Memory Support System in French: a Pilot Study

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ABSTRACT

Mild cognitive impairment (MCI) confers a higher risk of developing dementia. While largely preserved, instrumental activities of daily living (IADLs) may be affected to varying degrees by MCI. The Memory Support System (MSS) is a curriculum and calendar/note-taking system that has proven effective in sustaining independence in IADLs for individuals with MCI and in protecting mood among care partners. Until recently, the MSS has only been utilized among English- and Spanish-speaking samples. This study investigated the use of a translated and culturally adapted MSS in four French-speaking, community-dwelling participants with MCI and their support partners. Measures of treatment adherence, daily function, self-efficacy for memory, quality of life, mood, anxiety, and caregiver burden were assessed at baseline, treatment end, and eight-week follow-up. By treatment end and follow-up, participants with MCI showed improvement in adherence to the MSS calendar, IADLs, everyday abilities requiring memory and planning, self-efficacy, depression and anxiety symptoms, and quality of life. Care partners showed improvement in quality of life and depressive symptoms, while their caregiver burden and anxiety symptoms generally remained unchanged. Findings suggest that, with appropriate training, Francophones with MCI can and will use the MSS, and that MSS training may contribute to daily functioning and aspects of participant and care partner well-being.

Key words: mild cognitive impairment, memory book, memory loss, functional ability, behavioural intervention, quality of life, caregivers, cognitive rehabilitation

INTRODUCTION

By 2030, around 1 million Canadians will be living with dementia.(1) Mild cognitive impairment (MCI) is a high-risk stage for converting to dementia.(2,3) While instrumental activities of daily living (IADLs) are largely preserved in MCI compared to dementia, IADLs may be affected to varying degrees by MCI compared to cognitively healthy older adults.(4) Memory changes in MCI can lead to increased caregiver burden, requiring more oversight in IADLs.(5) The rising risk of MCI and dementia in the older adult population emphasizes the importance of finding interventions to sustain IADLs in MCI.(3) Offering non-pharmacologic interventions is now considered good practice due to the lack of medications that improve cognition or delay MCI progression.(2)

Growing evidence supports the use of non-pharmacologic interventions to mitigate cognitive decline and maintain IADLs in older adults with MCI.(6) The memory support system (MSS) for MCI promotes independent completion of personal goals and IADLs,(7,8) and has been utilized for over a decade as a core component of the Mayo Clinic's HABIT® program.(9) The MSS has shown positive treatment adherence, sustained IADL independence, improved memory self-efficacy for individuals with MCI compared to randomized controls, and improved mood for care partners compared to control care partners.(8) A recent pilot study on its Spanish translation and cultural adaptation yielded similar results,(10) suggesting its potential applicability in other populations with memory decline and well-being improvement.

The 2021 census reported that 21.4% of the Canadian population speaks French as their primary official language.(11) In 2016, the percentage of individuals aged ≥65 in Ontario was higher among Francophones (19.5%) compared to Anglophones (16.2%).(12) Language barriers affecting access to health-care services have been a significant concern for Ontario's Francophone seniors.(13)

This pilot study aimed to develop a linguistically and culturally appropriate adaptation of the MSS in French and evaluate its impact on program outcomes for Francophones with MCI and their care partners.

METHODS

Study Design and Participants

A pre/post intervention design (baseline, treatment end, and eight-week follow-up) was utilized. Inclusion criteria included age ≥50 years old; diagnosis of single or multi-domain MCI; Clinical Dementia Rating global (CDR) score of ≤0.5;(14)

Montreal Cognitive Assessment (MoCA) score of ≥18;[15] available contact with a care partner ≥ two times weekly; a computer with access to the internet; and absence or stable intake of nootropic(s) for ≥ three months. Exclusion criteria included visual/hearing impairment, history of reading or written inability/disability sufficient to interfere with MSS training or concurrent participation in another related clinical trial. Participants were recruited in a memory clinic in Ottawa between January 2022 and February 2023. A total of 39 individuals were contacted to potentially participate in the study (Figure 1). The study was approved by the Bruyère Research Ethics Board (#M16-21-035) and preregistered at ClinicalTrials.gov (NCT05253365).

