Université de Montréal

Influence du milieu d'évaluation
sur la réalisation de tâches liées à la préparation de repas
auprès de personnes âgées fragiles

par

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École de réadaptation

Faculté de médecine

Thèse présentée à la Faculté des études supérieures

en vue de l'obtention du grade de Philosophiæ Doctor (Ph.D.)

en sciences biomédicales

option réadaptation

Juin, 2012

Université de Montréal

Faculté des études supérieures

Cette thèse intitulée :

Influence du milieu d'évaluation
sur la réalisation de tâches liées à la préparation de repas
auprès de personnes âgées fragiles

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Résumé

Le but général de la thèse consiste à mieux connaître l'influence du milieu d'évaluation (domicile vs clinique) sur la réalisation de tâches liées à la préparation de repas auprès de personnes âgées fragiles. La thèse s'articule autour de trois objectifs spécifiques, dont les résultats sont présentés dans le cadre de cinq articles scientifiques.

Le premier objectif vise à faire état des connaissances relatives au concept de fragilité en ergothérapie et à l'influence du milieu d'évaluation auprès des personnes âgées fragiles. Dans un premier temps, une analyse critique d'écrits portant sur la fragilité a été effectuée. Les résultats (article 1) démontrent la pertinence du concept de fragilité en ergothérapie, en suggérant qu'une meilleure compréhension de ce concept puisse aider les ergothérapeutes à offrir aux personnes fragiles des soins et services mieux adaptés à leurs besoins. Dans un deuxième temps, une recension des études ayant comparé la réalisation d'activités de la vie domestique (AVD) entre les milieux d'évaluation a été réalisée. Les résultats (article 2) révèlent que les personnes âgées sans déficit cognitif important tendent à offrir une meilleure performance à domicile, plutôt qu'en milieu clinique, lors de la réalisation d'AVD. Quelques facteurs, tels que la familiarité avec l'environnement, contribueraient à expliquer cette différence entre les milieux d'évaluation. Cette recension critique suggère que des résultats similaires puissent être obtenus auprès de personnes âgées fragiles.

Le second objectif cherche à comparer la réalisation de tâches liées à la préparation de repas entre les milieux d'évaluation auprès de personnes âgées fragiles. Pour atteindre cet objectif, trente-sept personnes âgées répondant aux critères de fragilité (Fried et al., 2001) ont été évaluées en milieux clinique et domiciliaire suivant un devis contrebalancé au moyen du Assessment of Motor and Process Skills (AMPS) et du Performance Assessment of Self-Care Skills (PASS). Les résultats (articles 3, 4 et 5) concourent, dans l'ensemble, à démontrer une meilleure performance des personnes fragiles lorsqu'elles sont évaluées à domicile.

Le dernier objectif a pour but d'identifier les facteurs sociodémographiques, physiques, cognitifs, psychologiques et environnementaux susceptibles d'expliquer la différence entre les milieux d'évaluation. Les résultats de la thèse (articles 3, 4 et 5) tendent à démontrer que le déclin de certaines fonctions exécutives constitue un facteur prépondérant pour expliquer une meilleure performance à domicile. Nos analyses révèlent que d'autres facteurs cognitifs, sociodémographiques, psychologiques, physiques et environnementaux contribuent également, mais de façon moins importante, à la différence observée entre les milieux d'évaluation.

Les résultats de cette thèse peuvent aider les ergothérapeutes à mieux distinguer les personnes âgées fragiles susceptibles de présenter une performance différente selon le milieu dans lequel elles sont évaluées et conséquemment, pour qui une visite à domicile devrait être préconisée. Les connaissances générées par la thèse pourraient ultimement contribuer à offrir aux personnes âgées fragiles des services mieux adaptés à leurs besoins, tout en favorisant une gestion efficiente des ressources en matière de santé.

Mots-clés : Personnes âgées, fragilité, activité de la vie courante, environnement, évaluation, fonctions exécutives

Abstract

This thesis aims to advance the state of knowledge about the impact of assessment settings (home versus clinic) on meal preparation task performance in frail older adults. The thesis has three specific objectives and the results are presented in five articles.

The first specific objective aims to review current knowledge about the concept of frailty in occupational therapy and the impact of assessment settings in frail older adults. First, a critical review about frailty was conducted. The results (article 1) demonstrate that a better understanding of the concept of frailty may help occupational therapists provide health care and services better tailored to the specific needs of this population. Second, a review of studies comparing performance of instrumental activities of daily living (IADL) between assessment settings was performed. The results (article 2) reveal that older adults without significant cognitive impairments tend to perform better in IADL tasks when assessed at home. Some factors, such as familiarity with the environment, may explain this difference. Based on this review, similar results might be expected with frail elders.

The second specific objective aims to compare meal preparation task performance in home and clinical settings in a population of frail older adults. Thirty-seven frail older adults were thus assessed in home and clinical settings with the Assessment of Motor and Process Skills (AMPS) and the Performance Assessment of Self-Care Skills (PASS), using a counterbalanced design. The results (articles 3, 4, 5) globally demonstrate significantly better performance of participants when assessed at home.

The third specific objective aims to identify demographic, physical, cognitive, psychological and environmental factors that may explain differences between assessment settings. The results (articles 3, 4, 5) indicate that a better performance in the home setting was mostly related to a decline in certain executive functions. Other cognitive, demographic, psychological, physical and environmental factors also contribute to explain the differences between assessment settings but to a lesser extent.

Our findings may help occupational therapists identify frail older adults likely to present a different performance in the clinical setting and thus for whom home assessments would be advisable. Our findings could ultimately mean that frail clients are provided with services adapted to their needs, while ensuring an efficient allocation of health care resources.

Keywords : Frail older adults, activity of daily living, environment, assessment, executive functions

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ADL	Activity of Daily Living
AMPS	Assessment of Motor and Process Skills
ANOVA	Analyse of Variance
AVD	Activités de la vie domestique
CSSS	Centre de santé et de services sociaux
EF	Executive Functions
IADL	Instrumental Activity of Daily Living
IUGM	Institut universitaire de gériatrie de Montréal
MANOVA	Multivariate Analyse of Variance
MMSE	Mini Mental State Examination
OT	Occupational Therapy
PASS	Performance Assessment of Self-Care Skills

Aux personnes âgées ayant accepté de participer à l'étude, sans qui ce projet de recherche n'aurait pu être possible...

Remerciements

Ce n'est pas tant l'aide de nos amis qui nous aide que la confiance dans cette aide.

-Épicure

Je tiens d'abord à témoigner ma plus profonde reconnaissance à mes directrices de thèse, Louise Demers et Isabelle Gélinas, pour leur support indéfectible, leur très grande disponibilité malgré une charge de travail colossale ainsi que la confiance qu'elles m'ont témoigné au cours de ces dernières années. Leur attitude d'ouverture, couplée à des conseils avisés prodigués aux moments-clés, ont fait de la réalisation de cette thèse une expérience non seulement stimulante, mais fort agréable.

Je souhaite également transmettre mes plus sincères remerciements à Michelle Plante et Denise McCabe, avec qui il fut si agréable de travailler. J'ai été privilégiée d'avoir pu bénéficier tant de leur expertise clinique que de leurs qualités humaines au cours de la réalisation des différentes étapes de la thèse. Merci pour votre belle générosité et votre enthousiasme. Merci à Yvan Bergeron, Isabelle Ménard, Éric Simard et tous les collaborateurs de l'IUGM et du CSSS Bordeaux Cartierville et St-Laurent d'avoir pris le risque de s'investir dans le projet, malgré les incertitudes et les difficultés liées au recrutement. Sans vous, le projet de recherche n'aurait pu se concrétiser.

Merci à Lise Gagnon, qui a si généreusement accepté de continuer à me faire profiter de son expertise, en acceptant de collaborer au projet de recherche et en siégeant à titre de membre du jury dans le cadre de l'examen synthèse. Merci pour ta douceur, ton ouverture et la confiance que tu me témoignes depuis près de dix ans. Merci à François Béland pour m'avoir permis d'approfondir des connaissances en lien avec le concept de la fragilité et, conséquemment, transmis ce désir de poursuivre mes recherches dans ce domaine.

Je remercie également Margo Holm et Ketki Raina de m'avoir accueilli si généreusement à l'Université de Pittsburgh. La formation qu'elles m'ont offerte m'a permis d'acquérir les connaissances et les habiletés nécessaires à l'administration adéquate de leur outil de mesure. Merci également à Brett Berg pour sa disponibilité au cours du long processus de calibration des données AMPS.

Un merci tout particulier à Claudine Auger, de m'avoir permis de profiter de son expérience de doctorante et de son talent extraordinaire pour la recherche. Merci à Rossitza Nikolova de m'avoir insufflé le courage, en 2006, de me lancer dans la réalisation d'un doctorat à Montréal...

Merci à Michel et à notre fille, Flora, qui comprendra plus tard pourquoi ses parents sont si souvent devant un écran d'ordinateur...Merci à mes parents pour leur disponibilité et leur amour inconditionnel.

Merci aux professeurs de l'Université de Montréal et au personnel du centre de recherche de l'IUGM qui ont participé, de près ou de loin, à la réalisation du projet de recherche ainsi qu'à ma formation académique. Je remercie également les Instituts de recherche en santé du Canada, le Fonds de recherche en santé du Québec ainsi que la Fondation canadienne d'ergothérapie, dont le soutien financier a rendu possible la réalisation de cette thèse. Enfin, je tiens à remercier l'Ordre des ergothérapeutes du Québec pour avoir contribué à faire connaître, par le biais de la bourse Anne-Lang-Étienne, le projet de recherche auprès des cliniciens.

Enfin, merci à tous les participants pour leur généreuse - et ô combien appréciée- implication dans le projet de recherche....

Chapitre 1 Introduction

1.1 Problématique

Au Canada, les personnes âgées de 65 ans et plus constituaient 14,4% de la population en 2011 (Statistiques Canada, 2011) et cette proportion pourrait atteindre 25% en 2036 (Statistiques Canada, 2010). En lien avec le vieillissement de la population, on observe une augmentation de la fragilité, correspondant à un état de vulnérabilité caractérisé par une diminution des réserves physiologiques et de résistance aux stresseurs (Bergman et al., 2007; Fried et al., 2001). La fragilité est souvent associée à la présence de comorbidités et de difficultés liées à la réalisation d'activités de la vie courante (Fried, Ferrucci, Darer, Williamson, & Anderson, 2004), contribuant conséquemment à intensifier les besoins de cette population en matière de services et de soins de santé (Fried & Watson, 1998). Les personnes âgées fragiles constitueraient ainsi une proportion importante de la clientèle vue en milieu hospitalier, notamment au sein des principaux services d'évaluation et de réadaptation gériatriques (Constandiopoulos et al., 1999; Wells, Seabrook, Stolee, Borrie, & Knoefel, 2003).

Avant de réintégrer leur domicile suivant une hospitalisation, les personnes âgées fragiles sont souvent évaluées par des ergothérapeutes afin de déterminer leur capacité à réaliser certaines activités de la vie domestique (AVD). Les AVD renvoient à un ensemble de tâches importantes pour assurer l'autonomie et le bien-être de la personne dans la communauté, telle que celles liées à la préparation de repas (Gitlin, 2005; Lawton & Brody, 1969). L'évaluation de tâches liées la préparation de repas permet, par le biais d'outils fondés sur l'observation de la performance, d'apprécier l'effort déployé, les risques de chutes et de blessures ainsi que l'assistance requise lors de la réalisation de l'activité (Fisher & Jones, 2010; Gitlin, 2005; Holm & Rogers, 2008). Les observations réalisées aident ultimement à recommander les adaptations requises à domicile (aides techniques, réaménagement de l'environnement), à préciser les services à offrir au moment du congé de l'hôpital, voire même à déterminer le besoin d'orienter la personne vers un nouveau milieu de vie (Harris, James, & Snow, 2008; Mountain & Pighills, 2002).

Au Québec, à l'instar d'autres régions du monde, cette évaluation est généralement effectuée en milieu clinique (par ex. l'hôpital), essentiellement en raison de contraintes structurelles et financières. En effet, les coûts et le temps associés aux déplacements, ainsi que la réduction de la durée des hospitalisations, limiteraient les possibilités de réaliser cette évaluation à domicile (Lannin, Clemson, & McCluskey, 2011). Dans ce contexte, il est légitime de se demander si, chez les personnes âgées fragiles, la performance évaluée en milieu clinique correspond à celle observée au sein d'un milieu plus familier, comme le domicile. Il est ainsi possible que les personnes âgées fragiles puissent éprouver plus de difficultés à réaliser des activités complexes, telle que la préparation de repas, au sein du milieu clinique. En effet, certains auteurs rapportent que les personnes âgées fragiles tendraient à présenter un déclin de certaines fonctions exécutives (Morley, Haren, Rolland, & Kim, 2006; Patrick, Gaskovski, & Rexroth, 2002), lesquelles ont pour fonction de faciliter l'interaction de la personne avec son milieu, particulièrement dans des situations nouvelles et pour des activités complexes (Collette, 2004; Van der linden et al., 2000). Il est par ailleurs probable que d'autres facteurs sociodémographiques, physiques, psychologiques, cognitifs contribuent parallèlement à offrir une meilleure performance au sein de l'un ou l'autre des milieux d'évaluation.

Il apparaît ainsi crucial de savoir si la performance évaluée en milieu clinique concorde avec celle qui aurait pu être observée à domicile chez la population âgée fragile. En cas de disparité, il importe également d'identifier les facteurs susceptibles d'expliquer cette différence entre les milieux d'évaluation. Une meilleure connaissance de ces facteurs pourrait aider les ergothérapeutes à mieux identifier les caractéristiques de la clientèle âgée fragile susceptible de démontrer une performance différente selon le milieu d'évaluation, et conséquemment pour qui une évaluation à domicile devrait être préconisée. En somme, l'obtention de données probantes quant à l'influence du milieu d'évaluation auprès des personnes âgées fragiles pourrait ultimement aider à dispenser des services mieux adaptés à leurs besoins et favorables à leur maintien à domicile, tout en contribuant à une gestion efficiente des ressources en matière de santé.

1.2 But et objectifs de la thèse

Le but général de la thèse consiste à mieux connaître l'influence du milieu d'évaluation sur la réalisation de tâches liées à la préparation de repas auprès de personnes âgées fragiles.

Il se décline en trois objectifs spécifiques:

Le premier objectif vise à faire état des connaissances relatives au concept de fragilité en ergothérapie et à l'influence du milieu d'évaluation auprès des personnes âgées fragiles.

Le second objectif a pour but de comparer la réalisation de tâches liées à la préparation de repas entre les milieux d'évaluation clinique et domiciliaire auprès de personnes âgées fragiles.

Le dernier objectif cherche à identifier les facteurs sociodémographiques, physiques, cognitifs, psychologiques et environnementaux susceptibles d'expliquer la différence, s'il y a lieu, entre les milieux d'évaluation.

1.3 Modèle conceptuel

L'étude des relations existant entre les variables d'intérêt s'appuie sur le modèle conceptuel de la *Classification internationale du fonctionnement, du handicap et de la santé,* notamment en raison de la dialectique qu'il propose entre la personne et son milieu. Élaboré par l'Organisation mondiale de la Santé (2001), ce modèle du fonctionnement humain pose *l'état de fonctionnement* de la personne comme le résultat de l'interaction dynamique entre son problème de santé et les facteurs contextuels (environnementaux et personnels). Le problème de santé est qualifié de *déficience*, lorsqu'il renvoie à une atteinte des fonctions des systèmes organiques ou des structures anatomiques. Quant aux facteurs

contextuels, ils agissent comme des facilitateurs ou des obstacles, selon qu'ils favorisent ou entravent certains aspects du fonctionnement. Ces aspects du fonctionnement réfèrent à la *capacité* (réalisation de tâches dans un environnement standardisé) et à la *performance* (réalisation de tâches dans un environnement réel). D'une part, ce modèle laisse présager qu'un écart entre la réalisation de tâches en milieux clinique (*capacité*) et domiciliaire (*performance*) puisse s'expliquer par l'influence différente exercée par chacun des environnements. Le modèle suggère d'autre part que les caractéristiques de l'environnement clinique (*standard*) et domiciliaire (*réel*) puissent influencer différemment la réalisation de tâches liées à la préparation de repas (*capacité et performance*), selon les caractéristiques sociodémographiques *(facteurs personnels),* physiques, cognitives et psychologiques (*intégrité des fonctions organiques et structures anatomiques*) des personnes âgées fragiles. L'utilisation de ce modèle dans le cadre de cette thèse aide donc à mieux connaître l'influence (*habilitante et contraignante*) que peuvent exercer les milieux d'évaluation clinique et domiciliaire sur la réalisation de tâches liées à la préparation de repas, selon les caractéristiques sociodémographiques, physiques, cognitives et psychologiques des personnes âgées fragiles.

1.4. Méthodologie générale

La méthodologie utilisée dans le cadre de la thèse comprend un volet d'état des connaissances et un volet d'études empiriques. Le volet d'état des connaissances comporte une analyse critique de la littérature visant à démontrer l'utilité du concept de fragilité en ergothérapie. Le choix des articles utilisés dans le cadre de cette analyse critique découle, d'une part, de lectures identifiées par un groupe d'experts en matière de fragilité et, d'autre part, d'une recension d'études randomisées réalisées en ergothérapie auprès de personnes âgées fragiles. Le volet d'état des connaissances inclut également une recension des écrits visant à répertorier les études ayant comparé la réalisation d'AVD entre les milieux d'évaluation clinique et domiciliaire auprès des personnes âgées fragiles. Pour ce faire, une

méthodologie qui s'appuie sur la recherche d'études empiriques par l'interrogation des banques de données pertinentes a été privilégiée.

