling the names of people with whom they frequently interact. Researchers have established that mnemonics and visual imagery strategies are often effective in facilitating encoding and recall of such information; however, no research exists pertaining to the frequency that such training should occur. The purpose of this study was to assess the relative effectiveness of three frequencies of intervention sessions—one time per day, two times per week, and five times per day—on survivors' ability to recall face-name associations. Results showed that sessions held one time per day and two times per week were more effective than sessions held five times per day. Mnemonics and visual imagery strategies were effective for 4 of the 7 participants regardless of frequency of intervention sessions.

Purpose

The purpose of this research was to explore how variations in the frequency of treatment sessions affected the success or failure of a memory intervention program for survivors of TBI. The specific objective was to evaluate the relative effectiveness of

three frequencies of intervention sessions—five times per day, one time per day, and two times per week—on the ability of people with TBI and persistent memory disorders to recall face-name associations.

Method

Participants

7 male survivors of TBI:

- Ranged in age from 28 to 40 years ($M = 34$ years, 8 months; $SD = 4$ years, 1 month)
- At least one year post-injury (range = 1 year, 11 months to 26 years, 2 months; $M = 14$ years, 0 months; $SD = 7$ years, 5 months)
- Did not have language impairments or aphasia as established through performance above 93.8 on the Aphasia Quotient of the *Western Aphasia Battery*
- Had severe and persistent memory deficits
- Native speakers of American English
- No history of neurological problems other than those associated with TBI

Materials

- Photographs of 15 staff members with whom an individual participant had daily interactions but could not name. The first name of each pictured individual was paired with a visual imagery statement. For example, the imagery statement for the name "Claire" was, "Imagine Claire eating a chocolate éclair."
 - Separated into three sets of 3 photographs each and one set of 6 photographs
 - Each 3-photograph set served as the stimuli for one of the three experimental phases
 - The 6-photograph set served as replacement stimuli in case of incidental learning

- A set of 15 general comments drawing attention to specific facial features. These comments included statements such as, "Look at the hair," and "Notice whether the person is wearing glasses."

Procedure

Memory training sessions included two activities:

- a probe activity to assess progress on learning staff members' names and
- a training activity to facilitate the learning of staff members' names.

Probe activity:

1. The participant attempted to name each staff member as his/her picture was displayed. No accuracy feedback was provided.
2. The participant attempted to name each staff member as his/her picture was displayed. No accuracy feedback was provided.

Training activity:

1. The trainer randomized the presentation order of three photographs designated as the training set for that experimental phase.
2. Each photograph presentation began with a pre-exposure period during which the trainer read two general comments directing attention to facial features.
3. The trainer (a) stated the staff member's name, (b) requested that the participant repeat the name, (c) read the imagery statement associated with the name, and (d) had the participant repeat the imagery statement.
4. The trainer removed the photograph and waited five seconds before presenting the next photograph.
5. The trainer repeated the process with the remaining two photographs and repeated the entire training procedure a total of five times within each

session. Hence, a participant viewed, named, and recited a visual imagery statement about the three photographs within a training set a total of five times during each session.

Experimental design:

- Modified multiple-baseline design in which each of three phases used a separate set of stimuli and a different frequency of training sessions
 - five times per day
 - one time per day
 - two times per week
- Baseline data established that a participant could not name any of the people in the stimulus photographs.
- While training activities occurred with one set of stimuli, probe activities used all 15 stimulus photographs to measure changes in baseline performance on untrained items.
- Criterion for progressing to a new experimental phase was correct labeling of all three photographs in the current stimulus set during three consecutive intervention sessions or completion of 25 training sessions, whichever came first.