Translation and Cultural Adaptation

Professional services were used to translate the MSS materials and measures. Bilingual professionals and volunteers reviewed and evaluated initial translations, resolving discrepancies with professional translators. Two French-speaking community volunteers field-tested the materials to create the final version.

MSS Training Paradigm

The MSS and its manualized training curriculum are described in detail in prior reports.[7,8] Briefly, the MSS is a pocket-sized calendar and note-taking system with three sections: (a) events; (b) to-do's; and (c) journaling. The MSS training curriculum applies three stages from learning theory (acquisition, application, and adaptation),[16] and consists of ten 1-hour sessions delivered over two to six weeks starting seven to 10 days after baseline assessment. It includes orientation, modelling, practice use, and homework assignments to be completed with assistance from the care partner. Participants progress to the next stage after demonstrating 100% accuracy on the intervention plan/questions (IPQs) for two consecutive days (see Appendix A for an example of the two-page-per-day calendar in French and Appendix B for the IPQs). The MSS trainer was a master's level research coordinator (J.F.) supervised by a licensed psychologist (O.A.S.). After the intervention, each participant and their partner completed a semi-structured interview to provide suggestions for improving the MSS. The intervention only used the MSS training. One participant completed the MSS training virtually, through the Zoom platform, and three other participants had a combination of in-person and virtual sessions.

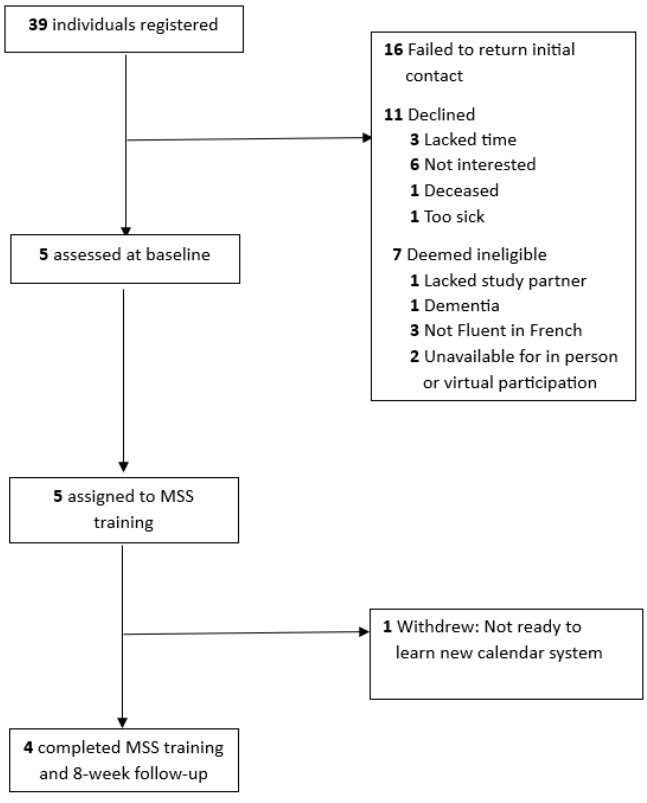

FIGURE 1. Recruitment flow chart

Measures

The following measures were used: Clinical Dementia Rating Scale;[14] Montreal Cognitive Assessment (MoCA);[15] Functional Assessment Questionnaire (FAQ);[17] Everyday Cognition (E-Cog) questionnaire's memory and executive functioning subscales;[18] Self-Efficacy in Mild Cognitive Impairment Scale;[19] Quality of Life in Alzheimer Disease;[20] Center for Epidemiologic Studies Depression Scale;[21] State-Trait Anxiety Inventory;[22] and Zarit Burden Interview-short version.[23] Measures used are described in detail in Appendix C. All written measures were provided in French. At enrollment, participants with MCI and their care partners completed measures of cognitive and functional impairment. They also completed measures of treatment adherence, IADLs, self-efficacy for memory, quality of life, mood, anxiety, and caregiver burden at baseline, treatment end, and eight-week follow-up.