Le volet d'études empiriques repose sur un dispositif quasi-expérimental utilisant la méthodologie suivante: Trente-sept personnes âgées de 65 ans et plus, répondant aux critères de fragilité établis par Fried et al. (2001) et ne présentant pas de déficit cognitif important ont été recrutées. Les participants étaient invités à réaliser trois à quatre séances d'évaluation s'échelonnant sur environ 4 semaines. Lors de la première séance, des variables sociodémographiques, physiques, psychologiques et cognitives ont été colligées. Lors des 2 séances suivantes, les participants devaient réaliser des tâches ayant trait à la préparation de repas en milieux clinique et domiciliaire, suivant un devis contrebalancé. Leur performance a été filmée, puis évaluée au moyen du *Assessment of motor and process skills* (AMPS) et du *Performance Assessment of Self-Care Skills* (PASS) par une ergothérapeute aveugle aux hypothèses spécifiques du projet de recherche. Des facteurs environnementaux (degré de similitude entre les milieux clinique et domiciliaire) ont également été mesurés. Enfin, une dernière séance avait lieu lorsque les évaluations (cognitives et psychologiques) n'avaient pu être précédemment complétées. Des analyses (ANOVA, MANOVA) ont été réalisées afin de comparer la réalisation de tâches liées à la préparation de repas en milieux clinique et domiciliaire. Deux stratégies ont été utilisées en vue d'identifier les facteurs susceptibles d'expliquer la différence de performance entre les milieux d'évaluation. D'une part, afin de vérifier l'hypothèse selon laquelle une altération des fonctions exécutives constituait l'un de ces principaux facteurs, les participants ont été assignés à l'un des deux groupes suivants: Groupe 1 = Fonctions exécutives préservées; Groupe 2 = Fonctions exécutives altérées. Au sein de chacun des groupes formés, le dispositif contrebalancé a été appliqué. D'autre part, des analyses de corrélation et de régression ont été conduites afin de faire ressortir les facteurs physiques, cognitives, psychologiques et environnementaux susceptibles d'expliquer la différence de performance entre les milieux d'évaluation.

De plus amples détails sur la méthodologie utilisée sont présentés au sein des articles constituant le corps de la thèse.

1.5 Organisation de la thèse

La thèse est constituée de 8 chapitres, incluant ce chapitre d'introduction.

Les chapitres 2 et 3 présentent, sous la forme de deux articles scientifiques, l'état des connaissances associé au premier objectif spécifique de la thèse. Le chapitre 2 se compose d'une analyse critique d'écrits portant sur la fragilité. Il s'agit du manuscrit "*Is frailty a useful concept for occupational therapists?"* dont une version abrégée a été acceptée pour publication dans la revue *Australian Occupational Therapy Journal*. La première partie de ce chapitre définit le concept de fragilité en exposant les principaux modèles et mesures qui y sont associés. La seconde partie résume les résultats d'études randomisées ayant évalué l'impact d'interventions de prévention et de réadaptation en ergothérapie auprès de personnes âgées fragiles.

Le chapitre 3 présente une recension critique des études ayant comparé la réalisation d'AVD entre les milieux d'évaluation (clinique vs domicile). Il s'agit de l'article "*Home and clinical assessments of instrumental activities of daily living: what could explain the difference between settings in frail older adults, if any*?" paru dans la revue *British Journal of Occupational Therapy*. La première partie de ce chapitre présente les résultats découlant des études menées auprès d'adultes, puis celles spécifiquement conduites auprès de personnes âgées. La seconde partie expose les facteurs susceptibles d'expliquer la différence, s'il y a lieu, entre les milieux d'évaluation, en insistant davantage sur les études menées auprès des personnes âgées.

Les chapitres 4 à 6 présentent, sous la forme de trois articles, les méthodologies et les résultats associés aux objectifs spécifiques 2 et 3 de la thèse. Le chapitre 4 se compose de l'article intitulé *"Impact of familiar and unfamiliar settings on cooking task assessments*

in frail older adults with poor and preserved executive functions", publié dans la revue *International Psychogeriatrics*. La première partie de ce chapitre compare la réalisation de tâches liées à la préparation de repas entre les milieux clinique et domiciliaire pour l'ensemble des participants âgés fragiles au moyen de l'outil d'évaluation AMPS (Assesment of Motor and Process Skills). La seconde partie de ce chapitre détermine si une altération des fonctions exécutives peut contribuer à expliquer la différence entre les milieux d'évaluation.

Le chapitre 5 présente le manuscrit qui s'intitule "*Factors that may explain differences between home and clinic meal preparation task assessments in frail elderly"* publié dans la revue *International Journal of Rehabilitation Research.* La première partie de ce chapitre compare la réalisation de tâches liées à la préparation de repas entre les milieux clinique et domiciliaire pour l'ensemble des participants âgés fragiles au moyen de l'outil d'évaluation PASS (Performance Assessment of Self-Care Skills). La seconde partie de ce chapitre identifie les facteurs (sociodémographiques, physiques, cognitifs, psychologiques, environnementaux) susceptibles d'expliquer la différence entre les milieux d'évaluation.

Le chapitre 6 se compose du manuscrit qui a pour titre *"Cooking task assessment in frail older adults: who performed better at home and in the clinic?"* soumis au *Scandinavian Journal of Occupational Therapy*. La première partie de ce chapitre compare la réalisation de tâches liées à la préparation de repas en milieux clinique et domiciliaire au moyen de l'outil d'évaluation AMPS en s'intéressant cette fois à la performance de chacun des participants âgés fragiles, plutôt qu'à l'ensemble du groupe. La seconde partie de ce chapitre identifie les facteurs (sociodémographiques, physiques, cognitifs, psychologiques, environnementaux) associés à une meilleure performance au sein de chacun des milieux.

Le chapitre 7 propose une discussion générale comportant une synthèse des principaux résultats, des aspects novateurs de la thèse, des limites de nos travaux et de leurs retombées potentielles.

Le chapitre 8 offre une conclusion résumant les éléments clés de la thèse et suggérant quelques pistes à investiguer pour de futures recherches.

Chapitre 2   Is frailty a useful concept for occupational therapists? (Article 1)

Une version abrégée du texte constituant ce chapitre a été soumise à la revue *Australian Occupational Therapy Journal* le 23 juin 2011 et acceptée pour publication le 11 juin 2012, sous le titre *"Frailty: a concept underutilised by occupational therapists"*. L'étudiante a rédigé l'article sous la supervision de ses directrices, Louise Demers, Ph.D., et Isabelle Gélinas, Ph.D., qui sont respectivement deuxième et troisième auteures. Le format de présentation des références de ce chapitre est conforme aux règles d'édition de la revue.

2.1 Abstract

The concept of frailty may be important for occupational therapists as they will be increasingly called upon to work with frail older clients. However, in view of the debate about how to define and measure frailty, the usefulness of this concept may be questioned. Moreover, are occupational therapy (OT) interventions currently offered to frail elders really appropriate? This paper aims to show how a better understanding of the concept of frailty may improve health care and services provided by occupational therapists to this population. *Method*: Relevant literature on frailty was selected from a list of articles suggested by a group of experts. Those articles were then supplemented by a review of high quality studies pertaining to OT interventions with frail older adults. *Results*: Frailty is characterized by a sharp decline in an individual's functioning following a minor "stress". Potentially, it is thus a reversible process, which suggests that the frail elderly could benefit from occupational therapy prevention and rehabilitation interventions. *Discussion & Conclusion*: Frailty may represent a comprehensive and innovative concept in helping occupational therapists tailor their interventions to the specific needs of this population. Recommendations for future research are addressed.

Key Words

Frail older adults, Occupational therapy, Prevention, Rehabilitation

RUNNING HEAD: Frailty and occupational therapy

2.2 Introduction

Over the last decade, the number of studies focusing on the frail elderly has soared. The new and growing interest in this population stems from the significant challenge that it will pose for our health care system in the coming years. The number of frail elderly is likely to increase as the population ages (Fried & Watson, 1998). In addition, since frail elders are at risk of falls, hospitalization and disabilities, they are likely to require more health care and services (Bergman et al., 2004; Fried & Watson, 1998). Hence occupational therapists will increasingly be called upon to work with this population in the continuum of health care and services for the elderly.

Despite this increased attention in recent years, the usefulness of the concept of frailty may be questioned. Many occupational therapists may be reluctant to refer to frailty since there is still much debate about the many ways to define and measure it (Hogan, MacKnight, & Bergman, 2003). In other words, the advantage of using a "frailty-based" approach over a "diagnostic-based" approach remains unclear. Moreover, whether those frail older adults are being offered occupational therapy (OT) interventions that are really appropriate to their complex needs may be questioned. Frailty may yet represent a comprehensive and innovative concept in helping occupational therapists improve the quality of health care and services they provide to this population of older patients.

This paper first aims to show the usefulness of the concept of frailty for occupational therapy, based on the main theories of frailty and robust OT interventions conducted with this population. The article concludes on how better understanding and measuring frailty may improve health care and services provided by occupational therapists. Recommendations for future research are also addressed.

2.3 Method

Relevant literature on the main theories of frailty were selected from a list of ten articles suggested by a group of experts (McGill University - Université de Montréal Research Group on Frailty and Aging). To document robust OT interventions conducted with frail elderly, literature searches were performed in three databases (Medline, Ageline, Embase). For each database, a core set of medical subject headings was identified (see Table 2-1, page 38). To capture any further relevant references, titles and abstracts were also searched with the following natural terms: (frail$ OR vulnerable OR homebound) AND (prevention OR rehabilitation OR intervention) AND (occupational therap$). The searches were limited to articles in English or French published between 1996 through 2011. Reference lists from the selected articles were screened for potential relevant additional publications that were not identified in the original search. Articles were selected for inclusion if they: 1) involved adults aged 65 or older considered at risk for adverse outcomes by the authors of the particular article; 2) included OT prevention or rehabilitation interventions; and 3) considered clinically relevant outcomes, such as disability, fall, hospitalization, institutionalization or death. Studies that mainly focused on elderly patients with a disease such as stroke were excluded. Only randomized trials were considered.

2.4. Results

2.4.1. Main theories of frailty

Over the last two decades, the work done by Fried and her colleagues (Fried, Ferrucci, Darer, Williamson, & Anderson, 2004; Fried et al., 2001; Fried & Watson, 1998) and Rockwood and his colleagues (Rockwood, Fox, Stolee, Robertson, & Beattie, 1994;

Rockwood, Mitnitski, & MacKnight, 2002) has led to the emergence of two main conceptions of frailty.

Fried and colleagues view frailty as a biological syndrome characterized by reduced reserves and resistance to stressors that stem from a decline in different physiological systems and increase vulnerability. This process is seen as being primarily triggered by age-related changes in the neuroendocrine, immune and neuromuscular systems. All of these changes follow a common pathway in contributing to sarcopenia (loss of muscle mass), which in turn leads to more losses (in grip strength, walking speed, physical activity, energy and body weight). This cycle of frailty is sustained by various factors such as illness, physical inactivity, undernutrition, medication, immobilization and fear of falling as well as emotional and physical stressors (surgery, dehydration, hospitalization). When the losses pass the point where the person can compensate for them, the result is a loss of stability that can lead to adverse outcomes (e.g., falls, disability) which may also contribute to perpetuating the cycle. According to Fried and colleagues, frailty may be viewed as a continuum, from the initial stage (pre-frailty) at one end to the terminal stage (failure to thrive) at the other. The syndrome is characterized throughout this continuum using performance-based and self-report measures of the following symptoms: fatigue, weight loss, low energy, slower walking speed and reduced grip strength. However, the use of measures mainly based on a decline of physical functions to capture such a complex concept may be perceived as reductionist (Ferrucci, Mahallati & Simonsick, 2006; Rockwood, Hogan & MacKnight, 2000). Moreover, whether this measurement approach for frailty is specific enough to avoid incorrectly identifying as frail individuals who are not frail had been questioned (Bergman et al., 2007).

Rockwood and colleagues believe that frailty is a multidimensional syndrome characterized by a loss of reserves and increased vulnerability. Unlike Fried and colleagues, they see frailty as an accumulation of age-related deficits, independently of their nature and exact number. In their dynamic model frailty is depicted as a precarious equilibrium

between resources (e.g., help from a caregiver) and deficits (e.g., disability), on which a small disruption can have a major impact (e.g., institutionalization). Rockwood's model differs from Fried's model in suggesting that different pathways can lead to similar degrees of frailty. Rockwood et al. (Rockwood et al., 2005; Rockwood et al., 1999) propose tools to assess frailty based on a combination of indicators that are not included in Fried's measure, such as a loss of autonomy in activities of daily living, incontinence or onset of cognitive symptoms. However, one of the main criticisms of this model is whether frailty is in fact perceived as a combination of diseases and disabilities. Moreover, some authors questioned whether those measures are sensitive enough to detect the early stages of frailty (as reported by Jones, Song & Rockwood, 2004).

The main differences between Fried's and Rockwood's conceptions and measures of frailty are summarized in Table 2-2 (page 39). Although these differ in some respects, they both recognize the frail elderly as a more vulnerable population at greater risk of disability and other adverse outcomes such as hospitalization, institutionalization and death. General agreement about the inherent state of vulnerability in the frail population led in recent years to defining frailty as "increased vulnerability to stressors due to impairments in multiple, inter-related systems that lead to decline in homeostatic reserve and resiliency" (Bergman et al., 2007, p. 731).

A better understanding of the "vulnerability" as a core feature of frailty could help occupational therapists distinguish better between the frail and non-frail elderly. First, the frail differ from the non-frail elderly in the speed at which their physical, cognitive and functional performance declines (Ferrucci et al., 2002). This more rapid decline in performance in the frail elderly could be influenced by biological, behavioral and environmental factors that deplete the person's reserves (Bergman et al., 2007; Kuh, 2007). As a consequence, frail individuals are more likely to have difficulty coping with minor stressors (e.g. change in temperature) than the non-frail elderly, who compensate for them more easily (Bergman et al., 2004). Second, frail individuals also differ from the non-frail

in the type of stressor that leads to disability (Ferrucci et al., 2002; Ferrucci et al., 1996). While disability in the non-frail most often results from major stressors (e.g. stroke, amputation), disability in frail individuals is more likely to occur following minor event (e.g. change in medication, bronchitis) (Ferrucci et al., 1996; Campbell & Buchner, 1997). In other words, for frail individuals even a minor stress may be sufficient to push them over the threshold leading to disability. Thus considering the concept of frailty would help occupational therapists better identify the elderly at higher risk of disability and other adverse outcomes in relation to minor stressors.

Despite this vulnerability, a growing number of studies recognize that, to some extent, frailty could be an reversible process (Fried & Watson, 1998; Bergman et al., 2004). The (at least partly) reversible nature of frailty suggests that individuals showing a more rapid decline in their performance and higher risk of developing disabilities could benefit from geriatric prevention and rehabilitation programs, especially ones involving occupational therapists.

2.4.2. Studies in occupational therapy conducted with frail older adults

The search strategy yielded 22 potentially relevant articles. A manual search of the reference lists of the selected articles resulted in three additional studies. Five of the articles retrieved met the inclusion criteria and were retained.

Five randomized studies (Close et al., 1999; Mann et al., 1999; Gitlin et al., 2006; Gitlin et al., 2009; Hendricks et al., 2008) assessed the impact of OT prevention and rehabilitation programs on disability and other adverse outcomes in frail older adults. Close et al. (1999) (n=397) demonstrated that a fall prevention program combining medical and OT assessments and interventions can reduce the number of falls, risk of falling, hospital admissions and functional decline at 12-month follow-up. Participants were community-dwelling older adults with and without cognitive impairments who had been previously admitted to an emergency department after a fall. During a single home visit, the

occupational therapist evaluated functional independence and environmental hazards and then provided minor equipment, gave advice about home modifications (e.g., remove loose rugs) and made referrals to relevant health services. The study conducted by Mann et al. (1999) (n=104) showed the effect of home-based rehabilitation programs on slowing functional decline in a population of frail older adults who lived at home, presented no significant cognitive impairments and reported difficulties with at least one activity of daily living. This 18-month program included teaching the use of assistive devices and environmental modifications tailored to the specific needs of the participants through visits every 6 months by occupational therapists. More recently, the study (n=319) conducted by Gitlin et al. (2006, 2009) showed that a program targeting risk factors related to falls and disabilities reduced difficulties with activities of daily living and mobility in a frail population. The participants lived at home, showed no significant cognitive impairments and reported difficulties with one or more activities of daily living. The home-based program included training in the use of cognitive, behavioral and environmental strategies (e.g., problem-solving, energy conservation, grab bars). The intervention involved regular contacts with an occupational therapist over a 12-month period. Muscle strengthening exercises and fall recovery techniques were also provided by a physical therapist. The program proved to be effective in reducing the mortality rate in the two years following the intervention, particularly with a moderately vulnerable population.

However, contrasting results were obtained by Hendriks et al. (2008). Those authors followed a methodology similar to one described by Close et al., except that they included in the study only older adults without cognitive impairments. According to the authors, the limited efficacy of the interventions was partly attributable to a low or moderate rate of participants' compliance with recommendations.

