Using Visual Imagery and Implementation Intentions to Improve Prospective Memory in Multiple Sclerosis: Preliminary Results from a Telehealth Feasibility Trial

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Background

- Persons with multiple sclerosis (PwMS) can experience deficits in prospective memory (PM) or "remembering to remember," which are associated with functional difficulties.
- However, there has yet to be a clinical trial examining cognitive rehabilitation to improve PM in PwMS.
- The Telehealth PM Intervention (TPMI) combines two strategies that have been beneficial in other populations—visual imagery and implementation intentions—and is offered to PwMS through remote one-on-one sessions twice a week over four weeks.

Objectives

- To 1) evaluate the feasibility and 2) preliminary efficacy of TPMI.

Methods

Inclusion Criteria:
- Clinical diagnosis of MS with no relapses within the past 2 months
- Between the ages of 18 and 60
- Able to read, write, and speak in English
- No history of other serious neurological or psychiatric illness, including substance misuse
- Access to the internet and a web camera
- Not in a cognitive rehabilitation program within the past 6 months
- Self-reported issues with "remembering places they have to be" and "things they have to do"

Treatment:
- Randomized 1:1 into active treatment or active control group, stratified by age and gender
  - *Active Treatment:* four sessions with visualization training, then four sessions adding in implementation of intentions training (i.e., using "if" and "then" statements to establish cues).
  - *Active Control:* eight sessions covering different educational topics about MS and cognition.
- Each session was approximately 30 minutes and done remotely using Qliqsoft.

Feasibility Measures:
- Recruitment, enrollment, and retention numbers
- Adherence to treatment
- Rating of credibility and expectancy for improvement (1-10)
- Satisfaction with overall treatment (0-10)

PM Measures:
- Performance-based: Memory for Intentions Test (MIST)
- Self-report: Perceived Deficits Questionnaire (PDQ)

Statistical Analyses:
- Mann-Whitney U tests for feasibility measures and 2 (time) x 2 (treatment) repeated measures ANOVA for the PM measures.

Results

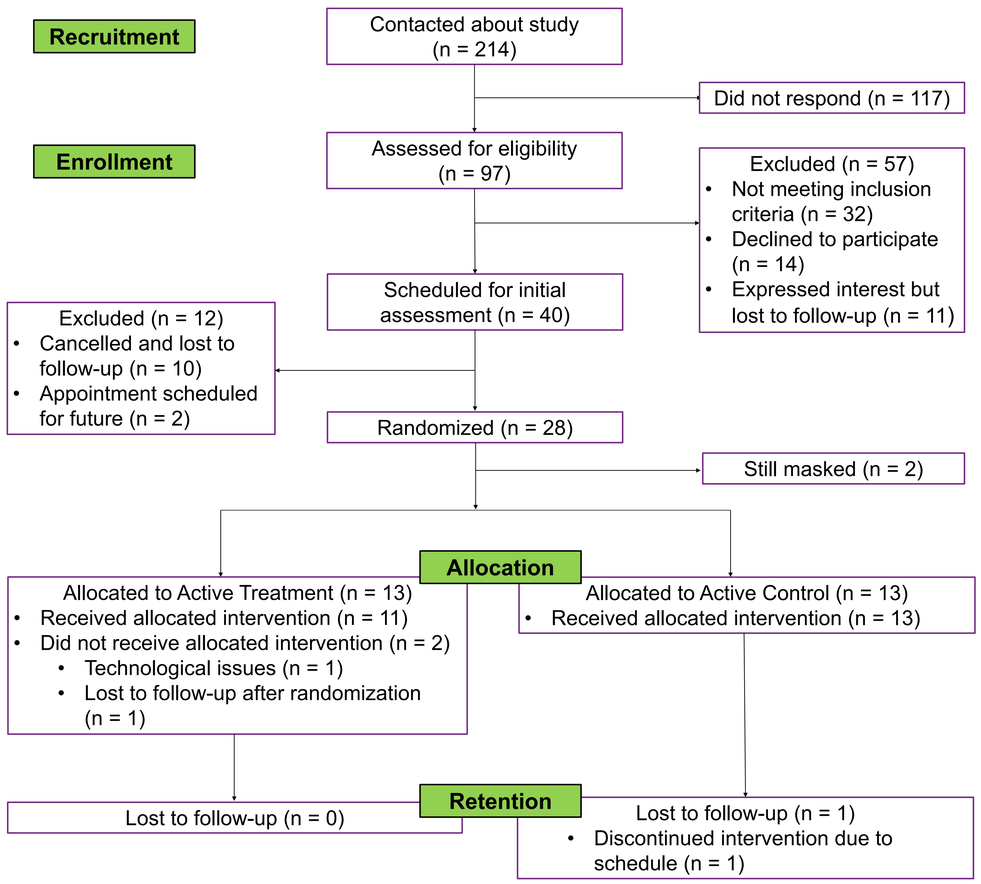

Figure 1: Flow chart of recruitment, enrollment, allocation, and retention at the time of the preliminary analyses

	Active Treatment	Active Control
Attendance of All 8 Sessions	84.6%	92.3%
Treatment Expectancy and Credibility (≥7/10)	90.9%	76.9%
Treatment Satisfaction (≥7/10)	81.8%	83.8%
Reduction in Time-Based PM Errors	81.8%	50%
Reduction in PM complaints	81.8%	50%

Table 1: Adherence, treatment ratings, and PM outcomes between the two treatment groups

Results (Cont.)

- *Feasibility*
  - 41.2% of PwMS assessed met eligibility for the study, with 70% of eligible individuals completing a baseline assessment (**Figure 1**).
  - Three randomized participants have withdrawn from the study due to:
    - Device not being compatible with Qliqsoft
    - Lost to follow-up after randomization
    - Intervention conflicting with schedule
  - Adherence (U = 92.00, p = .724), treatment credibility and expectancy (U = 81.00, p = .608), and treatment satisfaction (U = 62.50, p = .833) were comparable between the two treatment groups (**Table 1**).
- *Performance-based PM*
  - No significant effects on the overall MIST F(1,21)=0.12, p=.734)
  - On the number of time-based errors, an area where PwMS have greater difficulty than healthy controls, there was a significant effect of Time (F(1,21)=15.06, p=.001), but not with Time x Treatment (F(1,21)=2.48, p=.131; **Table 1**).
- *Self-reported PM*
  - There was a significant effect of Time (F(1,21)=6.12, p=.022), but not with Time x Treatment (F(1,21)=0.72, p=.405; **Table 1**).

Conclusions

- TPMI appears to be a feasible intervention, although further evidence is needed to support its efficacy in improving PM.
  - The feasibility and preliminary efficacy will be re-evaluated after the target sample size (n = 36) has been reached.

References

Available upon request

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