Analysis

Data quality was investigated using descriptive statistics. The percentage of participants adherent to the MSS at each assessment point was calculated. Changes in treatment adherence, IADLs, mood, anxiety, quality of life, self-efficacy, and caregiver burden were assessed using effect sizes. Effect sizes were calculated using the mean and standard deviation of the change scores: Cohen's d=(M1-M2)/stdev(pooled). In interpreting Cohen's d, a small effect is indicated by a d value of 0.2, a medium effect by a d value of 0.5, and a large effect by a d value of 0.8. Statistical analyses were conducted using Microsoft Excel (365 version; Microsoft Corporation, Redmond, WA).

RESULTS

The final enrollment rate was 12.82% (n=5), with an 80% (n=4) retention rate for both the intervention and eight-week follow-up. Table 1 presents the characteristics of the study sample, comprising four participants with MCI and their care partners. Of the care partners, two were spouses, one a daughter, and another a friend. All participants and care partners self-identified as of European descent.

TABLE 1.
Participant characteristics and baseline test results

Characteristic	*Participants with MCI (n = 4)*	*Care Partners (n = 4)*
Age, years, Mean (SD) [range]	69.25 (5.62) [62-75]	61.75 (18.21) [35-75]
Women, no. (%)	3 (75)	3 (75)
Education, years, Mean (SD) [range]	15 (2.58) [12-18]	17.25 (1.89) [16-20]
Marital status, no. (%)		
Married	2 (50)	2 (50)
Divorced/Separated	2 (50)	1 (25)
Single/never married		1 (25)
MoCA[a], Mean (SD) [range]	22.75 (2.22) [20-25]	29 (0.82) [28-30]
CDR[b], Mean (SD) [range]	0.38 (0.25) [0-0.5]	

[a]Range is 0 to 30; a higher score indicates better global cognition.
[b]Range is 0 to 3; a higher score indicates greater dementia severity.
MCI = Mild Cognitive Impairment; MoCA = Montreal Cognitive Assessment;[16] CDR = Clinical Dementia Rating.[15]

Table 2 presents outcome variable scores for participants with MCI and their care partners at baseline (T1), treatment end (T2), and eight-week follow-up (T3). Treatment adherence scores rose from T1 to T2, slightly decreased at T3 but remained higher than at T1. The percentage of adherent MCI participants at each assessment point: 0% at T1, 100% at T2, and 75% at T3. FAQ scores decreased from T1 to T2 and stayed stable at T3. ECog total score and memory- and planning-related subscale scores dropped from T1 to T2; while the former returned to baseline, the latter remained steady from T2 to T3. ECog organization and divided attention subscale scores remained stable from T1 to T2 and slightly increased from T2 to T3. In participants with MCI, self-efficacy for memory and quality of life scores increased from T1 to T3, while anxiety and depressive symptoms decreased. Caregiver burden increased from T1 to T2 but nearly returned to baseline at T3. For care partners, quality of life increased and depressive symptoms decreased from T1 to T3, with anxiety symptoms remaining relatively unchanged.

After the MSS training, semi-structured interviews showed that the MSS calendar had a positive impact on the lives of participants with MCI and their care partners. Participants reported that the MSS training and calendar helped them better organize their daily routine and keep track of appointments and medications, increased independence in the completion of daily tasks, increased quality of life, increased self-confidence in doing daily activities, and decreased anxiety. All participants planned to continue using the MSS and would recommend it to others. Most partners reported increased quality of life and decreased caregiver burden. All partners felt participants had increased autonomy in daily tasks by relying on their MSS calendars.

DISCUSSION

We translated and culturally adapted the MSS into French, piloting it with four Francophones with MCI who successfully adopted it. MSS training significantly improved adherence, achieving levels consistent with the original MCI sample (8% baseline, 95% treatment end, 84% eight-week follow-up).[7] This pilot group showed promising outcomes at treatment end and eight-week follow-up.

By treatment end, participants with MCI showed improvement in IADLs and memory- and planning-related daily activities. This improvement was maintained at follow-up and consistent with previous trials of the MSS.[7,8,10] Also, similar to a previous MSS study,[7] there was improved self-efficacy for memory seen by treatment end and follow-up.