2.4. Discussion & Conclusion

This article stresses the importance of the concept of frailty in helping occupational therapists understand why some elders are more likely to suffer a significant loss of autonomy or need longer hospitalization after a minor event. Better knowledge about frailty could also mean that occupational therapists can tailor their interventions to the specific and complex needs of this population. For example, earlier identification of frailty would enable occupational therapists to intervene with clients likely to benefit from prevention programs. Since frailty sets in gradually, occupational therapists could target behavioral and environmental risk factors through multidimensional interventions, such as fall prevention programs, before severe disabilities develop. Also, early identification of frail individuals could help target those likely to benefit from rehabilitation services and optimize the residual capacities of those individuals whose condition is still reversible. Given the major impacts that minor changes can have on the frail elderly, it is expected that environmental modifications adapted to their particular needs or a longer rehabilitation phase could be sufficient in some cases to allow them to remain at home.

Evidence-based studies reviewed suggest that most prevention and rehabilitation interventions involving occupational therapy could help to slow the disability process and reduce the risk of adverse outcomes, especially in a moderate stage of frailty. These positive outcomes are consistent with the results of three systematic reviews (Beswick et al., 2008; Daniels, van Rossum, de Witte, Kempen & van den Heuvel, 2008; Stuck, Egger, Hammer, Minder & Beck, 2002). Beswick et al. (2008) found that complex interventions (e.g., fall prevention programs) had a beneficial effect on functional decline, the number of relocations and hospitalization rates in the elderly, including those considered frail. According to Daniels et al. (2008) and Stuck et al. (2002), to be effective such interventions should include a multidimensional and personalized program given over a long period of time that targets moderately frail older adults. This stresses the need for more high quality

OT studies based on well-defined, sensitive and specific measures of frailty. However, our results suggest that future studies should pay more attention to the main challenges that may compromise their effectiveness (such as low compliance), and develop innovative strategies to overcome them.

Despite the strong evidence presented by the high quality studies reviewed, occupational therapists may also find it difficult to incorporate such evidence in their clinical practice. First, interventions described in the studies reviewed were home-based programs, which may not be applicable in clinical settings. Finally, most studies reviewed were conducted with a relatively cognitively intact population. Further research is thus needed to explore: 1) if those OT interventions could be implemented in clinical settings (day hospital or day center); and 2) which prevention and rehabilitation interventions may be most efficient with frail older adults with cognitive impairments.

Occupational therapists may also find health care authorities reluctant to invest financial resources in prevention and rehabilitation programs that may have modest but clinically meaningful impacts on frail elders' autonomy. Despite the investment those OT interventions required (US$942 per person, as reported by Jutkowitz et al., 2012), some studies concluded that such programs are cost-effective, in view of their positive outcomes on falls, hospitalization, institutionalization and mortality (Jutkowitz et al., 2012; Mann et al, 1999; Salkeld et al., 2000). Even if more cost-effectiveness studies are still required, increased funding allocated to such programs may yet be worthwhile on a long-term basis, while potentially improving the quality of life of frail elders.

In conclusion, this article stresses the importance for occupational therapists of considering the concept as well as relevant measures of frailty in their researches and clinical practice. In this regard OT could complement and improve existing frailty measures. For example, assessing the strategies used by the elderly to compensate for their losses could help to identify individuals at risk of disability, since it may reflect this precarious equilibrium that is typical of frailty. In addition, measuring a subtle but

clinically meaningful improvement after an OT intervention could show the reversible nature of frailty. Further research, however, is needed to assess which tools used in OT could increase the validity of existing measures of frailty. In the long run, the development of valid frailty measures could help to better identify this population and respond more appropriately to its specific needs, especially in regard to occupational therapy care and services.

2.6 Acknowledgements

2.7 References

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Table 2-1 Search strategy: medical subject headings used in three data bases

Medline

(Frail elderly OR Homebound persons OR Vulnerable population) (Treatment outcome OR Rehabilitation OR Accident prevention) AND occupational therapy

Ageline

(Frail elderly OR Housebound) AND (Treatment outcome OR Rehabilitation OR Accident prevention) AND occupational therapy

Embase

(Frail elderly OR vulnerable population OR Homebound patient) AND (Treatment outcome OR Rehabilitation OR Accident prevention) AND occupational therapy

Table 2-2   Main differences between Fried's and Rockwood's conceptions and measures of frailty

	Fried et al.	Rockwood et al.
Models	Model based on a hypothesized "cycle" of frailty, a potentially adverse downward "spiral" of energetics	Model based on accumulation of age-related deficits
	A physiopathological pathway underlying frailty is hypothesized	No specific pathway underlying frailty is hypothesized
Measures	Variables are highly specified[1]	Variables are hardly specified[1]
	At least 3 criteria out of 5: - weakness (reduced grip strength) - slowness (reduced walking speed) - poor endurance and energy - low physical activity level - weight loss	No exact number of deficits
	Comorbidity (e.g. depression) and disease (e.g., Parkinson) are not included	Comorbidity (e.g., depression) and disease (e.g., Parkinson) may be included

[1] As mentioned by Rockwood (2011). Canadian Association on Gerontology Annual Conference. Keynote presentation "Frailty: two perspectives on clinical and scientific challenges".

Chapitre 3   Home and clinical assessments of instrumental activities of daily living: what could explain the difference between settings in frail older adults, if any? (Article 2)

Le texte de ce chapitre a été soumis à la revue *British Journal of Occupational Therapy* le 3 septembre 2008, accepté le 19 janvier 2009 et publié en août 2009, sous le titre *Home and clinical assessments of instrumental activities of daily living: what could explain the difference between settings in frail older adults, if any?*. L'étudiante a rédigé l'article sous la supervision de ses directrices, Louise Demers, Ph.D., et Isabelle Gélinas, Ph.D., qui sont respectivement deuxième et troisième auteures. Le contenu a fait l'objet d'une présentation par affiche dans le cadre de conférences scientifiques nationales et internationales, soient le Congrès de l'Association canadienne des ergothérapeutes à Ottawa (Ontario) (Provencher, Demers & Gélinas, 2009a) et le XIXe Congrès International de Gérontologie et de Gériatrie (IAGG) à Paris (France) (Provencher, Demers & Gélinas, 2009b). L'article est reproduit avec l'autorisation de *British Journal of Occupational Therapy*. Le format de présentation des références de ce chapitre est conforme aux règles d'édition de la revue.

Référence: "Home and clinical assessments of instrumental activities of daily living: what could explain the difference between settings in frail older adults, if any?" by Véronique Provencher, Louise Demers and Isabelle Gélinas, British Journal of Occupational Therapy, 72 (8), 339-348. Copyright © 2009 College of Occupational Therapists. Reprinted with the permission of College of Occupational Therapists.

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3.1 Abstract

Background: Older patients are usually assessed by occupational therapists in hospital before going home. However, for many frail older adults, this assessment in an unfamiliar environment might not be as representative of their functional abilities as an assessment at home. The aim of this literature review was to determine if differences exist between home and clinical instrumental activities of daily living (IADL) assessments of frail older adults and identify factors that might explain those differences, if any. **Method:** The sources of the review data were Medline, CINAHL, AMED, PsycINFO, Embase and Current Content from 1988 to 2008. As few relevant studies concerning frail people were found, the search was extended to mixed-age and older adult populations. Ten articles were retained. **Main findings:** The results suggest differences in IADL assessment between settings for older adults without dementia. Some factors, such as familiarity with the environment and coping skills, might explain those differences. Based on this review, similar results might be expected with frail older people. **Implications for practice:** Given the dearth of literature on this topic, further research is needed to compare home and clinical assessments and measure relevant factors in a frail population. Helping occupational therapists to identify frail patients, who may show different abilities in unfamiliar settings, could mean more appropriate services after discharge from hospital.

3.2 Introduction

In Europe, people aged 65 years and over make up nearly 17% of the population and this percentage is expected to increase in the coming years (European Commission 2007). Ageing is accompanied by an increased risk of frailty, defined as vulnerability due to a reduction in physiological reserves and resistance to stressors (Fried et al 2001, Rockwood et al 2005). More specifically, frailty has been found to lead to decreased physical capacities (Fried et al 2001) and sometimes a sensory and /or cognitive decline (Strawbridge et al 1998, Puts et al 2005). Some studies also show an association between frailty and some psychological characteristics, such as anxious and depressive symptoms (Tinetti et al 1995, Studenski et al 2004). Others report that frailty is correlated with some sociodemographic characteristics, such as older age and less schooling (Béland et al 1998, Fried et al 2001). These characteristics are often accompanied by comorbidities (such as vascular, cardiac, renal, pulmonary and osteoarticular problems) and functional decline, which increase the health care needs of frail older adults (Fried et al 2004). Hence, frail older adults make up a large percentage of patients seen in hospitals (Gravelle et al 2007).

In the past few years, health policies have encouraged older adults to return home after hospitalisation (Department of Health 1998, 2000). Before going home, however, frail older adults must be assessed to determine their ability to do some activities that are usually familiar, significant and necessary if they are to remain at home, such as those involved in instrumental activities of daily living (IADL). IADL are defined as 'multi-step activities that are complex to perform and which require the use of objects external to the individual' (Gitlin 2005, p227). Those activities refer to a set of tasks essential to independent community living (Lawton and Brody 1969), which are concerned with a person's ability to cope with his or her environment (Katz 1983) (for example, preparing meals and using the phone). Even if IADL assessment can be self-reported (Rogers et al 2003), it often consists of observing the person to ascertain if he or she does these activities efficiently,

independently and safely in order to determine the home care required (Gitlin 2005). This formal assessment by an occupational therapist is often done at the hospital, because a home visit is known to require time and financial resources (Mountain and Pighills 2002).

Frail older adults are known to present limited coping skills, however, as even minimal environmental challenges may have a huge impact on their functional abilities (Ferrucci et al 2003). As a consequence, this assessment conducted in a clinical setting may not be representative of their true abilities at home, especially for tasks related to IADL. Compared with simpler activities of daily living (ADL), IADL represent activities judged as particularly sensitive to environmental changes (Raina et al 2007) and with which frail older adults tend to have more difficulty (Fried et al 2001). Thus it is of interest to know if there is a difference between IADL performance assessed in clinical and home settings in this population, based on clinical and economic reasons. First, frail older adults are at risk of falling, malnutrition and hospitalisation (Vellas et al 2000), which is why it is important that the services provided upon discharge from hospital are the services that are really needed. Overestimating their abilities in a hospital setting could lead to insufficient services to meet their needs. Second, given the current dearth of resources (Aiken et al 2002) and the growing needs of an expanding frail population (Department of Health 2003), it is vital to allocate services efficiently. Under estimating frail older adults' abilities in a hospital setting could result in unnecessary services, creating substantial additional costs.

In this context, a better understanding of the factors that might explain this difference between assessment settings could help to develop a profile of frail older adults for whom this difference might be large enough to warrant doing an assessment at home, because it is the setting in which they will be functioning. Such knowledge could ultimately mean that these clients are provided with services adapted to their needs, fostering their ability to live independently at home while minimising the cost of delivering inappropriate services. Therefore, the aim of this literature review was to determine if there was a

difference between settings in the assessment of frail older adults' performance of IADL and to identify the factors that might explain this difference, if any, in this population.

3.3 Method

To achieve these objectives, the literature review aimed first to identify studies that compared the IADL assessment of frail older adults in clinical and home settings. The Medline (1988-2008), CINAHL (1982-2008), AMED (1985-2008), PsycINFO (1985-2008), Embase (1988-2008) and Current Content (1993-2008) databases were searched, using the key words: (familiar or home) AND (clinic or hospital) AND assessment AND (activity of daily living or functional). These key words were also combined with 'frail' AND 'elderly or older adults or aged'. The search was restricted to articles in English published between 1988 and 2008. The studies retained had to meet the following criteria: 1. Relate to assessments based on direct observation (that is, assessment of an activity done in real time); 2. Include the assessment of at least one indoor IADL performed at home and in clinical setting (for example, hospital, clinic or day centre). Studies aimed at measuring the effectiveness of an intervention or comparing one instrument with another to determine its predictive validity were excluded. Since this search did not return any relevant studies, the search was expanded to older adults and mixed-age populations because they share some characteristics (such as cognitive impairments, chronic conditions or advanced age) with frail people. The lists of references in the pertinent articles were also consulted to identify relevant studies prior to the period used in the database search.

The search identified 10 studies (published between 1979 and 2007) that met the aforementioned inclusion and exclusion criteria. All 10 were critically appraised, highlighting the strengths and weaknesses of the study, and included in the review. Those articles were then supplemented by a literature search about frailty. This last step aimed to determine if the results obtained from the review of the 10 articles might apply to frail older adults.

The data analysis consisted, first, of extracting, from the selected articles, the results indicating the presence (or absence) of a difference between settings. Then potential determining factors that might influence IADL assessments between settings were identified. Those that were measured, analysed or explicitly suggested as such by the authors of the studies were considered.

3.4 Results and discussion

The description of the results and discussion relating to each of the objectives is divided into two parts. The first part summarises the results from the reviewed studies (see Table 3-1, page 65-66) that compared IADL performance between settings, focusing first on those involving mixed-age populations and then on those conducted specifically with older adults. The second part describes the factors that might have a different impact on IADL performance in clinical and home assessment settings, with greater emphasis on these extracts from studies with older adults. The section also addresses how the factors drawn from the literature review might apply to frail older adults.

3.4.1. Studies conducted with mixed-age populations

Two studies published in the late 1970s noted a tendency in recently hospitalised patients to show better abilities when doing certain IADL in a hospital setting. In the study by Sheikh et al (1979), 73 participants with disabilities of varying aetiologies (stroke, arthritis, multiple sclerosis and postoperative status) were assessed in the hospital then at home within the same week. The results showed an advantage of the hospital setting for overall activities measured (t = 0.575, $p < 0.05$), especially for the only IADL task assessed, which was making tea. In the study by Haworth and Hollings (1979), patients with rheumatoid arthritis (n = 38) were assessed in the hospital setting then at home within 10 days. The results showed significantly better performances ($p < 0.05$) in a hospital

setting for some IADL activities (housekeeping and laundry) whereas no difference was found for others (for example, managing one's finances). Thus these studies showed that some individuals seem more likely to perform better in a hospital setting, particularly when assessed for certain IADL. However, the psychometric properties of the instruments used in these studies are not established, which casts doubt on the validity of the results.

Different results were obtained using instruments with established psychometric properties in more recent studies with community-dwelling individuals with brain damage (dementia, stroke and traumatic brain injury [TBI]). With respect to dementia (for example, Alzheimer's disease), the participants (n = 19) in the study by Nygård et al (1994) were assessed using the Assessment of Motor and Process Skills (AMPS) in a clinical setting and then at home within a few days. The AMPS provides an assessment of overall performance in familiar and significant IADL, while assessing the underlying motor and process skills. Process skills refer to the abilities to organise and adapt a series of actions to perform the activity effortlessly, efficiently, independently and safely (Fisher 2003). The results did not show any significant differences between the two settings for process skills, either statistical (t (18) = 1.35; p = 0.19) or clinical (score ranging from 0.47 clinical to 0.60 at home, where a score below 1.0 for process skills indicates a need for assistance to live in the community [Fisher 2003]). Similar results were obtained for the measure of motor skills.

In the study by Hoppes et al (2003), participants with dementia (n = 12) were assessed in three settings with a varying degree of familiarity (home, day centre and university). The measures were taken in random order in each of these settings using the Structured Assessment of Independent Living Skills (SAILS). This structured assessment comprises 50 items, five of which relate to IADL (using a phone book, dialling a phone number, understanding a medication label, opening a medication container and following a simple recipe). Like the study by Nygård et al (1994), this study did not find any significant differences between the assessment settings with regard to the performance of these IADL

(F (2.20): 1.37; p = 0.28). In short, these studies did not show any tangible effect of the assessment setting on the performance of complex IADL in populations with dementia.

Two studies conducted mainly with individuals who had a stroke or TBI showed that the participants seemed to perform better in the home environment when assessed for IADL. The participants with brain damage (left and right stroke) in the study by Goldstein and Robins (1998) (n = 18) showed better process and motor skills at home according to assessments done with the AMPS. This difference was statistically significant for motor skills (p < 0.05) but not for process skills, even though higher scores were obtained at home. Based on descriptive analyses, the results show that a quarter of the participants had a clinically better performance at home.

As for the results obtained by Darragh et al (1998), they show a marked difference in the impact of the assessment setting, with better results at home. In this study, 20 adults with moderate to severe brain damage of varying aetiologies (TBI, stroke and tumour) were assessed using a counter - balanced design. This means that half of the participants were assessed first in a familiar environment and the other half in an unfamiliar environment to reduce learning bias. The measures of process skills show a statistically (t (19): -4.28, p = 0.03) and clinically (mean score rising from 0.72 in the hospital to 1.84 at home) significant difference between the settings for the sample as a whole. The descriptive data show clinically better process skills at home for nearly one-third of the participants.

Overall, although the sample sizes limit the generalisability of the results, the analyses done in these more recent studies suggest that some people would perform better at home when assessed for IADL. However, none of the studies discussed above specifically examined older adults without significant cognitive deficits, thus limiting the generalisability of their results to this population.

3.4.2. Studies conducted specifically with older adults

The studies conducted with community-dwelling older adults without significant cognitive deficits tend to report stronger evidence of a better performance in a home assessment setting. For example, in a study of older adults (n = 97) presenting vision problems of varying severity, West et al (1997) found a moderate association between home and clinical setting when assessing for ability to use a phone, as measured by dialling a number (r = 0.60) and looking in a phone book (r = 0.62). The results pertaining to those IADL tasks reveal that, respectively, 56% and 55% of the participants less visually impaired obtained better scores when assessed at home. This proportion increased to 60% and 62% for those more visually impaired. Those results thus show an advantage of home assessment for more than half of the participants with visual impairments for the only IADL tasks assessed in this study.