Incidental learning:

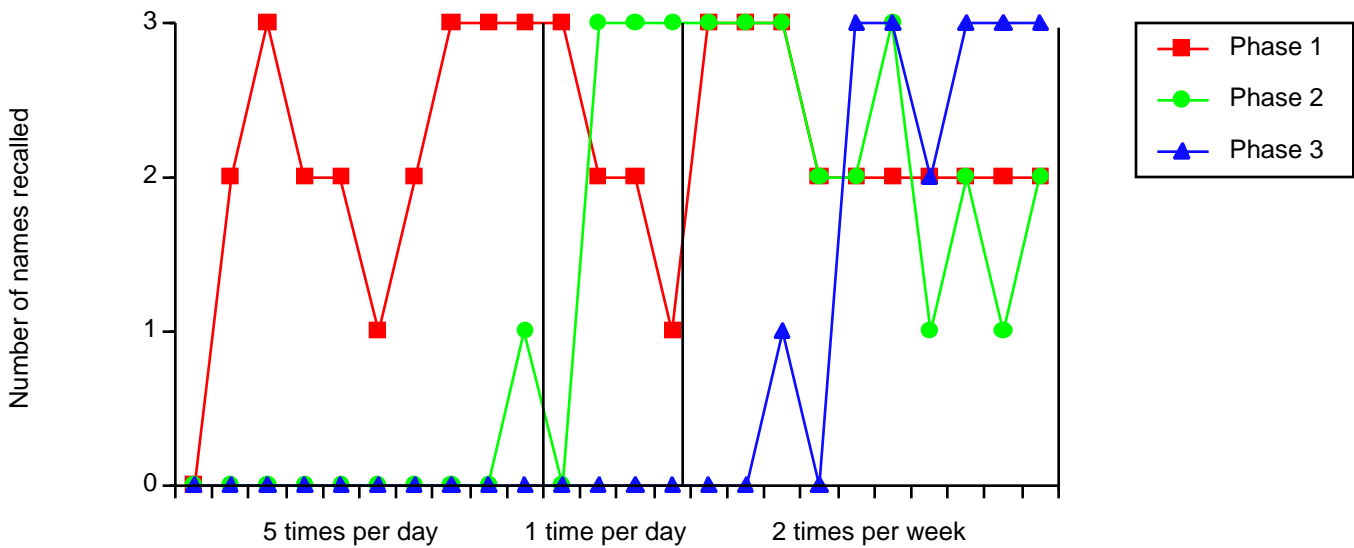
Throughout the course of the experiment, participants had incidental exposure to staff members' names. If incidental exposure became sufficient for a participant to learn a staff member's name that was included in a to-be-trained stimulus set, a change was evident in the participant's performance on the probe activities. If this occurred, the trainer replaced that stimulus item with one from an alternative set.