By the end of treatment and follow-up, participants with MCI and care partners exhibited less depression and improved quality of life. Although anxiety and caregiver burden slightly increased at treatment end, participants' levels of anxiety were reduced during follow-up, while care partners generally returned to baseline levels of anxiety and caregiver burden. In contrast to earlier MSS studies,[7,8,10] participants maintained improvements in depression and anxiety symptoms at follow-up, yet caregiver burden did not improve on self-report measures, despite partners noting improved caregiver burden during interviews. The improvements in feelings of depression for both MCI participants and care partners suggest the treatment may have provided psychological benefits (e.g., social support, sense of purpose, and coping skills) in the context of physical distancing requirements during COVID-19.

Study limitations encompass a non-randomized, quasi-experimental design with a small sample. However, substantial effect sizes on daily and psychological functioning indicate potential advantages relative to prior MSS studies.[7,8,10] While these initial pilot results are promising, larger sample confirmation is warranted. Recruitment faced obstacles due to the pandemic's influence on clinical and research endeavors. Some candidates were hesitant about technology for virtual visits, and others could not commit to the visit schedule, hindering the achievement of the initial goal of recruiting 20 participants with MCI.

TABLE 2.
Outcome variables for participants with MCI and their care partners; comparison of outcome scores in a combined group at baseline (T1), treatment end (T2), and eight-week follow-up (T3)

	Baseline (T1) Mean (SD)	*Treatment End (T2) Mean (SD)*	*Follow-up (T3) Mean (SD)*	*T1–T2 Cohen's d*	*T2–T3 Cohen's d*	*T1–T3 Cohen's d*
Participant with MCI						
Adherence[a]	3.5 (1.73)	9.25 (0.96)	7.5 (1.91)	1.72	−1.04	1.47
Daily functioning						
FAQ[b]	3.75 (3.3)	1 (1.41)	1.5 (1.29)	−0.99	0.39	−0.86
ECog Total[c]	40.75 (10.56)	36.5 (10.97)	39.5 (12.12)	−0.42	0.28	−0.12
ECog memory[d]	16.75 (6.4)	14.5 (5.2)	14 (5.48)	−0.41	−0.1	−0.48
ECog planning[e]	8 (374)	6.25 (0.96)	6.5 (1.29)	−0.65	0.24	−0.55
ECog organization[f]	8.25 (3.1)	8.25 (3.3)	10.25 (3.69)	0	0.59	0.6
ECog divided attention[g]	7.75 (1.71)	7.5 (2.38)	8.75 (3.3)	−0.13	0.45	0.4
Self-efficacy for memory[h]	74.25 (6.65)	83.75 (3.86)	85 (2.16)	1.33	0.42	1.46
Quality of life[i]	39.25 (5.25)	43 (4.24)	44 (4.55)	0.77	0.24	0.91
Depression[j]	7.25 (8.5)	5 (5.35)	1.25 (1.26)	−0.34	−0.91	−0.93
Anxiety[k]	17.5 (11.03)	18.5 (9.26)	15.25 (4.65)	0.11	−0.46	−0.28
Care partner						
Caregiver burden[l]	6.5 (7.59)	9.25 (7.72)	6.75 (5.85)	0.38	−0.39	0.04
Quality of life[i]	39.5 (4.43)	41 (6.73)	43.25 (5.56)	0.28	0.39	0.74
Depression[j]	8.25 (2.63)	7.75 (6.18)	4.75 (4.5)	−0.11	−0.57	−0.9
Anxiety[k]	17.75 (4.5)	19 (5.23)	17.75 (2.87)	0.27	−0.32	0

[a]Range is 0 to 10; a higher score indicates greater treatment adherence.
[b]Range is 0 to 30; a higher score indicates worse informant-rated instrumental activities of daily living.
[c]Range is 23 to 92; a higher score indicates worse informant-rated ability to perform everyday tasks involving memory and executive functioning.
[d]Range is 8 to 32; a higher score indicates worse informant-rated ability to perform memory-related everyday tasks.
[e]Range is 5 to 20; a higher score indicates worse informant-rated ability to perform planning-related everyday tasks.
[f]Range is 6 to 24; a higher score indicates worse informant-rated ability to perform organization-related everyday tasks.
[g]Range is 4 to 16; a higher score indicates worse informant-rated ability to perform everyday tasks involving divided attention.
[h]Range is 9 to 90; a higher score indicates better self-reported self-efficacy in managing daily activities.
[i]Range is 13 to 52; a higher score indicates better self-reported quality of life.
[j]Range is 0 to 60; a higher score indicates worse self-reported depressive symptoms.
[k]Range is 10 to 40; a higher score indicates worse self-reported anxiety symptoms.
[l]Range is 0 to 48; a higher score indicates worse self-reported caregiver burden.
ECog = Everyday Cognition modified version;[18] FAQ = Functional Activities Questionnaire.[17]