Similar results were obtained in studies assessing several IADL tasks. In the study by Park et al (1994), 20 older adults, most of whom presented with some physical impairments (orthopaedic, osteoarticular, cardiovascular, vision and renal problems) were assessed with the AMPS. The participants were asked to do two IADL (usually at least one related to meal preparation) at home and at the hospital using a counterbalanced design. The results showed that most of the participants had better process skills at home, which were both statistically (t (19) = 6.07; p<0.01) and clinically (mean score: 0.99 in hospital and 1.41 at home) significant, and that this difference was particularly marked in half of them. However, these results were obtained with a limited number of participants.

Two studies (Rogers et al 2003, Raina et al 2007) conducted respectively with individuals with cardiac (n = 55) or orthopaedic (n = 57) problems reached a similar trend as both previous studies, with a large number of participants. The assessment was done with the Performance Assessment of Self-Care Skills (PASS), which assesses IADL performance in terms of adequacy, independence and safety for categories of activities

(physical and cognitive) or for specific ones (for example, sweeping, changing bed linen, carrying the garbage, cleaning up after a meal, preparing a light meal, paying bills, using a phone and managing medication). The results obtained by Rogers et al (2003) showed that the performance of physical and cognitive IADL assessed at home was better for, respectively, 35% and 38% of the participants (and comparable in, respectively, 52% and 55%). This advantage of home was even more important in the study by Raina et al (2007), where the participants had a significantly better performance at home (p<0.001) on cognitive IADL (independence: t (54) = -3.73; safety: t (54) = -3.92; adequacy: t (54) = -8.20). Similar results have been obtained for physical IADL (safety: t (54)= 5.11, p < 0.001; adequacy: t (54) = -3.19, p = 0.002), except for measures pertaining to independence (t (54) = 0.12, p = 0.65). More specifically, this better performance was more noticeable in preparing a meal on a stove and in using the phone whereas a more modest effect was observed for paying bills (see Table 3-1 for details). However, because of the assessment order (in hospital, then at home), the advantage of home found in these two studies may be attributable to a learning bias.

To summarise, among the studies reviewed, those conducted in mixed-age populations came to contradictory conclusions with respect to the existence of a difference between assessment settings. These inconsistent findings can be attributed to a different range of populations and methodologies that are used. However, a different conclusion may be drawn from the studies conducted with older adults without significant cognitive deficits. Despite some methodological weaknesses (small sample size and assessment in a clinical setting before the assessment at home), those studies suggest that the home setting may offer a more accurate assessment of the actual IADL performance with this population.

Although none of the studies was specifically conducted with frail older adults, the results – especially those of Park et al (1994) and Raina et al (2007) – indicate that a similar tendency may be found in this population. In fact, the older participants assessed in these studies presented some of the conditions (cardiac, renal and osteoarticular problems) often

associated with frailty. However, these hypotheses regarding the presence of a difference between assessment settings in frail older adults have yet to be proven.

3.4.3. Factors that might have a different impact on IADL performance in clinical and home assessment settings

The second part of this review examined factors that might explain the presence (or absence) of a difference between assessment settings. These factors were grouped according to whether they were related to the environment or to the population studied. The section concludes with how those factors might apply to frail older adults.

3.4.3.1. Factors related to the environment

The reviewed studies reached similar conclusions regarding the effect of some characteristics of the assessment settings, such as the types of equipment and adaptations used. These conclusions are based mainly on the results of Haworth and Hollings (1979) and Park et al (1994), suggesting that activities that are more dependent on the environment (for example, meal preparation, housework and laundry) are more affected by the assessment setting. However, based on the results reported in these studies, it is not possible to determine clearly the type of equipment (whether it is found in a clinical setting or at home) that might be a greater facilitator of IADL performance. In fact, the studies involving older adults (Park et al 1994, West et al 1997, Raina et al 2007) indicate that the participants benefit more from the equipment found at home. However, these conclusions differ from those of studies conducted with mixed-age populations (Haworth and Hollings 1979, Sheikh et al 1979), which indicate that the participants benefit more from the equipment, often better adapted, available in a clinical setting.

One of the major differences between these studies is the participants' degree of familiarity with each of the settings. The participants who benefited from the equipment available at home came from the community while those who benefited more from the

equipment in a clinical setting were recruited from the hospital. Considering that hospitalisation lasted at least 2 weeks, it is assumed that, in the case of participants hospitalised for a longer period, the hospital setting had become more familiar to them than their own home. However, the concept of familiarity is not clearly defined in most of the studies reviewed. In addition, even when it is measured, the degree of familiarity is operationalised differently by different authors (that is, living in the same environment for at least 2 months [Park et al 1994] or at least 1 year [Darragh et al 1998]). Furthermore, the limited information given in these studies regarding the physical characteristics of each of the environments makes it difficult to identify the specific factors associated with the assessment settings.

3.4.3.2. Factors related to the population studied

Other factors, such as some cognitive, physical, psychological and sociodemographic characteristics of the participants, are also suggested to explain the difference in performance observed between settings.

3.4.3.2.1. Cognitive abilities

The effect of cognitive abilities on the performance of some complex IADL might explain the difference between the settings found with many older adults without significant cognitive deficits (see Park et al 1994, West et al 1997, Rogers et al 2003, Raina et al 2007) while there was little difference between settings for the participants with dementia. In fact, some authors (Nygård et al 1994, Hoppes et al 2003) suggest that the lack of cognitive resources explains the absence of a difference between settings in IADL performance of their participants with dementia. This conclusion is in agreement with that reached by Nygård and Starkhammar (2003), who suggested that the severity of the cognitive deficits presented by patients with moderate-stage dementia may lead to difficulties in recognising, using and remembering the location of familiar objects in their own living environment.

Furthermore, the effect of some cognitive abilities on the performance of complex IADL could help to explain why a significant difference between settings was not observed in all of the older participants. For example, results from the study by Park et al (1994) suggested a smaller difference between settings in older adults with some better process skills (such as accommodates and benefits) in an unfamiliar environment. Since process skills are related to the ability to cope with difficulties (Dickerson and Fisher 1993, Fisher 2003), these results support the hypothesis that older adults with better coping skills are likely to have fewer difficulties in an unfamiliar environment.

These results also suggest that older adults for whom a difference between settings was observed would, unlike individuals with more severe cognitive deficits, have enough cognitive resources to benefit from the familiarity of the setting when doing complex IADL. However, unlike those with better preserved cognitive functions, they would not have enough cognitive resources to adapt to an unfamiliar setting when doing certain IADL. These conclusions are in agreement with those of Lundberg and Hakamies-Blomqvist (2003), who proposed that older adults with a deterioration in some cognitive abilities (such as executive functions) may not have the resources they need to adapt to unfamiliar objects.

The coping difficulties reported may thus suggest a decline of some executive functions. Hence, this cognitive component is particularly important in enabling the person to adapt to a new environment in facilitating his or her interaction with the environment, particularly in new circumstances and for complex activities (Van der Linden and Hupet 1994, Rapport et al 1998, Collette 2004). These observations support the deterioration of cognitive components related to advanced age (West 1996, Palmer et al 1998, Isingrini 2004), especially in individuals with medical and cardiac problems (Prins et al 2005, Thorton et al 2007, Vogels et al 2007), which is the population examined in the studies by Park et al (1994) and Raina et al (2007). However, none of the studies reviewed tried to

define the specific cognitive profile of the participants, thus limiting the possibility of determining the relative effect of this component.

3.4.3.2.2. Physical and sensory abilities

Other factors, mainly associated with physical and visual abilities, also have a different impact on IADL performance in clinical and home assessment settings. With regard to factors related to physical abilities, Park et al (1994) suggested that a greater propensity to use supports to move around and drop things could have contributed to the difficulties observed in a clinical setting. In fact, poorer reactions involving balance are expected to lead to greater difficulties in getting around and maintaining stability in a setting where distance from facilities limits the available support (Hagedorn 1995). Similarly, decreased grip strength is expected to lead to greater difficulties when handling and carrying objects with unfamiliar characteristics (for example, heavier or more slippery than expected) (Klinger 1997, Cole et al 1999). As for factors related to sensory abilities, West et al (1997) suggested that declining vision may explain the difference observed between assessment settings. In fact, a deterioration in visual abilities may lead to difficulties in recognising or reacting to unusual sensory information (for example, product labels) (Owsley and Sloane 1987, Whiteside et al 2006) and in locating and avoiding obstacles in unexpected places (Dunn 1991, Ellis 1991). However, of the studies reviewed, only this last study by West et al (1997) systematically measured one of these factors associated with physical or visual abilities.

3.4.3.2.3. Psychological characteristics

Some of the studies discussed above (Haworth and Hollings 1979, Sheikh et al 1979, Park et al 1994) suggest that a feeling of insecurity could have impeded IADL performance in one or other of the assessment settings. First, Park et al (1994) suggested that the anxiety generated by being assessed in a clinical setting could have contributed to the difficulties observed in some of the participants. Haworth and Hollings (1979) and Sheikh et al (1979), on the other hand, suggested that less confidence because of the

absence of the therapist had a negative effect on the performance at home, supporting the view that feeling more supervised in a clinical setting makes this setting more reassuring (Haworth and Hollings 1979). These studies thus suggest that a feeling of insecurity might affect IADL performance in an anxiety-producing setting (be it clinical or at home).

These observations are in agreement with the more anxiety-producing and less predictable nature of an assessment setting that is unfamiliar to the person. An IADL assessment that takes place in an unfamiliar setting often involves handling objects that do not belong to the person (Holubar and Rice 2006), the loss of reference points for locating facilities (Kaplan and Kaplan 1983), and the risk that the objects do not have the expected characteristics or that the obstacles are not in the usual place (Yerxa and Baum 1987). However, neither of the two studies reviewed tried to measure this factor, thus limiting the possibility of determining its relative impact.

3.4.3.2.4. Sociodemographic characteristics

One of the studies discussed above (West et al 1997) showed that the level of education might influence IADL performance differently in different assessment settings. Although the impact of this variable was reported only for using the phone, the results suggest that people with less schooling might have more difficulties doing this type of IADL in an unfamiliar environment.

To summarise, although the advantage of home found in the studies done with older adults suggests that this difference is related to familiarity with the environment, other factors were also mentioned, such as some cognitive (fewer resources related to coping skills), physical (reduced balance and grip strength), sensory (declining vision), psychological (higher anxiety level) and socio demographic (less schooling) characteristics. However, despite the expected effect of these factors, their individual contributions have barely been explored since most of these studies did not try specifically to measure, analyse or control these factors. In fact, most of the studies reviewed are based on anecdotal (for

example, observations of behaviour) or descriptive (for example, measures of general cognitive status) data, which were not submitted to statistical analysis. Only West et al (1997) tried to determine the relative impact of some factors using regression analysis.

Despite these methodological limitations, some of the factors identified in the studies reviewed might apply to frail older adults. Since many of them show a decline in their coping skills (Ferrucci et al 2003), particularly executive functions (Patrick et al 2002), reduced grip strength, problems with walking and balance (Fried et al 2001), declining vision, symptoms of anxiety (Tinetti et al 1995) and less schooling (Béland et al 1998), it is anticipated that frail older adults presenting such factors may experience even greater difficulties in doing complex IADL in an unfamiliar environment. However, these frail older adults may also be exposed to less risk of falls and accidents when doing IADL in a clinical setting which, although unfamiliar, is often better lit, quieter, obstacle-free and less distracting visually (Hagedorn 1995). On the other hand, familiarity, by providing the opportunity to use familiar objects and do the activity in the usual environmental layout, supports the use of known strategies and motor patterns (Yerxa and Baum 1987, Dunn et al 1994), which reduces the demands on certain cognitive functions (Kirasic 1991, Lundberg and Hakamies-Blomqvist 2003, Kliegel et al 2007). In addition, the predictable nature of a familiar setting could increase the feeling of confidence and security (Yerxa and Baum 1987, Hagedorn 1995, Kielhofner 2008).

For frail older adults, therefore, home is most likely to be this familiar environment, especially given the current trend towards reducing the length of hospitalisation and the prevalence of this population in short-term care facilities (Constandiopoulos et al 1999, Welch and Lowes 2005). At the same time, since frail older adults are a population at risk of hospitalisation and relocation (Vellas et al 2000), an unfamiliar assessment setting may well not be just the hospital environment but also a new living environment (for example, seniors' home). Future studies with frail older adults are needed to test these hypotheses.

3.5 Conclusion

This literature review found some evidence of a difference between assessment settings in the performance of IADL in older adults without significant cognitive deficits and suggests that a similar trend could be found with frail populations. Those results suggest that the home setting may be advocated for a more accurate assessment of IADL with older adults, thus giving support to assessing their ability to cope in the setting in which they will be living. It would, however, be interesting to document which specific IADL would be more advantageously assessed at home and if similar conclusions can be reached for basic ADL. Also, from the studies reviewed, it appears that the effect of certain factors related to the environment (familiarity of the assessment setting) and populations studied (cognitive, physical, psychological and sociodemographic characteristics) might account for some of the difference between settings. These conclusions remain to be proven empirically, particularly in frail older adults. Future studies could not just compare clinical and home IADL assessments in this population but also identify and specifically measure the factors that might explain a difference between settings. In addition, these studies should consider using specific methodological strategies (for example, operationalisation of the concept of familiarity and a large enough sample to do regression analysis). Such studies may then be able to distinguish frail clients likely to present different abilities in clinical and home assessment settings from those presenting comparable abilities in both settings. With this knowledge, older community-dwelling clients could be offered services and interventions adapted to their needs, ultimately improving their autonomy and quality of life, while managing more optimally financial and human health care resources.

3.6 Acknowledgements

3.7 References

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Table 3-1   Studies comparing instrumental activity of daily living (IADL) performance between assessment settings (clinical *vs* home)

Authors (year)	n	Population (age & diagnosis)	Instrument used (IADL performance)	Results	Factors identified
Haworth & Hollings (1979)	38	Adults* (54.7 ± 12.1 years) Dx: rheumatoid arthritis	4-point scale assessing 37 tasks including 14 relating to IADL	Clinical > home Statistically significant difference (p < 0.05) for housekeeping, laundry	Type of equipment used
Sheikh et al. (1979)	73	Adults* Dx: stroke, arthritis, multiple sclerosis, post-operative status	3-point scale assessing 17 tasks including 2 relating to IADL	Clinical > home Statistically significant difference (p < 0.05) for overall tasks, especially for making tea	Type of equipment used Feeling of confidence/security
Nygård et al. (1994)	19	Adults and elders (51 to 84 years) Dx: Alzheimer's disease and other forms of dementia	AMPS including only IADL	Clinical = home No statistically & clinically significant difference (process skills: t = 1.35; p = 0.19; from .47 clinical to .60 at home)	Cognitive abilities?
Hoppes et al. (2003)	12	Elders (72 to 88 years) Dx: dementia	SAILS assessing 50 tasks including 5 relating to IADL	Clinical = home No statistically significant difference (F: 1.37; p = 0.28) for IADL tasks	Cognitive abilities?
Goldstein & Robins (1998)	18	Adults and Older adults (32 to 75 years) Dx: left and right stroke	AMPS including only IADL	Clinical < home Statistically significant difference but only for motor skills (p < 0.05) Clinically better process skills for about 1/4 of the participants	Familiarity of the environment
Darragh et al. (1998)	20	Adults (20 to 49 years) Dx: Traumatic brain injury, aneurysm, stroke, brain tumor	AMPS including only IADL	Clinical < home Statistically and clinically significant difference (process skills: F: -4.28, P = 0.03; from .72 clinical to 1.84 at home) Clinically better process skills for about 1/3 of the participants	Familiarity of the environment**

Table 3-1 *(Continued)* Studies comparing instrumental activity of daily living (IADL) performance between assessment settings (clinical *vs* home)

West et al. (1997)	97	Elders (> 65 years) Dx: vision problems of varying severity	Assesses 7 tasks 2 relating to IADL	Clinical < home 60-62% of the participants more visually impaired for IADL tasks (dialing a number and looking on a phone book)	Familiarity of the environment Declining vision** Less education**
Park et al. (1994)	20	Elders (82.2 ± 6.9 years) Dx: orthopedic, osteo-articular, cardiovascular, vision and medical problems	AMPS including only IADL	Clinical < home Statistically and clinically significant difference (process skills: t = 6.07; p < 0.01; from 0.99 clinical to 1.41 at home), particularly marked for 1/2 of the participants	Familiarity of the environment** Process skills: Difficulties locating and using unfamiliar objects appropriately, dealing effectively with problems that arise and preventing their recurrence Motor skills: Lack of confidence, increased need to maintain stability and tendency to drop things
Rogers et al. (2003)	57	Older adults (> 70 years) Dx: orthopedic problems (knee prosthesis) No significant cognitive disabilities (3MS: 91.4 ± 6.2)	PASS Assessing 26 tasks including 14 cognitive IADL and 4 physical IADL	Clinical < home 35-38% of the participants for physical and cognitive IADL Clinical = home 52-55% of the participants for physical and cognitive IADL	Familiarity of the environment
Raina et al. (2007)	55	Older adults (> 70 years) Dx: cardiac disease (heart failure) No significant cognitive disabilities (3MS: 92.3 ± 5.0)	PASS Assessing 26 tasks including 14 cognitive IADL and 4 physical IADL	Clinical < home Statistically significant difference (p<.001) for cognitive IADL, especially for preparing meal on stove (safety and adequacy; p < .001, independence: p = 0.005) and using the phone (independence and adequacy: p< .001) but not for paying bills (independence: p=0.35 and adequacy: p=0.42)	Familiarity of the environment

*Clients recently hospitalized   ** Factors measured or analyzed   Dx: Diagnosis   AMPS: Assessment of Motor and Process Skills   PASS: Performance Assessment of Self-Care Skills   SAILS = Structured Assessment of Independent Living Skills   3MS = Modified Mini-Mental State

Chapitre 4   Impact of familiar and unfamiliar settings on cooking task assessments in frail older adults with poor and preserved executive functions (Article 3)

Le texte de ce chapitre, intitulé *Impact of familiar and unfamiliar settings on cooking task assessments in frail older adults with poor and preserved executive functions* a été soumis à la revue *International Psychogeriatrics* le 23 juin 2011, accepté le 25 septembre 2011 et publié (en ligne) le 12 décembre 2011. L'étudiante a rédigé l'article en entier sous la supervision de ses directrices Louise Demers, Ph.D., et Isabelle Gélinas, Ph.D., qui sont respectivement deuxième et quatrième auteures. Lise Gagnon, neuropsychologue et chercheure au Centre de recherche sur le vieillissement de Sherbrooke, qui apparaît à titre de troisième auteure, a été impliquée dans la rédaction du manuscrit en raison de son expertise dans le domaine de la cognition, notamment à l'égard des fonctions exécutives.