Results

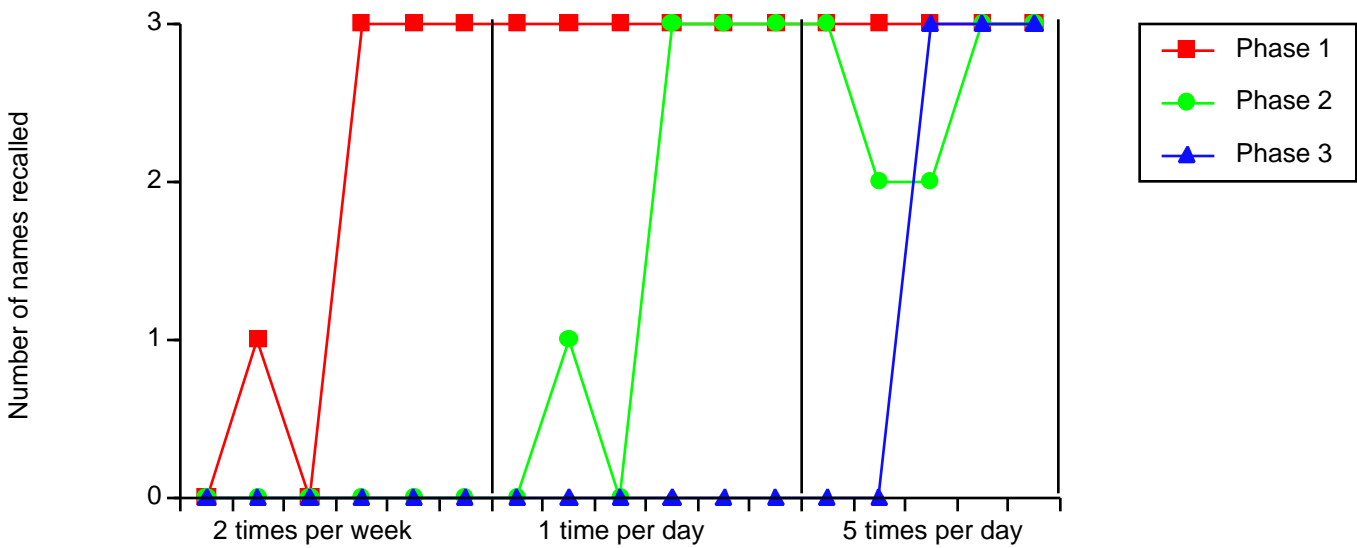
Use of the mnemonic and visual imagery strategy was effective for 4 of the 7 participants across all experimental phases (see Figures 1 – 4). Once having mastered a face-name association, these participants maintained that association as they progressed from one phase of the experiment to the next.