Non-pharmacologic interventions for French-speaking Canadians with MCI are necessary. The study demonstrated that Francophones with MCI can effectively learn and implement a memory compensation curriculum. Using the MSS in French may enhance general functional status, quality of life, mood, anxiety, and self-efficacy. While the results align with prior MSS studies, further research with a larger French-speaking MCI sample is required for confirmation.

ACKNOWLEDGEMENTS

Not applicable.

CONFLICT OF INTEREST DISCLOSURES

We have read and understood the *Canadian Geriatrics Journal*'s policy on conflicts of interest disclosure and declare no conflicts of interest.

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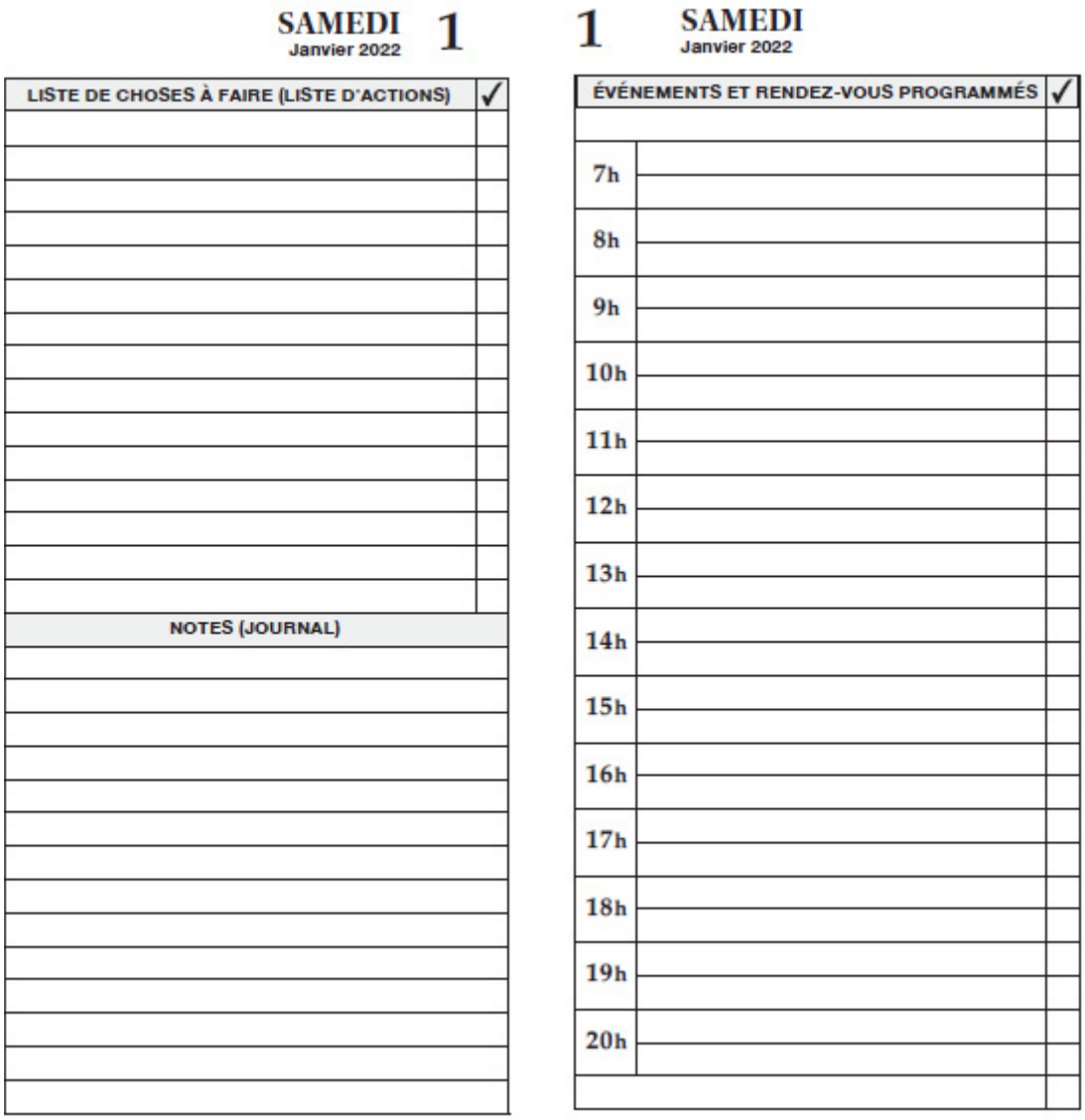
APPENDIX A. Example of a two-page-per-day calendar in French