Ces résultats ont été présentés sous forme d'affiches lors du Congrès de l'Association canadienne des ergothérapeutes (ACE) à Saskatoon (Saskatchewan, Canada) (Provencher, Demers, Gélinas, & Mc Cabe, 2011a) et au 9e Congrès International Francophone de Gérontologie et de Gériatrie (CIFGG) à Nice (France) (Provencher, Demers, Gélinas, & Mc Cabe, 2010). Sur la scène provinciale, un exposé oral a été offert le 6 octobre 2011 lors de la 9e journée scientifique du Réseau Québécois de Recherche sur le Vieillissement (RQRV) à Orford (Québec, Canada) (Provencher, Demers, & Gélinas, 2011b). Sur la scène locale, les résultats ont fait l'objet d'une présentation orale le 11 mai 2011 dans le cadre de Journée scientifique de l'École de réadaptation de l'Université de Montréal, à Montréal (Québec, Canada) (Provencher, Demers, & Gélinas, 2011c).

L'article est reproduit avec l'autorisation de la revue *International Psychogeriatrics.* Le format de présentation des références du prochain chapitre est conforme aux règles d'édition de cette revue.

Référence: "Impact of familiar and unfamiliar settings on cooking task assessments in frail older adults with poor and preserved executive functions" by Véronique Provencher, Louise Demers, Lise Gagnon and Isabelle Gélinas, International Psychogeriatrics, 24 (5), 775-783 Copyright © 2012 International Psychogeriatric Association. Reprinted with the permission of Cambridge University Press.

4.1 Abstract

Background: Hospitalized frail older patients are usually assessed for their ability to perform some daily living activities in a clinical setting prior to discharge. However, assessments that take place in this unfamiliar environment might not be as representative of their functional performance as assessments at home. This may be related to a decline in some cognitive components, such as executive functions (EF), which enable one to cope with new environments. This study thus aims to compare cooking task performance in familiar and unfamiliar settings in a population of frail older adults with poor and preserved EF. **Methods:** Thirty-seven frail older adults were assigned to one of two groups: poor EF or preserved EF. Participants performed two cooking tasks in familiar and unfamiliar settings, using a counterbalanced design. Their performance was assessed with a reliable tool based on observation of motor and process skills (Assessment of Motor and Process Skills). **Results:** Thirty-three participants were retained for analysis. They demonstrated significantly better motor skills ($F = 5.536$; $p = 0.025$) and process skills ($F = 8.149$; $p = 0.008$) in the familiar setting. The difference between settings was particularly marked for process skills in participants with poor EF ($F = 16.920$; $p < 0.001$). **Conclusions:** This study suggests that a home setting may be preferable for a more accurate assessment of cooking task performance in frail older adults, especially those with poor EF. These findings highlight the risk of underestimating frail older adults' performance when assessed in an unfamiliar setting (e.g. hospital), which could lead to inefficient allocation of home care services.

Key words: frailty, executive functions, activity of daily living, performance-based assessment, environment

4.2 Introduction

Frail older adults often present with functional decline and multiple comorbidities (Fried *et al.*, 2001), which lead to increased home care needs and hospitalization (Fried and Watson, 1998). As a consequence, frail elderly adults now represent a large proportion of patients seen in healthcare settings, such as geriatric rehabilitation and assessment units (Wells *et al.*, 2003). Prior to discharge, these patients are usually assessed for their ability to perform some activities of daily living (ADLs) such as preparing a light meal safely, independently, and effectively. This performance-based assessment, usually done in the clinical setting, is intended to determine home care requirements and the need for relocation into residential care (Mountain and Pighills, 2002).

Health professionals may, however, question the extent to which frail older adults' performance observed in clinical settings is truly representative of their performance in a more familiar environment, such as at home. Given the current dearth of healthcare resources (Aiken *et al.*, 2002) and the growing needs of an expanding frail population often at risk of falls and malnutrition (Fried and Watson, 1998), it is important to allocate services efficiently so that the assistance recommended upon discharge from healthcare settings meets the needs of frail patients.

To our knowledge, only a few studies (Nygard *et al.*, 1994; Park *et al.*, 1994; West *et al.*, 1997; Hoppes *et al.*, 2003; Rogers *et al.*, 2003; Raina *et al.*, 2007) have compared older adults' performance in ADL tasks between familiar and unfamiliar settings using observation-based assessments. Nygard *et al.* (1994) and Hoppes *et al.* (2003) did not find any significant differences between the assessment settings in the performance of complex tasks (such as meal preparation) in populations with dementia. However, a different conclusion may be drawn from studies conducted with older adults presenting with orthopedic, cardiovascular, and visual problems (Park *et al.*, 1994; West *et al.*, 1997; Rogers *et al.*, 2003; Raina *et al.*, 2007). These studies tended to report a better performance

in home assessment settings for most participants. Even if some older adults demonstrated the same ability between settings, the authors concluded that familiar settings may generally provide a more accurate assessment of actual performance in this population.

But why would familiarity with settings improve the performance of some but not all older participants without severe cognitive impairments? Some authors (Lundberg andHakamies-Blomqvist, 2003) have suggested that decreased abilities in some older adults to adapt to unfamiliar environments might be related to a decline in specific cognitive abilities, such as executive functions (EF). EF can be particularly important in enabling the individual to interact with the environment, especially in new circumstances and for complex activities (Van der Linden *et al.*, 2000). Complex activities such as cooking tasks are thus expected to require considerable executive resources in unfamiliar settings. Since a selective decline in EF has been reported in normal aging (Isingrini, 2004) and especially in frail populations (Patrick *et al.*, 2002), it is anticipated that frail older adults may experience even greater difficulties in performing complex tasks such as cooking in an unfamiliar environment.

However, it is still unclear how assessment settings influence performance on meal preparation tasks in frail older adults as none of the studies reviewed were specifically conducted with this population. Moreover, despite the expected role of EF in explaining differences found between assessment settings, their specific contribution has barely been explored since most studies did not try to specifically measure or analyze those cognitive functions. This study thus aimed to (1) compare cooking task performance in familiar and unfamiliar assessment settings in a population of frail older adults; and (2) assess how a decline in EF may account for the difference in task performance, if any, between assessment settings.

4.3 Methods

4.3.1. Participants

Thirty-seven frail adults aged 65 years or older and showing no severe cognitive impairments were selected for this study. Participants were recruited from ambulatory geriatric services and local community health centers in the urban area of Montreal, Canada. The sample also included older volunteers who learned about the study through newspapers or were referred by other participants (see Figure 4-1, p.80). To be eligible for the study, participants had to meet three or more of the five frailty criteria used in the CardiovascularHealth Study (Fried *et al.*, 2001): (1) unintentional weight loss of 10 lbs (4.5 kg) or 5% of body weight in the prior year, based on participant's report; (2) grip strength in the lowest 20%, adjusted for gender and body mass index; (3) poor endurance and energy as indicated by self-report of exhaustion identified by two questions from the Center for Epidemiological Studies Depression (CES–D) scale; (4) slowness, as defined in our study as time to walk 10 feet (3 m), in the lower 20%, adjusted for gender and standing height; (5) low physical activity, as defined as weighted score of kilocalories expended per week in the lowest quintile, adjusted for gender and based on participant's report.

All participants lived in the community. Participants recruited from inpatient services had been discharged for at least three months, which suggests a stable medical condition. Participants had to have lived in their own home (house or apartment) and used the main appliance (stove, toaster, kettle) for at least two months to ensure familiarity with their kitchen environment. Individuals showing severe physical, sensory, or language deficits due to a neurologic disease or cognitive impairments that may suggest the presence of dementia were excluded from the study. All participants provided written informed consent prior to beginning the study. This research was approved by the institutions' ethics committees.

4.3.2. Measures

4.3.2.1. Demographic and clinical variables

Demographic and clinical data used to describe the sample were age, gender, education, number of frailty characteristics, as well as familiarity with the home setting, defined as the number of years spent in their current home environment. Episodic memory was also measured using the Free and Cue Selective Reminding Test-16 items (Grober and Buschke, 1987, adapted by Van der Linden, 2004), a test known to be sensitive to cognitive decline in aging (Van der Linden, 2004).

4.3.2.2. Executive functions

EF were measured with three neuropsychological tests.
The Trail-Making Test (TMT) is a paper-and pencil task requiring participants to circle (1) numbers in consecutive order (TMT A), and (2) numbers and letters in alternating order (TMT B) (Strauss and Spreen, 2006). The latter assesses cognitive flexibility and divided attention (Lezak *et al.*, 2004). The score is the time to complete the Trail B. A faster time indicates better performance.
The Victoria version of the Stroop test requires participants to read aloud as quickly as possible the color of 24 dots (part D), common words (part W) and then name the color of the ink for printed words (e.g. name the color of the ink "green" of the printed word "blue"; part C) (Strauss and Spreen, 2006). The latter measures inhibition and selective attention (Lezak *et al.*, 2004). The scores are the time to complete part C and the number of errors (not self-corrected). Faster times and low error rate indicate better performance.
The Tower of London test requires participants to move colored balls one at a time from an initial state to match a set of goal positions (Coyette and Van der Linden, 1993). This test is used as a measure of planning ability. Scores are calculated by adding planning time to execution time for each trial. A faster time indicates a better performance.

Based on previous studies (Binetti *et al.*, 1996; Di Fabio *et al.*, 2005; Johnson *et al.*, 2007), the following cut-offs were used to define a decline in EF: performance <1 standard deviation or <30th percentile compared to normative data based on age and/or education (Coyette and Van der Linden, 1993; Strauss and Spreen, 2006) on at least two of the three measures of EF.

4.3.2.3. Cooking task performance

Performance in cooking tasks was evaluated with the Assessment of Motor and Process Skills (AMPS) (Fisher, 2003). The AMPS is an observational assessment simultaneously evaluating effort, efficiency, safety, and independence of 16 motor and 20 process skills as a person performs standardized tasks related to ADLs (e.g. cooking). Motor skills refer to the abilities to move oneself or the task objects. Process skills are related to the abilities to (1) select, interact with, and use tools and materials, (2) carry out individual actions and steps, and (3) modify performance when problems are encountered. Each skill is rated on a 4-point scale, from deficit (1) to competent (4). A computer program converts ordinal data into equal-interval ability measures, expressed as logits. Tasks chosen must be appropriate to challenge the participants' motor and process skills and be perceived as familiar and life-relevant by the person. The AMPS was selected because it demonstrates high test-retest, intra-rater, and inter-rater reliability. It is also widely used with older adults and culturally relevant for different parts of the world.

4.3.3. Procedure

Assessments were generally conducted in three 90-minute sessions by a trained occupational therapist. In the first session, demographic and clinical data were collected. Individuals meeting the study criteria were then invited to perform the EF tests. In the second and third sessions, the AMPS was administered. All participants performed two tasks twice: once in their home and once in the unfamiliar setting. Two life-relevant tasks (e.g. preparing eggs, toast, and coffee) were chosen from about 20 standardized cooking

tasks that involve the use of an electrical appliance. The unfamiliar setting was a kitchen that the participant had never seen prior to this study. Before performing the tasks in the unfamiliar setting, each participant was shown the location and use of the tools they would need.

Two groups were created: the "preserved EF group" that included those persons who do not show a decline in EF; and the "poor EF group" that included those persons who show a decline in EF. To minimize order effect, a counterbalanced design was used: within each group (poor EF and preserved EF), one half of the participants first performed the tasks in their homes while the other half first performed the tasks in the unfamiliar setting. Assessments in the two environments for each individual were administered at least one week apart and were completed about the same time of day. The aim was to limit participants' recall of the test and to control for frail older adults' fluctuating fatigue during the day. Time between measures did not exceed three weeks to reduce the possibility that their condition may have changed between assessments. Participants were videotaped during their performance for later scoring by another trained occupational therapist. This independent rater was blind to the order of settings, group assignment, and study hypothesis. For each participant, assessments in the two environments were scored at least two weeks apart to limit the rater's recall of their previous performance. The number of participants scored first in familiar and unfamiliar settings was also counterbalanced.

4.3.4. Data analysis

Descriptive statistics were calculated for the main characteristics of the participants. Independent *t* test Mann-Whitney U or Fisher's exact test were used to compare the groups (poor EF and preserved EF) on these characteristics.

Descriptive statistics were also generated to determine if mean scores on the AMPS were below expected cut-offs (2.0 logits on motor ability measures and 1.0 logits on process ability measures), indicative of a person who may need assistance in the community (process scores being a better predictor than motor scores) (Fisher, 2003).

Differences between mean ability measures in familiar and unfamiliar settings were also calculated (by subtracting the lowest score to the highest score). A value of at least 0.30 between measures may be considered as clinically significant (Fisher, 2003).

Two two-way repeated measures analyses of variance (ANOVA) were conducted to examine if there was a significant difference ($p < 0.05$) between familiar and unfamiliar AMPS motor and process ability measures in our sample. ANOVA simple effects analyses were used to look at the impact of assessment settings on each group (preserved EF and poor EF).

Two two-way repeated measures ANOVAs and two paired *t*-tests were performed to detect any order or learning effects for motor and process skills. Further analyses (Rasch measurement statistics) were also conducted by the AMPS Project International (2011) to ensure rater reliability and the validity of the measures obtained (whether the ability measures were as expected, based on the demographic information provided). All statistical analyses were performed using SPSS for Windows Version 17.0.

4.4 Results

Results from the Rasch measurement statistics indicated good rater reliability and confirmed the validity of the measures obtained, except for four participants. Thirty-three participants were thus retained for analysis. Results showed that the two groups (preserved EF and poor EF) were comparable on age, education, gender, number of frailty criteria, familiarity with home setting and memory tests (see Table 4-1, page 88). As expected, the two groups differed on EF tests (TMT B, Stroop C [time], three of the four Tower of London subtests), but not on the parts known to measure speed performance (TMT A, Stroops D and W) (see Table 4-1, page 88).

Descriptive analyses revealed that mean scores for motor ability measures were below the cutoff score of 2.0 logits for both groups (Figure 4-2, page 86). However, the

only mean score below the cut-off of 1.0 logits on the process scale was obtained by the group with poor EF in unfamiliar settings (mean process score: 0.68 ± 0.39). Moreover, the difference between process mean ability measures in familiar and unfamiliar settings was clinically significant for that group (.34 logits).

The ANOVAs revealed a significant difference in motor ($F = 5.536$; $p = 0.025$) and process ($F = 8.149$; $p = 0.008$) skills performance between familiar and unfamiliar settings. Results of the interaction indicated that poorer EF had no effect on motor skills ($F = 1.258$; $p = 0.271$) as both groups performed worse in the unfamiliar setting (see Figure 4-2a, page 87). However, a decline in EF did have an effect on process skills ($F = 9.299$; $p = 0.005$) (see Figure 4-2b, page 87). More specifically, the "poor EF" group performed worse in the unfamiliar setting than the familiar setting ($F = 16.920$; $p < 0.001$) while no such difference was found between settings for the "preserved EF" group ($F = 0.200$; $p = 0.890$). Results of the interaction also revealed that both groups showed similar process ability measures in the familiar setting ($F = 0.400$; $p = 0.530$) but that the "poor EF" group performed worse in the unfamiliar setting than the "preserved EF" group ($F = 11.950$; $p = 0.002$).

The ANOVAs revealed no effect of setting order for both motor ($F = 2.645$; $p = 0.114$) and process skills ($F = 0.114$; $p = 0.737$). In other words, there was no significant difference in the ability measures for either motor or process skills between the subgroup of participants who performed first in the home ($n = 16$) and the subgroup who performed first in the unfamiliar setting ($n = 17$). Moreover, no learning effect was detected for process and motor skills by the paired t-tests (motor: $t = -0.488$; $p = 0.629$; process: $t = -1.104$; $p = 0.278$), indicating that ability measures taken the first time did not differ significantly from those taken the second time, not accounting for the assessment settings.

4.5 Discussion

This study examined the effect of assessment settings on cooking task performance in a population of frail older adults with preserved and poor EF. The results revealed that frail older adults performed better overall in familiar settings than unfamiliar settings on process and motor skills. However, further analysis indicated that only participants with poor EF were more likely to show poorer process skills in unfamiliar settings. Thus, the results of this study support the hypothesis that familiarity with the environment improves performance in frail older adults and that EF might account for some of the difference between settings.