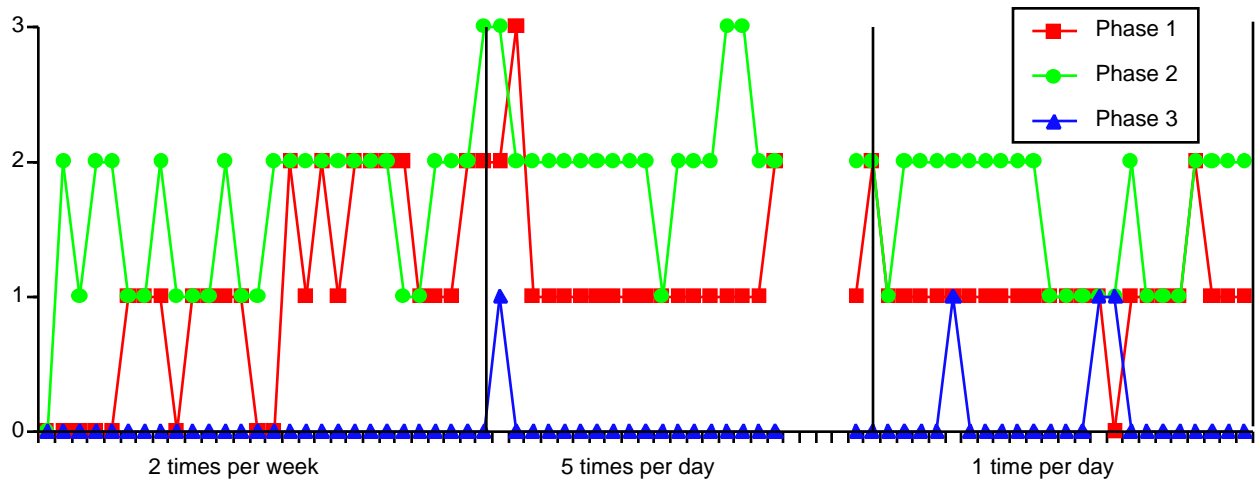
Figures 1 – 4

1. Participant DL

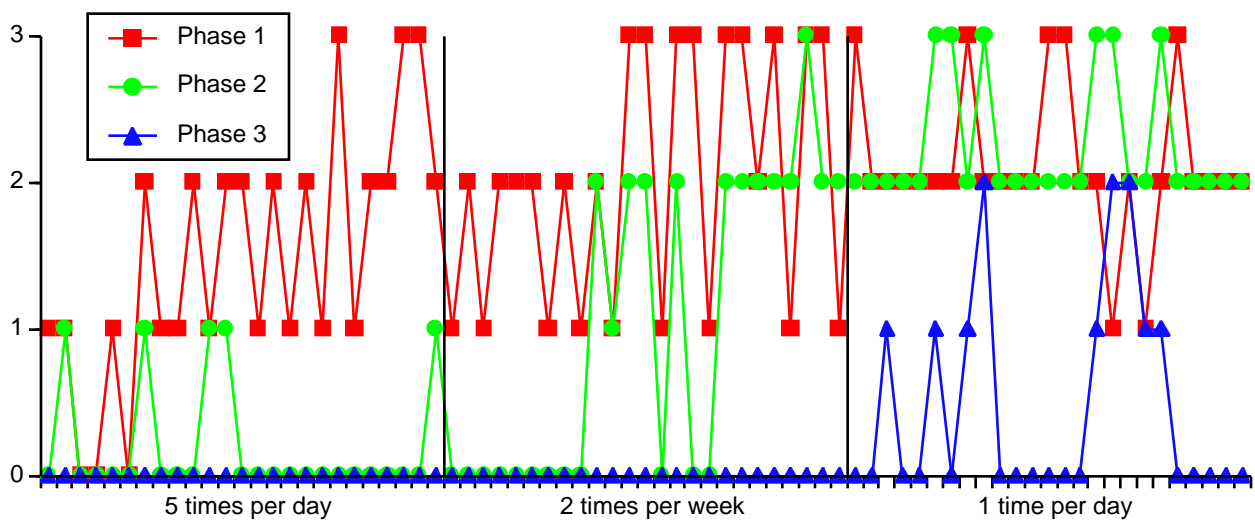


2. Participant LB

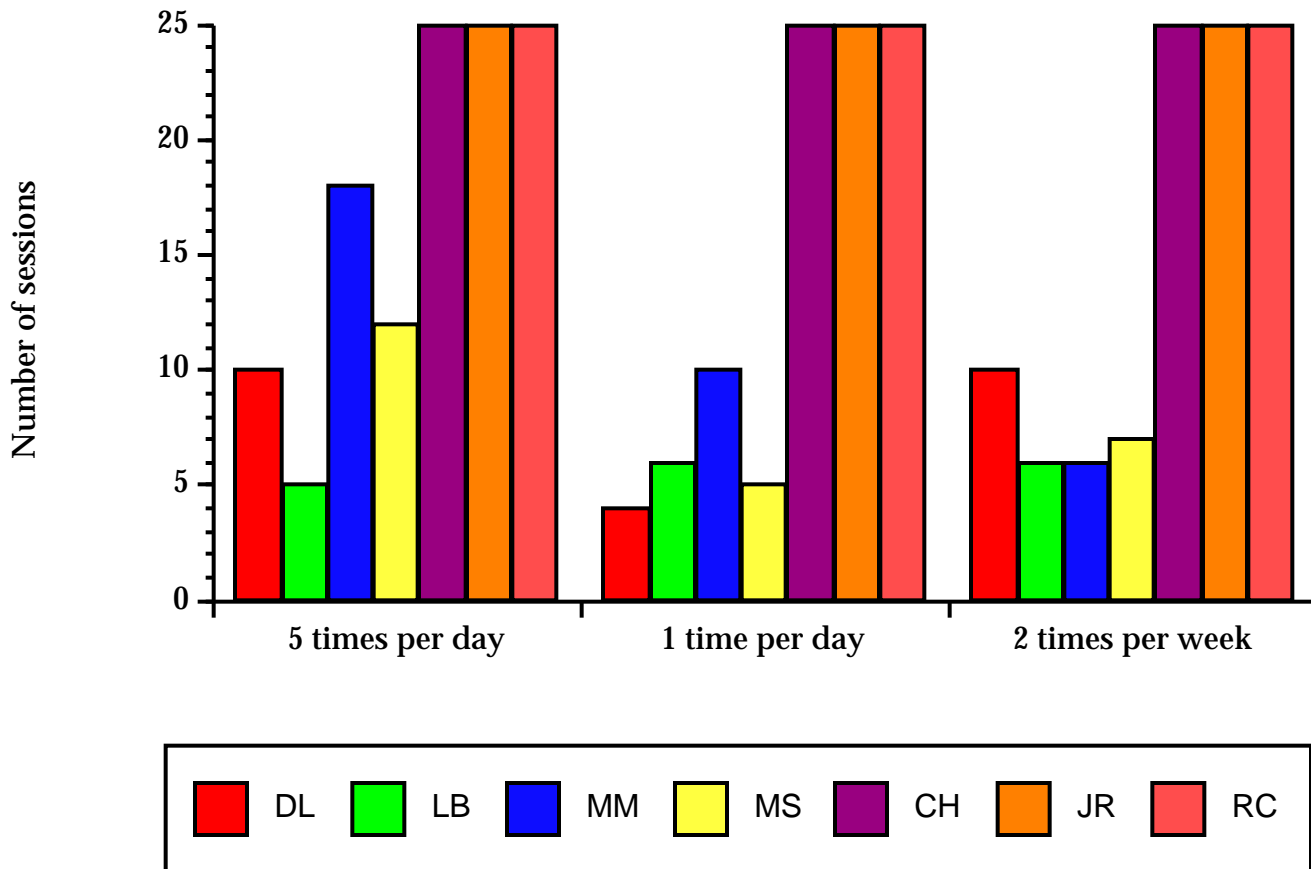




6. Participant JR



7. Participant RC



Discussion

Major findings:

- Using a combination of mnemonics and visual imagery is an effective strategy for learning face-name associations for approximately half of survivors with TBI who have persistent memory impairments.
- Study participants demonstrated greater efficiency of learning when intervention sessions occurred two or five times per week than when they occurred five times per day.
- Trainers and facility staff members reported frequent behavior problems when sessions occurred multiple times per day, but they did not experience these problems when sessions occurred less frequently.

Possible explanations for the finding that participants performed better when they attended two or five sessions per week than when they attended 25 sessions per week:

- experiencing repeated failures and the associated frustration within a short time period (i.e., one day) is detrimental to mastery of new knowledge or skills.
- learning occurs more efficiently when multiple exposures to stimuli span an extended time period than when the same number of exposures span a short time period.

Treatment Implications

- Although intensive treatment may be beneficial during the period of spontaneous recovery and the early stages of acute rehabilitation, continuing this level of treatment several months or years post-injury may be contraindicated. If an intervention program is too intense, behaviors resulting from frustration and failure may interfere with engagement in the learning task and, hence, limit mastery.
- Although professionals designed the intervention procedures, staff members without professional training performed the training sessions. This follows current cost-containment trends that encourage the provision of services by family, friends, or caregivers rather than the reliance solely on highly-educated professionals.

Remaining Questions

- Why were the procedures effective with some survivors of TBI but not others?
- Does performance improve if survivors generate their own visual imagery statements to pair with photographs?
- Would use of auditory as well as visual stimuli be more effective in facilitating the mastery of face-name associations?
- Do survivors generalize face-name associations to settings outside of treatment sessions once mastery has been achieved?

Conclusion

Being able to call people by name can substantially impact a person's willingness to initiate interactions. Providing survivors of TBI with this skill may enhance their involvement in work, school, and social situations and, thus, may improve their overall quality of life. Although one technique for improving the recall of discrete pieces of information is unlikely to work for all survivors of TBI, guidelines for identifying and implementing appropriate approaches for use with specific individuals will help considerably in structuring remediation efforts. Researchers need to continue investigating techniques that are beneficial to survivors of TBI and individuals with memory impairments resulting from other types of neurological insults.

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