SAMEDI 1
Janvier 2022

LISTE DE CHOSES À FAIRE (LISTE D'ACTIONS)	✓

NOTES (JOURNAL)

1 SAMEDI
Janvier 2022

ÉVÉNEMENTS ET RENDEZ-VOUS PROGRAMMÉS	✓
7h	
8h	
9h	
10h	
11h	
12h	
13h	
14h	
15h	
16h	
17h	
18h	
19h	
20h	

APPENDIX B (part 1 of 3). Intervention plan/questions (IPQs)

Questions de l'agenda HABIT® - Série 1

Nom: _____

Score : **3** - la réponse est donnée ou pointée du doigt sans aucun indice de la part du partenaire.
2 - doit recevoir un ou plusieurs indices indirects.
1 - doit recevoir un indice direct.
0 - incapable de faire une démonstration.

- Vous pouvez également faire référence à l'agenda comme étant le calendrier, le livre bleu, etc.
- Pour augmenter la difficulté, posez les questions dans un ordre différent à chaque fois.
- Les questions doivent être posées 3 fois par jour.

Commencez les questions par « Regardez dans votre agenda ».

Date du jour:										
Veuillez ouvrir votre agenda à aujourd'hui. Où trouvez-vous la date? *Regarde en haut de chaque page*										
Quelles sont les 3 sections principales pour chaque jour dans l'agenda? *Nomme les 3 sections*										
Où inscrivez-vous les rendez-vous prévus à une heure précise? *Section des événements/rendez-vous programmés (à côté de l'heure)*										
Où faut-il écrire une note à propos de quelque chose? *(C'est-à-dire des informations qui pourraient être utiles plus tard ?) Section Notes (Journal)*										
Où devez-vous répertorier les tâches que vous devez accomplir (mais pas à un moment précis)? *Section Choses à faire (liste d'actions)*										
Je veux que vous cochiez les tâches terminées... Comment marquer une tâche terminée?[a]										
Je veux que vous mettiez une étoile à côté d'un élément qui est une haute priorité pour la journée... Comment marquer une tâche qui est une haute priorité?[a]										
Je veux que vous regardiez votre agenda au moins 3 fois par jour pendant la formation... Combien de fois par jour devez-vous vous référer à votre agenda, au minimum?[a]										
Score total (24 points possibles)										
BONUS : Où inscrivez-vous un rendez-vous que vous avez le mois prochain ? *Calendrier annuel*										

[a]Indique que cet élément est livré dans le format d'apprentissage sans erreur/récupération espacée. Le score est de 3 ou 0 seulement, sans aide. Ne laissez pas le patient deviner.
Phase d'acquisition des QGI - Rév. déc. 2018

APPENDIX B (part 2 of 3). Intervention plan/questions (IPQs)

Questions de l'agenda HABIT® - Série 2

Nom: _____

Score : **3** - aucun indice n'est nécessaire
2 - indice(s) indirect(s)
1 - indice direct
0 - incapable de démontrer

Commencez les questions par « Regardez dans votre agenda ».