Our results for motor skills suggest that some frail older adults may benefit significantly from the familiarity of home when assessing performance on a cooking task. These results are not consistent with previous studies examining the effect of the environment on AMPS motor ability measures in older adults. Neither Park *et al.* (1994) nor Nygard *et al.* (1994) reported significant poorer motor scores in the unfamiliar environment. Since motor skills are observable actions that are related to the abilities to move oneself or task objects, the different trend that emerged from our study may be attributable to a more pronounced decline in some physical abilities, as suggested by poorer mean motor ability measures (<2.0 logits) in our frail population. More precisely, frail older adults often demonstrate decreased balance and strength (Fried and Watson, 1998), which may reduce their stability and standing tolerance in unfamiliar environments where distance between facilities is generally increased (Hagedorn, 1995). These conclusions are in agreement with observations by Park *et al.*, which suggest that a greater propensity to use supports to move around may explain the poorer performance of some participants in unfamiliar settings. Thus, our results for motor skills suggest that frail older adults may benefit from the familiarity of home when assessed for their ability to perform cooking tasks.

Our results for process skills suggest that some frail older adults may benefit significantly from the familiarity of an assessment at home. These results concur with previous studies (Park *et al.*, 1994; Darragh *et al.*, 1998) that reported a significant difference between settings for process skills. In our study, a larger difference between settings was observed in participants with poor EF since this group scored low on the process scale (below the 1.0 cut-off) in unfamiliar settings. Similar findings emerged from the study by Darragh *et al.* (1998), where participants showing poorer process skills in an unfamiliar environment tended to benefit from familiarity of settings. Since process skills are related to the individual's ability to modify performance when problems are encountered, these results suggest that differences between settings may be related to more difficulties in compensating for limitations in unfamiliar settings. This hypothesis is also supported by our results obtained with frail participants showing preserved EF, who demonstrated similar performance between familiar and unfamiliar settings. Taken together, our results are consistent with the view that a decline in EF tends to expose the individual to greater difficulties when performing complex tasks (such as cooking) in an unfamiliar setting, which may explain the difference between settings.

Even if there is no exact relationship between process skills and cognitive abilities (Fisher, 2003), the results may be interpreted in light of the decreased cognitive resources with aging. As process skills refer to the abilities to interact with tools and materials as well as carry out individual actions and steps, the difference between settings shown by older adults with poor EF may be related to decreased ability to recruit enough cognitive resources when preparing a meal in a challenging environment (Craik and Bialystok, 2006). This may be expressed by difficulty overcoming automatisms, such as looking for objects where they are at home or switching between different cooking tasks performed simultaneously, while discovering how to adjust the cooking level of a new appliance to avoid burning food. They could however mobilize the cognitive resources needed to perform the tasks in a familiar environment (Kliegel *et al.*, 2007). This hypothesis is

supported by our results, which indicate that frail older adults with poor EF showed about the same level of process skills at home as those with preserved EF. This suggests that home assessment settings, by providing the opportunity to use familiar objects and perform the activity in the usual environmental layout, may support the use of known strategies that help to reduce the demand on some cognitive components, such as EF (Lundberg and Hakamies-Blomqvist, 2003; Kliegel *et al.*, 2007).

Overall, the significant and clinical difference found between settings in frail older adults with poor EF on process skills raise concerns about the risks of underestimating their abilities when assessed in an unfamiliar setting, which could lead to unnecessary services and higher costs. Given that most people presenting poor process ability measures (<1.0 logits) require assistance to live in the community (Fisher, 2003), our findings mean that frail older adults with decreased EF may be offered more services than needed upon discharge from hospital, based on assessments performed in clinical settings. Such a higher perceived need for assistance may even lead health professionals to recommend that some of those frail patients be moved to residential care when it is not fully appropriate. However, these conclusions should not obscure the fact that an assessment in a clinical setting can be a good predictor of how frail older adults with preserved EF will perform on process skills at home.

A limitation of this study is that the high rate of refusal among eligible frail participants may have compromised the generalizability of our results. As underscored by Ferrucci *et al.* (2004), frail older adults are not an easy population to get involved in a research project. Because of their limited energy and restricted mobility, it is a challenge to convince them to come to the clinical setting for a cooking activity. However, many strategies were used to facilitate their participation in our study: sessions were planned so that they could get some rest when needed, taxi transportation was offered, and assistance was provided to help them get in and out of the car.

This study suggests that a familiar setting may be advocated for a more accurate assessment of cooking task performance in frail older adults, especially those showing fewer coping skills. Since a large proportion of older adults are discharged home after hospitalization (Lim *et al.*, 2007), our results support the relevance of assessing frail clients for their ability to cope in their likely living environment. This conclusion is in agreement with previous studies (Nygard *et al.*, 1994; Park *et al.*, 1994; Rogers *et al.*, 2003; Raina *et al.*, 2007), which emphasized the importance of evaluating clients in a familiar setting if the purpose of the assessment is to predict the ability to function at home (Park *et al.*, 1994) or to obtain the best estimate of a client's potential (Nygard *et al.*, 1994). However, assessment in unfamiliar settings may still be relevant if the purpose of the evaluation is to screen for a possible decline in EF, which could be suggested by some difficulties when performing an activity of daily living in a new context.

To our knowledge, this is the first study to demonstrate the effect of assessment settings on task performance in a frail population and how a decline in EF may explain the difference between settings. Our findings may help to distinguish frail clients likely to present different abilities in familiar and unfamiliar settings from those showing comparable abilities in both settings when performing a meal preparation task. Since geriatric rehabilitation now takes place either in institutional or home settings, our results may also assist in the selection of frail older people more likely to receive the greatest benefit from interventions conducted in real-life settings. Further studies should verify if similar results are obtained with other ADLs and using different assessment tools and if other factors might explain the difference between settings. Taking into consideration the increasing cost of services for aging populations around the world, further research that may help to direct the allocation of financial resources more appropriately are also needed. Greater knowledge could ultimately mean that frail clients are provided with services adapted to their needs, fostering their ability to live independently at home while minimizing the cost of delivering inappropriate services.

Conflict of interest

None.

Description of authors' roles

V. Provencher designed the study, collected the data, and carried out the statistical analyses. L. Demers, I. Gélinas, and L. Gagnon supervised the data collection and assisted with design of the study and statistical analyses. V. Provencher wrote the first draft of the paper and all the authors commented critically and contributed with important intellectual content to the writing of the paper.

4.6 Acknowledgments

4.7 References

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Figure 4-1   Participants' enrollment

A)

B)
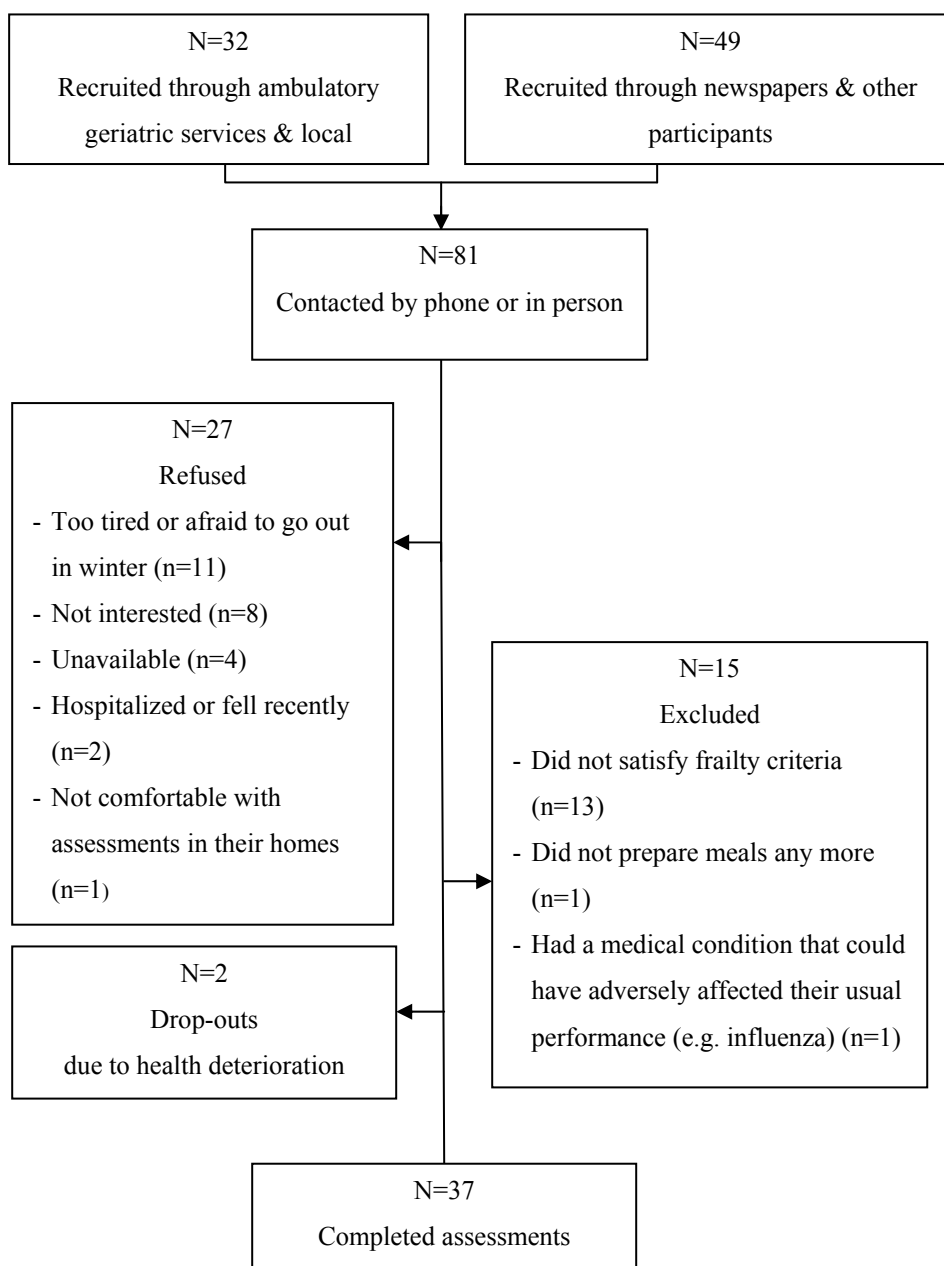
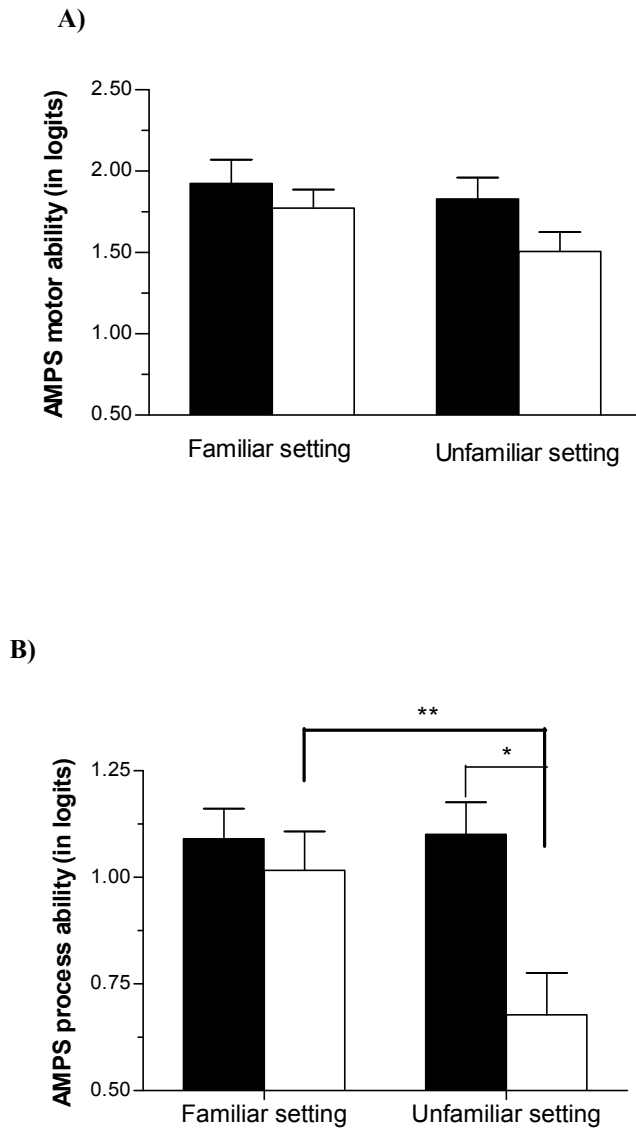Figure 4-2   Impact of settings (familiar vs unfamiliar) on assessment of (A) motor and (B) process ability in frail older adults with preserved executive functions (EF) ■ (n=17) and poor EF □ (n=16).

* p<.01 (difference between frail participants with poor EF and preserved EF in the unfamiliar setting)

** p<.001 (difference between familiar and unfamiliar settings in frail participants with poor EF)

Table 4-1 Characteristics of Participants with Poor and Preserved Executive Functions (EF)

Variables	Poor EF (n=16)	Preserved EF (n=17)	p-values [a]
Age (y)	74.6 ± 5.4	78.0 ± 5.2	0.11
Education (y)	10.5 ± 4.9	10.9 ± 3.4	0.68
Gender (women)	93.8	88.2	0.52
Number of frailty criteria (range: 3-5)	3.8 ± 0.6	3.5 ± 0.6	0.15
Familiarity with home setting (y) [b]	13.3 ± 13.4	16.0 ± 10.0	0.29
Performance on EF tests:			
- Trail Making Test A (s) [c]	63.5 ± 16.3	51.6 ± 19.1	0.07
- Trail Making Test B (s) [c]	217.3 ± 113.4	116.5 ± 50.6	<0.01
- Stroop Test (part D-color naming) (s) [c]	17.8 ± 5.5	19.2 ± 5.9	0.31
- Stroop Test (part W-word naming) (s) [c]	23.7 ± 4.8	26.7 ± 6.1	0.20
- Stroop Test (part C: colors interference) (s) [c]	68.4 ± 50.8	39.6 ± 10.1	<0.01
- Stroop Test (number of errors) [c]	1.8 ± 2.2	.7 ± .92	0.15
- Tower of London (N3) (s)	17.9 ± 18.8	10.6 ± 5.1	<0.05
- Tower of London (N5) (s)	64.5 ± 39.8	30.9 ± 20.5	<0.01
- Tower of London (N5+) (s)	36.6 ± 26.7	22.8 ± 14.1	<0.05
- Tower of London (N5-) (s)	68.8 ± 57.9	45.8 ± 36.7	0.25
Performance on memory test (Free and cue selective reminding test):			
- Recall 1 (number of words/16)	14.2 ± 1.8	14.9 ± 1.1	0.38
- Recall 2 (number of words/16)	15.1 ± 1.3	15.9 ± 0.3	0.06
- Recall 3 (number of words/16)	15.3 ± 1.0	15.8 ± 0.6	0.22
- Recall after 20 minutes (number of words/16) [d]	15.5 ± 0.8	15.4 ±1.3	0.87

Notes. Data expressed as mean ± SD or %; [a] p values from Independent T-test, Mann-Whitney U or Fisher's exact test; [b] Poor EF (n=13); Preserved EF (n=15); [c] Poor EF (n=15); Preserved EF (n=17), as one participant completed only one of the 3 tests. This participant was assigned to the poor EF group, based on similar results obtained by participants in that group on the Tower of London and the therapist's clinical judgment. [d] Poor EF (n=14); Preserved EF (n=14).

Chapitre 5   Factors that may explain differences between home and clinic meal preparation task assessments in frail older adults (Article 4)

Le texte de ce chapitre a été soumis le 21 février 2012, accepté pour publication le 21 mars 2012 et publié (en ligne) le 6 mai 2012 dans le *International Journal of Rehabilitation Research* sous le titre "*Factors that may explain differences between home and clinic meal preparation task assessments in frail older adults*". L'étudiante a rédigé l'article en entier sous la supervision de ses directrices Louise Demers, Ph.D., et Isabelle Gélinas, Ph.D., qui sont respectivement deuxième et troisième coauteures.

Les résultats ont été présentés par affiche le 27 mai 2012 lors d'un congrès international à Stockholm en Suède (Provencher, Demers, Gélinas, & Mc Cabe, 2012).

Le format de présentation des références du prochain chapitre est conforme aux règles d'édition de cette revue.

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Running head:

Impact of environment on frail elders' performance

Key words:

Frail elderly, environment, activities of daily living, performance-based assessment.

5.1 Abstract

Meal preparation assessments conducted in clinical environments (such as rehabilitation settings) might not reflect frail patients' performance at home. In addition, factors that may explain differences in performance between settings remain unknown. The purpose of this study was to compare home and clinic performance on meal preparation tasks in frail elders and to examine which factors may account for differences between settings. Thirty-three frail elders were assessed with the Performance Assessment of Self-Care Skills (heating soup, cutting fruit) in the home and clinic. A counterbalanced design was used. Factors related to the person (demographic, physical, cognitive and psychological characteristics) and the environment were also collected. Participants globally demonstrated significantly higher scores at home on heating a soup (F:4.125; p=0.015) and cutting a fruit (F:3.263; p=0.035). Better performance at home was associated with some demographic (lower education), cognitive (poorer executive functions) and environmental (higher similarity between settings) factors. Our findings may help health professionals clarify the profile of frail patients who should be assessed at home prior to discharge from rehabilitation and which features of the environment to consider when performing assessments in clinical settings.

