

## Comparison of Expanded versus Equal Interval Recall Training in Persons with Dementia

The purpose of this study is to investigate the impact of two different procedures of recall intervals during Spaced-Retrieval Training (SRT) for persons with dementia. Few studies have examined specifically how long the intervals between recall trials should be during SRT, or if there is a benefit of using equal recall intervals (i.e., 4 minutes between trials) versus expanded recall intervals (e.g., 1 minute – 2 minutes – 4 minutes, etc.). Additionally, not all studies address maintenance of the goals attained or generalization of learned behaviors. In this study, four persons with dementia who reside in a nursing home are participating. Participants are learning two functional goals (e.g., recalling room number/location and use of a memory book); for one goal, equal intervals between recall trials is used, and for the other, expanding intervals between recall trials is used. For both goals, errorless learning procedures is used; in other words, participants are cued so that they do not make errors.

Research has shown that persons with dementia are capable of learning new information and that some methods are more effective and efficient than others (e.g., Bourgeois et al., 2003; Camp et al., 1995; Hopper, 2003). In particular, spaced retrieval training (SRT), which was developed as a learning strategy by Landauer and Bjork (1978), has been shown to be effective in helping persons with dementia to (re)learn specific facts/skills to improve independence and/or quality of life (Camp & McKittrick, 1992; Brush & Camp, 1998a; Bourgeois et al., 2003; Bayles & Kim, 2003). SRT appears to require little or no cognitive effort on the part of the individual and the participants may have no memory of even going through the training sessions (Camp et al., 1995). SRT appears to utilize the preserved implicit memory and bypass explicit memory, which may explain its effectiveness for persons with dementia (Camp et al., 1995; Vanhalle et al., 1998; Bourgeois et al., 2003; Hopper, 2003). SRT uses errorless learning techniques that prevent participants from making errors during the training. Advocates of this theory believe that because the method of learning is unconscious and because the participant may not remember and learn from the errors, the participant may “relearn” incorrect information if allowed to make mistakes (Camp et al., 1995; Bourgeois et al., 2003; Bayles & Kim, 2003; Hopper, 2003). Thus, provision of cues that prevent mistakes is essential in SRT.

Equal intervals and expanded intervals are two procedures that have been used with SRT. Expanded intervals require a participant to remember information for increasingly long intervals before retrieval. According to Logan and Balota (2008), the “spacing effect” suggests that memory is improved when repetitions are spaced apart instead of being close together. An example of expanded intervals would be an interval schedule of 1 minute - 3 minutes - 6 minutes and so on. An example of equal intervals would be 4-4-4. This indicates that each recall would be made after four intervening minutes, three times. In both expanded and equal intervals, the participant would be asked to recall information three times over a total of 12 minutes.

Logan and Balota (2008) investigated the effectiveness of expanded intervals in contrast to equal intervals. Although both methods proved to be effective, both younger adults and older adults (without memory deficits) showed a greater initial success in the learning stage for expanded items as opposed to equal interval items. After twenty-four

hours the retrieval advantage for expanded intervals was lost for both age groups. There has been little research done in examining the two different procedures. This study will examine whether expanded or equal intervals are more effective for using SRT with persons with dementia.

### Method

Four persons with a diagnosis of dementia who live in one nursing home are participating in this study. Each participant has two target behaviors. MMSE scores are between 12 to 17, and each participant passed the Bourgeois Oral Reading Screening, and speaks English as their first language.

The research questions are being addressed by employing a multiple baseline across behaviors and participants ABA single-subject design (Kazdin, 1982). Each participant completes three phases: baseline [A], training [B], and maintenance [A]. Baseline consists of conducting probes to determine pre-training levels of target behaviors. Target behaviors are identified in collaboration with participants, family members, and staff (e.g., remember to lock wheelchair brakes, remember to use a memory book, remember your room number, etc.).

Training, using standardized SRT procedures, begins with the first participant when there is a stable or declining trend in the level of each target behavior, with at least three data points in baseline. Initiation of training is then staggered across participants and behaviors, with order of equal v. expanded intervals counterbalanced across participants. Training takes place 2 times per week. Each session lasts for approximately 40 to 45 minutes, unless the participant decides that he/she does not want to continue with the session. Each training session focuses on one behavior and that behavior is trained until it is learned (recall after a minimum 24-hour delay). Training continues until the participant achieves recall of the target behavior after a minimum 24-hour delay. The training is discontinued for a behavior if there is no improvement in recall of the behavior after four sessions.

Probe data are collected by having the participant respond to a probe question, for example: probe - "What do you use to walk?" response - "My cane." Five trials are offered during each 15-minute probe session. Time is filled with social interaction. Probe and training sessions are recorded to measure reliability of the dependent and independent variables.

The data to be analyzed are the total number of sessions to achieve the target behavior for equal versus expanding interval training procedures. Additionally, data from probes throughout the study are compared across baseline, training, and maintenance phases. Pre- and post-training levels of the behavior in natural contexts will be compared to determine if the participants' generalized the learned behavior.

### Results

This study is currently in progress. Baseline data have been collected on all four participants. Results revealed that participants recalled the desired response 0% in most baseline sessions, and up to 20% at the most. Training has begun with the first participant. Not enough data have been collected to date to comment on the research questions. Data collection will be completed by early April, 2011, with data analyses completed by late April, 2011.

## Discussion

The theoretical and clinical implications of this study will be discussed. Information learned in this study could influence our understanding of how people with dementia benefit from SRT most efficiently. It could also impact how clinicians conduct SRT with persons with dementia.