Commencez les questions par « Regardez dans votre agenda », afin d'encourager les gens à s'y référer.
- Vous pouvez également l'appeler le calendrier, le livre HABIT ou le livre bleu.
- Les questions doivent être posées 3 fois par jour.
- Pour augmenter la difficulté, posez les questions dans un ordre différent à chaque fois.

Date du jour:									
Quelle est la date du jour? Se réfère à l'agenda pour s'en assurer.									
En ce qui concerne la journée d'aujourd'hui, quels sont les rendez-vous ou les événements prévus? *Examine les événements/rendez-vous programmés*									
En regardant aujourd'hui, qu'avez-vous sur votre liste de choses à faire (tâches non programmées à un moment précis)? *Examine la section Choses à faire*									
En regardant aujourd'hui, qu'avez-vous marqué d'une étoile comme étant une priorité élevée? *Revoit et identifie les priorités, marque si nécessaire*									
En ce qui concerne la journée d'hier, vous êtes-vous rendu à tous vos rendez-vous? Avez-vous fait tout ce que vous aviez à faire? *Passe en revue les éléments cochés*									
En regardant la journée d'hier, avez-vous reporté des tâches que vous n'avez pas faites? *Examine la liste et reporte les tâches incomplètes*									
En regardant la journée d'hier, pouvez-vous me citer une note que vous avez écrite pour vous-même? *Se réfère à la section Notes (Journal)*									
Vous avez décidé de consulter votre agenda en (heure désignée du matin), (heure de l'après-midi), (heure du soir). Quand consultez-vous votre agenda chaque jour?[a]									
Score total (24 points possibles)									
BONUS : En regardant le mois prochain, avez-vous des rendez-vous ou des événements écrits ? *Se réfère au calendrier annuel*									

[a]Demandez d'abord au patient de choisir trois moments de la journée qui ont un sens pour lui et qui se produisent le matin, l'après-midi et le soir (par exemple, les repas). Posez la question dans le format d'apprentissage sans erreur/récupération espacée. Le score est de 3 ou 0, sans aide. Ne laissez pas le patient deviner.

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APPENDIX B (part 3 of 3). Intervention plan/questions (IPQs)

Questions de l'agenda HABIT® - Série 3

Nom: _____

Score : **3** - aucun indice n'est nécessaire
2 - indice(s) indirect(s)
1 - indice direct
0 - incapable de démontrer

**Pour les questions marquées d'un astérisque, les scores sont basés sur vos observations concernant l'utilisation continue de leur agenda.
- Les questions doivent être faites 3 fois par jour.

Date du jour:										
En regardant (choisissez un jour de semaine avant aujourd'hui), avez-vous pu vous rendre à tous vos rendez-vous ? Comment le savez-vous? *Démontre l'utilisation du système de vérification*										
En regardant (choisissez un jour de la semaine avant aujourd'hui), qu'avez-vous fait sur votre liste de choses à faire? Qu'est-ce que vous n'avez pas fait? *Choses à faire (liste d'actions); utilisation du système de coche*s										
En regardant la semaine dernière, donnez-moi un exemple de tâche que vous avez dû reporter (si AUCUNE) Que feriez-vous d'une tâche que vous n'avez pas faite? *Reporte les tâches incomplètes*										
En regardant la semaine dernière, donnez-moi un exemple de note que vous vous êtes écrite (une information dont vous vouliez vous souvenir plus tard)? *Section Notes (Journal)*										
En regardant *(choisissez un jour dans un avenir proche avec un élément de haute priorité que vous connaissez, si possible),* qu'est-ce qu'un élément de haute priorité? *Cherche l'étoile.*										
Que faites-vous ce week-end (ou un autre jour dans un avenir proche) ? *(passe en revue toutes les sections pour les événements, les choses à faire ou les notes concernant la journée à venir.)*										
Avez-vous des rendez-vous la semaine prochaine? *(examine la section des rendez-vous de la semaine prochaine pour les rendez-vous)*										
En ce qui concerne (choisir un jour dans le futur), êtes-vous libre de sortir pour (choisir : déjeuner/dîner/voir un film)? *Se réfère aux événements/appels programmés*										
Score total (24 points possibles)										
En regardant le mois de (*choisissez un mois futur avec un rendez-vous, un événement ou une date limite importants dont vous avez connaissance*), avez-vous quelque chose d'important à faire? *Calendrier annuel*										
Regarde l'agenda au moins 3 fois par jour. ***Observer*										
Apporte l'agenda avec lui/elle à un rendez-vous ***Observer*										
Se réfère à l'agenda pour fixer un rendez-vous futur ou faire des projets ***Observer*										