5.2 Introduction

Rehabilitation health professionals face the challenge of providing high quality care and services to a growing frail older adult population. Frail elders refer to a population with reduced reserves and resistance to stressors (Fried et al., 2001), which put them at increased risk of falls and disabilities. This vulnerability to such adverse outcomes may explain why they now represent a large proportion of patients seen in geriatric rehabilitation units (Wells et al., 2003). Prior to discharge from rehabilitation, frail older patients are routinely assessed for their ability to prepare meals, to know if they can still perform life-relevant activities of daily living independently, safely and adequately. This performance-based assessment, intended to help in making decisions about home care requirements (Mountain and Pighills, 2002), is usually done in a rehabilitation setting. However, the assessment of frail older patients in unfamiliar environments may raise questions among health professionals: does the performance observed in a clinical setting truly reflect performance in a more familiar environment, such as at home? What may explain differences in performance between settings?

Some previous studies (Hoppes et al., 2003; Nygard et al., 1994; Park et al., 1994; Raina et al., 2007; Rogers et al., 2003; West et al., 1997) have compared performance in activities of daily living between home and clinical settings using performance-based assessments in older patients with various diagnoses. However, conclusions drawn from those studies differed according to the population studied, the task assessed and the methodology used. Moreover, factors that may explain a better performance either at home or in the clinical setting have been barely explored.

The International Classification of Functioning, Disability and Health (ICF) model (WHO, 2001) may help in understanding the impact of setting on meal preparation task performance in frail older adults. The ICF recognizes meal preparation as a component of functioning in the domain of activity and participation. Activity is defined as execution of a

task or action by an individual (such as in a standard environment) while participation refers to involvement in a life situation (such as in the actual environment). A person's level of activity and participation may be hindered or facilitated by environmental factors, such as physical features and equipment in the home and clinical setting. The ICF stresses that the impact of environment on a person's activity and participation may also depend on personal factors (eg., sociodemographic characteristics) as well as level of body functions and the integrity of structures (eg., mental, sensory, neuromusculoskeletal and movement-related functions). The model thus suggests that features of the home and clinical environment may influence meal task performance in different ways, according to frail older adults' sociodemographic characteristics as well as their mental, sensory, neuromusculoskeletal and movement-related functions.

Our literature review suggested that two environmental factors could more specifically account for differences between home and clinical performance. Time spent in an environment tends to support task performance due to greater familiarity with tools and appliances (Provencher et al., 2009), while similarity between settings may favor application of knowledge in an unfamiliar context (Barnett and Ceci, 2002). Factors related to frail older adults' sociodemographic, mental (psychological and cognitive functions), neuromusculoskeletal and sensory characteristics might also explain discrepancies between assessment settings. Frailty has been found to be associated with attention, executive and memory decline (Patrick et al., 2002; Boyle et al., 2010), reduced grip strength, balance and vision (Davis et al., 2011; Fried et al., 2001; Puts et al., 2005), symptoms of anxiety and depression (Puts et al., 2005; Tinetti et al., 1995) and less years of formal education (Syddall et al., 2010). However, whether those factors enable or impede home and clinic meal preparation task performances in frail older adults remain unclear. Greater knowledge about factors to consider when assessing frail older adults in home and clinical environments could result in more appropriate services after discharge from rehabilitation.

This study thus aimed to 1) compare meal preparation task performance in home and clinical environments in a population of frail older adults, and 2) assess which factors may account for differences in task performance between environments.

5.3 Methods

5.3.1 Participants

Thirty-three frail adults aged 65 years or older and showing no severe cognitive impairments participated in this study (see Figure 5-1, page 107). To be eligible for the study, participants had to meet three or more of the following five frailty criteria, as described by Fried and collegues (2001, page 148): 1) Unintentional weight loss; 2) Reduced grip strength; 3) Exhaustion; 4) Slow walking speed (based on a 3 meters-walk in our study) and 5) Low physical activity. Participants had to have lived in their own home (house or apartment) and be owners of the main appliances (e.g., stove, can opener) for at least 2 months to ensure familiarity with their kitchen environment. Moreover, preparing a light meal had to be a relevant activity for all participants. Individuals showing severe physical, sensory or language deficits due to a neurologic disease or cognitive impairments that may suggest the presence of dementia were excluded from the study. All participants provided written informed consent prior to the study. The study was approved by the institutions' ethics committees.

5.3.2 Measures

Sociodemographic characteristics. Variables such as age, gender and education were collected.

Sensory and neuromusculoskeletal functions. Grip strength (kg) was measured with a Jamar dynamometer. Decreased balance was defined by a history of falls and/or use

of a walking aid. Visual impairments referred to the presence of glaucoma, cataracts, macular degeneration or other disease-related vision loss.

Cognitive functions. Attention and executive functions were measured with the Trail Making Test (parts A and B) (cf. Strauss and Spreen, 2006), the Victoria version of the Stroop Test (color naming and interference tasks) (cf. Strauss and Spreen, 2006) and the Tower of London (4 types of problem solving) (French version by Coyette and Vanderlinden, 1993). Episodic and working memory were respectively measured with Free and Cued Selective Reminding Test-16 items (4 recalls) (French version by Vanderlinden, 2004) and one subtest (Spatial Span) of the Wechsler Memory Scale (Wechsler, 1997). The psychometrics properties of all cognitive tests have been studied with populations of older adults (Strauss and Spreen, 2006; Coyette and Vanderlinden, 1993; Wechsler, 1997; Vanderlinden, 2004).

Psychological functions. Anxiety symptoms were assessed with the second scale (Trait-A) of Spielberger's State-Trait Anxiety Inventory (Spielberger, 1983). Depressive symptoms were assessed with the Geriatric Depression Scale (GDS) (Yesavage et al., 1983). Both questionnaires demonstrated good reliability and validity with older adults (Bouchard et al., 1996; Bourque et al., 1990).

Physical features of the environment. Familiarity with the home setting refers to the number of years participants had spent in their current home environment. Similarity between settings was determined by noting the difference (Yes/No) between the mechanism and/or design of the main appliances (stove, can opener and knife) in home and clinical settings, based on the assessor's judgment (*the scoring sheet is available from the first author*).

Meal preparation performance. Performance in preparing a light meal was evaluated with the Performance Assessment of Self-Care Skills (PASS) (Rogers and Holm, 1989). The PASS is a standardized tool based on observation of performance in 26 tasks

related to activities of daily living (such as preparing a light meal). For the present study, 2 of the 26 tasks were selected: heating soup and cutting fruit. These tasks were chosen because they are life-relevant for many frail older adults and involve the use of a potentially harmful appliance (stove, can opener and sharp utensils). Each task is rated for independence, safety and adequacy on 4-point ordinal scales, ranging from 0 (dependent, unsafe, inadequate) to 3 (completely independent, safe, adequate). Independence refers to the type and frequency of assistance provided by the examiner. Safety is related to the risks for the client or the environment while the task is performed. Adequacy takes into account the efficiency of the process and the quality of the result. Task scoring is based on rating 11 sub-tasks for heating soup and 6 sub-tasks for cutting fruit. The PASS was selected because it demonstrates good sensitivity to change and high test-retest and inter-observer reliability, and is still valid when tasks are administered separately (Holm and Rogers, 2008). Furthermore, this tool has a clinical and a home version, which are identical, except that participants use their own equipment when assessed at home.

5.3.3 Procedure

All assessments were completed in three or four 90 minutes-sessions by a trained occupational therapist. In the first session, eligibility criteria were verified. Demographic and physical variables were also collected. Individuals meeting the study criteria were invited to complete the cognitive and psychological tests.

In the second and third sessions, the PASS was administered. The assessor gave verbal instructions and presented materials and objects in a standardized manner for each task situation. For example, participants were instructed to plan the meal so that the food in both tasks would be ready to eat at about the same time. All participants performed the two tasks twice: once in their home and once in the clinical setting, which was a kitchen that the participant had never seen prior to this study. To minimize order effect, a counterbalanced design was used. Participants were randomly assigned, so that about half of the participants

first performed the tasks in their homes (n=15) and the other half first performed the tasks in the clinical setting (n=18). The time between the home and clinic assessments ranged from 1 to 3 weeks. Participants were videotaped during their performance for later scoring by another trained occupational therapist, who was blind to the specific study hypothesis. For each participant, home and clinic performances were scored at least 2 weeks apart.

A fourth session took place when some cognitive or psychological tests could not be performed in the first session due to participants' fatigue.

5.3.4 Data analysis

Descriptive statistics were generated for the main characteristics of the participants. A repeated measures multivariate analysis of variance (MANOVA) was used for each task (heating soup and cutting fruit) to determine whether an assessment settings effect occurred. The dependent variables were the three PASS performances (independence, safety, adequacy). The assessments in home and clinical settings were considered as repeated measures. Another repeated measures MANOVA was performed for each task to ensure that there were no learning effects between the first and the second assessments. Preliminary assumptions for MANOVA were verified, with no serious violation noted. Univariate analyses were employed whenever MANOVA revealed a main effect. A level of significance of $p < 0.05$ was used.

Bivariate correlation analyses were subsequently conducted to examine possible relationships between each independent variable (demographic, physical, cognitive, psychological and environmental characteristics) and the difference between each home and clinical PASS measure. Raw scores obtained on grip strength and cognitive tests were converted to z-scores, scaled scores or percentile based on age-, sex- and/or education-corrected norms (Coyette and Vanderlinden, 1993; Desrosiers et al., 1995; Strauss and Spreen, 2006; Vanderlinden, 2004; Wechsler, 1997).

A composite score was used for each of the three cognitive tests (Tower of London, Free and Cued Selective Reminding Test and Stroop Test-interference tasks). Pearson's and point-biserial coefficients were used respectively for the continuous and dichotomous variables. Partial correlation was performed to explore the relationship between physical functions (balance and vision problems) and the difference between PASS measures, while controlling for age. Significant correlations (p<.10) were retained and entered in the models. Multiple regressions were then applied following a stepwise approach (backward method). Regression analyses aimed to explore the factors that may predict differences between home and clinical PASS measures. Residual analyses were performed to ensure that the basic assumptions were met. Adjusted R^2 were interpreted as small (>.02), medium (>.13) and large (>.26) (Cohen, 1992). A level of significance of p<.05 was used. Statistical analyses were performed using SPSS for Windows Version 17.0.

5.4. Results

Characteristics of the participants are presented in table 5-1 (page108).

The main analysis from MANOVA revealed a significant difference between home and clinical PASS measures for heating soup (F=4.125; p=0.015) and cutting fruit (F=3.263; p=0.035). Univariate analyses indicated significantly higher scores in the home environment on independence (F=7.572; p=0.010) and adequacy measures (F=4.235; p=0.048) for heating soup, and on safety measures (F=5.146; p=0.030) for cutting fruit. No differences were found between home and clinic for other PASS measures (see Table 5-2, page 109). No learning effect was detected on the PASS measures for heating soup (F=1.621; p=0.205) and cutting fruit (F=2.912; p=0.051) (The trend observed was related to higher scores obtained for adequacy on the *first* assessment).

Results from bivariate associations and regression analyses are reported in Tables 5-3 and 5-4 (pages 110-111). For "heating soup", lower level of education and greater similarity between settings (can opener) were correlated with higher independence scores at

home and they explained a moderate portion (20%) of the variance. Having balance problems and less familiarity with the home environment were related to higher safety scores in the clinical setting and they made a large contribution (27%) to the model. Poorer performance on an executive function measure (Stroop Test-interference tasks) explained a small portion of the variance (8%) for higher adequacy scores at home. For "cutting fruit", poorer vision and slower performance (Stroop Test-color naming) emerged as predictors for higher independence scores in the clinical environment (21% of the variance). The latest (Stroop Test-color naming) also explained a small portion of the variance (8%) for higher adequacy scores in the clinical setting. The number of variables entered in each model allows a 10:1 ratio of participants to independent variable (Field, 2009, p.222).

5.5 Discussion

This study examined the impact of the environment on meal preparation task performance in a population of frail older adults and the factors that might explain differences between home and clinical environments. The results show that frail older adults performed better overall at home than in an unfamiliar setting on both tasks. However, the significant difference found between settings on each task varies according to which component of PASS performance (independence, safety or adequacy) was measured. Further analysis indicated that a better performance at home was associated with some demographic, cognitive and environmental factors. Physical factors were however more strongly related with a better performance in the clinical setting. Thus the results of this study support the hypothesis derived from the ICF model that environmental factors may impact differently on task performance, according to frail older adults' personal factors and body functions and structures.

Our results suggest that frail older adults may benefit significantly from the familiarity of home when assessed for tasks such as "heating soup", as revealed by the scores obtained on the independence and adequacy measures. In a study conducted in older

women with heart failure, Raina et al. (2007) found a significant difference between settings on the same PASS measures for that specific task. Taken together, our findings confirmed that some tasks, such as heating soup, are highly sensitive to changes that occurred in the environment where the assessment takes place.

Our study reveals that higher independence scores in the home environment for heating soup were more strongly correlated with lower education as well as similarity between tools used in both settings (can opener) during task performance. Based on Barnett and Ceci's work (Barnett and Ceci, 2002), it might be hypothesized that frail older adults' with lower education may have more difficulties to apply their knowledge and strategies in a new context, which impacted on their ability to operate an unusual can opener without assistance. Our study also reveals that higher adequacy scores in the home environment were associated with poorer executive functions. The difference between settings may be related to some older adults' decreased ability to recruit enough cognitive resources when performing two tasks simultaneously in a challenging environment (Craik and Bialystok, 2006). In the clinical setting, decreases in performance were found in independence and adequacy rather than in safety. These results suggest that the limited cognitive resources were allocated to critical safety task elements, such as avoiding burning the soup on the stove. Results must however be interpreted with caution because the explained variance is still modest.

Our results on the PASS safety measures for "cutting fruit" also suggest that frail older adults may benefit significantly from the familiarity of home. However, the higher safety scores obtained for that task were not associated with any of the factors measured. On the other hand, even if PASS measures did not reveal any significant clinic advantage, our findings indicate that having balance and vision problems was more strongly associated with higher scores in the unfamiliar environment. These results supported the hypothesis that clinical settings may enable autonomy and reduce the risk of falls and accidents in some frail older adults, since these environments usually offer assistive devices (e.g.,

magnifying glasses were available to participants when performing the PASS in the clinical setting) and are often less crowded (Hagedorn, 1995; Rogers et al., 2003). However, a measure of the support used by frail participants with balance problems when carrying bowls of soup could have help to know if the better performance in the clinical setting was more closely related to physical features of environment (availability of support) or to excess confidence induced by the predictable nature of the familiar setting (not using the support available at home).

This study has some potential limitations. First, our conclusions are based on data collected on one type of activity of daily living (cooking tasks). Thus it is uncertain whether similar results may be obtained if tasks expected to be less affected by the environment (e.g., getting dressed) were selected. Second, it is possible that some of the differences found between settings may be explained by factors not measured in the study (e.g., quality of tools used at home, socioeconomic status). Finally, the number of participants enrolled in this study, although sufficiently powerful for the robust analyses conducted, was relatively small. Caution is thus required in the interpretation of our results given the context of multiple analyses with a small sample size.

Overall, our results revealed lower performance in independence, security and/or adequacy on tasks performed in an unfamiliar environment in a population of frail older adults. Since even a subtle functional decline could be clinically significant in frail elders (Gitlin et al., 2008), small differences detected in performance between environments could well be clinically meaningful for many of them. These results suggest that a home visit may offer a more accurate assessment of cooking task performance. However, when a home visit is not possible, health professionals assessing frail older adults in a clinical setting should provide tools and appliances similar to the ones they use at home to obtain the best estimate of clients' potential.

To our knowledge, this is one of the first study to document which factors might explain differences between settings in task performance in a frail population. Our findings

may help to clarify the profile of frail clients likely to be affected by an unfamiliar context and the environmental features to take into account when assessing for a meal preparation task in clinical settings. Greater knowledge could ultimately help occupational therapists to provide to frail patients services tailored to their needs after discharge from rehabilitation.