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APPENDIX C. Measures

Cognitive and functional impairment were assessed by the Clinical Dementia Rating Scale. It is a 5-point scale that assesses three areas of cognition (memory, orientation, and judgment/problem-solving) and three areas of function (community affairs, home/hobbies, and personal care). The evaluation involves a semi-structured interview with the patient and a reliable informant. Scores of ≤0.5 indicate normal or questionable impairment.[14] Cognition was assessed by the Montreal Cognitive Assessment (MoCA), a widely used screening assessment for detecting cognitive impairment. It assesses various areas such as visuospatial and executive abilities, memory, attention, language, abstraction, delayed recall, and orientation, with a total of 30 points. The MoCA is considered a reliable and valid instrument for detecting mild cognitive impairment.[15]

Regarding treatment adherence, participants received the MSS at the end of the initial assessment and were instructed to "begin using the calendar to help with your memory". No further instructions were given. Spontaneous use of the MSS was assessed at the first training session 7–10 days later as the baseline for adherence and then repeated at treatment end and eight-week follow-up. Adherence was examined for two randomly selected days from the week prior to the appointment. Adherence was based on 4 criteria for a maximum of 10 points: bringing the MSS to the appointment (1 point), having at least one entry for today's date (1 point), having two entries over two days for things that happened at a particular time (maximum 2 points), having two entries over two days for things that did not need to happen at a particular time (maximum 2 points), and having at least entries for each of the two days in the journaling section (maximum 4 points). Treatment adherence was defined as a score of ≥7 on the adherence assessment.[8]

The ability to perform IADLs was evaluated using two informant-based questionnaires: the Functional Assessment Questionnaire[17] and the memory and executive functioning subscales of the Everyday Cognition questionnaire.[18] The Functional Assessment Questionnaire evaluates how well older adults can perform ten IADLs over the last four weeks. The questionnaire uses a 4-point scale from 0, which means "normal," to 3, which means "dependent". The Everyday Cognition questionnaire measures a person's capability to complete everyday tasks across various areas, including memory, language, visuospatial abilities, and executive functioning. The questionnaire is reliable and correlates well with other tests that assess daily and cognitive functions. For the study, only the memory and executive functioning subscales of the Everyday Cognition questionnaire were utilized. These subscales evaluate planning, organization, and divided attention.

To measure self-efficacy for memory, a modified version of the Chronic Disease Self-Efficacy Scales that included specific items related to MCI was used. The resulting 9-item Self-Efficacy in Mild Cognitive Impairment Scale focuses on memory and cognitive difficulties instead of general health conditions.[19]

To assess the quality of life, the Quality of Life in Alzheimer Disease instrument was used. It is a 13-item questionnaire designed for individuals with dementia, but has also been used for those with MCI and their care partners. It evaluates various aspects such as relationships, financial concerns, physical condition, mood, energy level, memory, daily functioning, and overall life quality. It uses a 4-point scale ranging from 1, which means "poor," to 4, which means "excellent".[20]

To measure mood, the Center for Epidemiologic Studies Depression Scale was used. It is a self-report questionnaire consisting of 20 items. The questionnaire uses a 3-point Likert-type response scale ranging from 0, which means "rarely or none of the time or less than one day", to 3, which means "most or all of the time or five to seven days".[21]

The State-Trait Anxiety Inventory, a 10-item rating scale modified from the original State-Trait Anxiety Inventory, was used to measure anxiety. This questionnaire was developed by the Resources for Enhancing Alzheimer's Caregiver Health project.[22]

The short version of the Zarit Burden Interview, which consists of 12 questions, was used to assess caregiver burden. This inventory measures the level of stress experienced by family caregivers related to the impact of the participant's disability on their lives.[23]