5.6 Acknowledgements

5.7 References

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N = 32
Recruited through ambulatory geriatric services (discharge > 3 months) & local community health centers (Montreal, Canada)

N = 49
Recruited by newpapers & through other participants

N = 81
Contacted by phone or in person

N = 27 Refused
- Too tired or afraid to go out in winter (n=11) - Not interested (n=8) - Unavailable (n=4) - Hospitalized or fell recently (n=2) - Not comfortable with assessments in their homes (n=1) - Plan to move to another residence (n=1)

N = 15 Excluded
- Did not satisfy frailty criteria (n=13) - Did not prepare meals anymore (n=1) - Has a medical condition that could adversely affected their usual performance (eg.Influenza) (n=1)

N = 6 Drop-outs
- Due to health deterioration - Due to fatigue or pain during home or clinic assessments

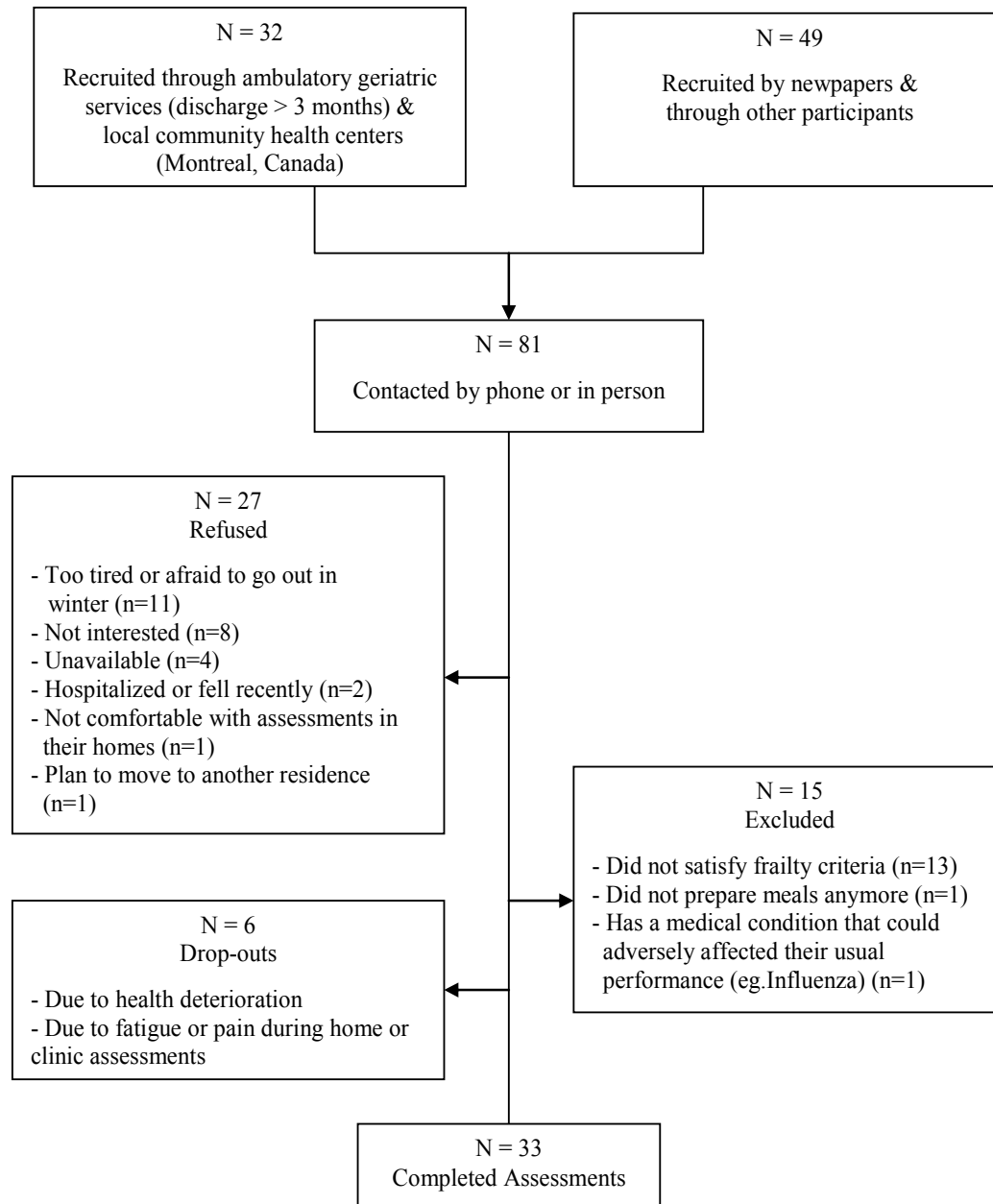| N = 33 |
|---|
| Completed Assessments |

Figure 5-1   Recruitment of the participants

Table 5-1 Characteristics of participants (n = 33)

Variables	Mean (SD)	Frequency (%)
Age (y)	76.0 (6.4)	
Education (y)	11.2 (4.3)	
Gender (women)		30 (90.9)
Familiarity with home environment (y) (n=28)	15.1 (11.7)	
Similarity between settings (yes)		
- Stove		12 (39.4)
- Can opener		12 (39.4)
- Knife		14 (42.4)
Grip strength (kg)	16.7 (7.5)	
Vision problems (yes)		7 (21.2)
Balance problems (yes)		18 (54.5)
Attention/executive functions [a]		
- Trail Making Test A (s)	56.2 (19.6)	
- Trail Making Test B (s)	151.9 (83.6)	
- Stroop Test (color naming) (s)	18.5 (5.8)	
- Stroop Test (interference task) (s)	51.2 (37.8)	
- Stroop Test (interference task) (number of errors)	1.01 (1.64)	
- Tower of London (N3) (s)	13.8 (14.0)	
- Tower of London (N5) (s)	43.1 (33.1)	
- Tower of London (N5+) (s)	26.8 (18.3)	
- Tower of London (N5-) (s)	55.3 (46.8)	
Working memory [b]		
- Spatial Span (n=32)	12.8 (3.0)	
Episodic memory [b]		
Free and Cued Selective Reminding Test	14.6 (1.6)	
- Recall 1 (number of words/16) (n=31)	15.5 (1.2)	
- Recall 2 (number of words/16) (n=32)	15.4 (1.2)	
- Recall 3 (number of words/16) (n=31)	15.3 (1.2)	
- Recall after 20 minutes (number of words/16) (n=28)		
Anxiety symptoms (score range: 20-80) [c]	39.0 (8.9)	
Depressive symptoms (score > 11/30) [c] (n=32)		12 (37.5)

Notes: [a] Lower scores indicate better performance; ; [b] Higher scores indicate better performance; [c] Lower scores indicate fewer symptoms

Table 5-2 Home and clinical PASS measures for the 2 meal preparation tasks

PASS measures (score range 0-3) [a]	Home (n =33)	Clinic (n = 33)
Heating soup:		
Independence	2.95 ± 0.08	2.90 ± 0.12*
Safety	2.63 ± 0.61	2.55 ± 0.51
Adequacy	1.94 ± 0.56	1.67 ± 0.54*
Cutting fruit:		
Independence	2.80 ± 0.26	2.83 ± 0.22
Safety	2.76 ± 0.44	2.52 ± 0.57*
Adequacy	2.00 ± 0.70	2.01 ± 0.63

[a] Lower scores indicate poorer performance; *p<0.05 based on univariate analysis from MANOVA.

Table 5-3 Correlations between the independent variables and the difference (home minus clinic) in PASS measures

Independent variables	Δ Heating soup			Δ Cutting fruit		
	Independence	Safety	Adequacy	Independence	Safety	Adequacy
Demographic characteristics						
- Education (yrs)	**-.395***	-.208	-.183	-.190	-.011	.187
Physical functions						
- Grip strength (SS)	-.36	.182	.001	.070	.090	.128
- Vision problems (yes)	.297	-.170	-.090	**-.347***	-.208	-.128
- Balance problems (yes)	.162	**-.482***	-.236	.148	-.238	-.028
Cognitive functions						
-Trail Making Test						
part A (percentile)	-.040	.051	-.038	.046	.085	.244
part B (percentile)	-.054	.153	-.019	.002	.133	.155
- Stroop Test						
Color naming (SS)	.162	.136	-.288	**.320***	.257	**.331***
Interference tasks (CS)	-.044	.284	**-.330***	.085	.112	.173
- Tower of London (CS)	-.231	-.140	-.043	-.147	.056	-.162
- Spatial Span (Scaled score)	-.052	.105	-.114	-.026	-.012	-.027
- Free and Cued Selective Reminding Test (CS)[1]	-.136	.032	.081	-.188	.027	-.203
Psychological functions						
- State-Trait Anxiety Inventory (score)	.073	-.160	-.050	.166	-.062	.240
- Geriatric Depression Scale (depressive symptoms)[2]	.217	-.116	-.227	.249	-.134	**.321***
Environmental characteristics						
- Familiarity with home (yrs)	.098	**.339***	.093	-.045	-.001	-.278
- Similarity between home and clinic settings (yes)						
- can opener	**-.418***	-.016	-.128	-	-	-
- stove	-.169	-.190	.038	-	-	-
- knife	-	-	-	-.018	-.141	-.211

Values are Pearson and point-biserial correlation coefficients. [1] Spearman coefficient (data not normally distributed). [2] biserial correlation coefficient
Positive sign indicates that a higher value on the independent variable are correlated with a better performance at home. Both balance and vision problems' correlations were still significant after controlling for age.

*<.10

Δ = difference (home minus clinic) in PASS measures; CS: composite score; SS: standard score

Table 5-4   Models of factors associated with differences between settings in PASS
measures .

Variables	Standardized regression coefficient	p value	F model	p value of the model	Adjusted R²
Δ Heating a soup					
- Independence			4.946	.014	**.198**
Similarity between settings (can opener)	.321	.065			
Education	-.288	.097			
- Safety			5.989	.007	**.270**
Balance problems	-.457	.010			
Familiarity with home	.334	.053			
- Adequacy			3.793	.061	**.080**
Stroop-interference tasks	-.330	.061			
Δ Cutting a fruit					
- Independence			5.218	.011	**.209**
Vision problems	-.395	.018			
Stroop-color naming	.374	.025			
- Adequacy[1]			3.730	.063	**.081**
Stroop-color naming	.333	.063			

[1]excluded variable: depressive symptoms

Δ = difference (home minus clinic) in PASS measures; CS: composite score; SS: standard score

Chapitre 6 Cooking task assessment in frail older adults: who performed better at home and in the clinic? (Article 5)

Le texte de ce chapitre a été soumis le 21 février 2012 à la revue *Scandinavian journal of Occupational Therapy* sous le titre *Cooking task assessment in frail older adults: who performed better at home and in the clinic?*. L'étudiante a rédigé l'article en entier sous la supervision de ses directrices Louise Demers, Ph.D., et Isabelle Gélinas, Ph.D., qui sont respectivement deuxième et troisième coauteures. Francine Giroux, statisticienne au Centre de recherche de l'Institut universitaire de gériatrie de Montréal, qui apparaît à titre de quatrième auteure, a été impliquée dans la rédaction du manuscrit afin de réviser les procédures statistiques utilisées.

Le format de présentation des références du prochain chapitre est conforme aux règles d'édition de cette revue.

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6.1. Abstract

Aim: The purpose of this study was to determine: 1) the proportion of frail older adults who demonstrate (a) statistically significant and (b) clinically meaningful differences between home and clinic cooking task performance; 2) factors associated with a better performance in each environment. *Methods:* Thirty-seven participants were evaluated with the Assessment of Motor and Process Skills (AMPS) in home and clinical environments using a counterbalanced design. Demographic, physical, cognitive, psychological and environmental characteristics were also collected. *Results:* 33 participants were retained for the analyses. A statistically significant difference ($>\pm2$ standard errors of measurement) between environments was found in 33% of the participants on the motor scale and in the same proportion on the process scale. A clinically meaningful difference (based on cut-off scores predicting need for assistance) was noted in 30% of the participants. A better performance at home on process scale was mostly associated with a decrease in some cognitive functions, while a better performance in the clinical environment on motor scale was related to a decline in some physical functions. *Conclusions:* Our findings may help occupational therapists identify frail patients for whom home assessments would be advisable so that assistance provided prior to discharge meets their needs at home.

Key words: Frail elderly, activities of daily living, performance-based assessment, environment

6.2. Introduction

Occupational therapists (OTs) practicing in geriatric rehabilitation units routinely assess their patients prior to discharge for their ability to perform some tasks related to activities of daily living (ADL). The aim of this performance-based assessment is to know if their patients can still perform life-relevant ADL tasks in an independent, safe and efficient manner and if home care services are needed. Because a home visit can not always be done prior to discharge, this evaluation is often performed in clinical settings. However, many OTs question the extent to which older adults' performance assessed in such unfamiliar environments truly reflects the performance that would be observed at home.

It is essential to know if reliable recommendations can be made based on assessments performed in clinical environments, especially with frail older adults. Frail elderly refers to a population with reduced reserves and resistance to stressors and thus at increased risk of falls, disability and hospitalization (1). They consequently make up a large proportion of patients seen in geriatric rehabilitation units (2) and are major consumers of home care services (3). Knowing that even a minimal change in environment may have a huge impact on their functional abilities (4), inaccurate estimates of frail elders' performance based on clinical assessments could mean that services provided upon discharge do not actually meet their needs. More specifically, overestimation of their abilities can increase the risk of injury due to inappropriate assistance at home. Conversely, underestimation of their abilities may lead to unnecessary home care services being recommended and even a relocation to residential care.

Cooking is an ADL often selected by OTs to assess the functional abilities of frail elders because this activity is familiar and life-relevant to most older adults (5). Moreover, cooking generally requires to move around, to manage many tasks simultaneously and to use potentially harmful appliances (stove, can opener, toaster, kettle). This ADL assessment

is thus helpful in estimating whether assistance is needed to minimize the risk of injury (falls, burn and cuts) in this vulnerable population.

An observation-based tool widely used by OTs to assess performance in familiar and life-relevant tasks is the Assessment of Motor and Process Skills (AMPS) (6). The AMPS simultaneously evaluates effort, efficiency, safety, and independence of 16 ADL motor and 20 ADL process skills as a person performs standardized ADL tasks (e.g., preparing eggs, toasts and tea). ADL motor skills refer to the ability to move oneself or task objects. ADL process skills are related to the ability to select, interact with and use tools and materials, to carry out individual actions and steps, and to modify performance when problems are encountered. The AMPS is known to be sensitive to change and provides cut-off scores to help clinicians identify individuals more likely to need assistance to live in the community (6).

To our knowledge, three studies (7-9) conducted respectively with populations with brain damage (n=20), dementia (n=19) and older adults with and without medical problems (n=20) used the AMPS to compare task performance between home and clinical environments. Considered together, the results of those studies suggest that unfamiliar assessment settings significantly affect -both positively and negatively- the performance of some individuals. However, little is known about the characteristics of participants who showed a significant difference between home and clinical environments. A literature review (10) suggested that lower levels of education, poorer balance, grip strength and vision, decreased cognitive resources (such as executive and memory functions) and higher levels of anxiety may predispose frail older adults to a better performance in a more familiar and predictable environment. However, some of those factors may also increase risks of falls and injury in home environment, which is often more crowded and cluttered. In sum, factors associated with a better task performance in home or clinical settings remain unclear. Moreover, knowing that even a subtle functional decline could be clinically

meaningful in this population (11), it is important to evaluate if statistically significant differences found between home and clinic performances are also clinically meaningful.

This study thus aimed to determine: 1) the proportion of frail older adults who demonstrate (a) statistically significant differences between their home and clinic ADL motor and ADL process ability measures, (b) clinically meaningful differences between their home and clinic ADL ability measures; 2) factors associated with a better performance in each environment.

6.3 Methods

6.3.1 Participants

Thirty-seven frail adults aged 65 years or older and showing no severe cognitive impairments were selected for this study. Participants were recruited from ambulatory geriatric services and local community health centers in the urban area of Montreal, Canada. The sample also included older volunteers who learned about the study through newspapers or were referred by other participants. To be eligible for the study, participants had to meet three or more of the following five frailty criteria, as described and operationalized by Fried and colleagues (1, page 148): 1) Unintentional weight loss; 2) Reduced grip strength; 3) Exhaustion; 4) Slow walking speed (based on a 3 meters-walk in our study) and 5) Low physical activity.

All participants lived in the community. Those recruited from inpatient services had been discharged for at least 3 months, which suggests a stable medical condition. Participants had to have lived in their own home (house or apartment) and be owners of the main appliances (eg., stove, refrigerator, toaster, kettle, can opener) for at least 2 months to ensure familiarity with their kitchen environment. Moreover, cooking had to be a relevant ADL for all participants. Participants were free of any acute medical condition (e.g., influenza) that would have negatively influenced their usual task performance. Individuals

showing severe physical, sensory or language deficits due to a neurological disease or cognitive impairments that may suggest the presence of dementia were excluded from the study. All participants provided written informed consent prior to beginning the study. This research was approved by the institutions' ethics committees.

6.3.2 Measures

Demographic characteristics. Demographic variables, such as age, education and main diagnosis or conditions, were collected.

Physical functions. Grip strength was measured with a Jamar dynamometer. Decreased balance was defined by a history of falls and/or use of a walking aid. Visual impairments refer to the presence of glaucoma, cataracts, macular degeneration or disease-related vision loss.

Cognitive functions. Attention and executive functions were measured with the three following tests: 1) The Trail Making Test (12-13), which is a paper-and-pencil task that requires participants to circle numbers in consecutive order (TMT A), and numbers and letters in alternating order (TMT B); 2) The Victoria version of the Stroop Test (13-14) which requires participants to read aloud as quickly as possible the color of 24 dots (part D), common words (part W) and then name the color of the ink for printed words (e.g., name the color of the ink "green" of the printed word "blue"; part C); 3) The Tower of London (15-16), which requires participants to move colored balls one-by-one from an initial state to match a set of goal positions. Working memory was measured with one subtest (Spatial Span) of the Wechsler Memory Scale (17-18). The test requires the participant to repeat a tapped sequence of blocks in the same order (forward condition) and in reverse order (backward condition). Episodic memory was measured with the Free and Cued Selective Reminding Test-16 items (19-20). In this test, participants had to recall a list of 16 common words in free and cued conditions on 4 trials. The psychometrics

properties of all the cognitive tests used in this study have been studied with populations of older adults (13, 16, 17, 20).

Psychological functions. Anxiety symptoms were assessed with the second scale (Trait-A) of the Spielberger State-Trait Anxiety Inventory (21, 22). Trait-A measures self-reported anxiety, which refers to the proneness of individuals to perceive stressful situations as threatening. It comprises a 40-item Likert-scale ranging from 1 (not at all) to 4 (almost always). This questionnaire demonstrated good reliability and validity with older adults (22).

Environmental characteristics. Familiarity with home setting refers to the number of years participants had spent in their current home environment. Similarity between settings was determined by the percentage difference (Yes/No) between the type and location of the main tools, appliances and facilities used in the home and clinical environments (*the scoring sheet is available from the first author*).

Cooking task performance. Cooking task performance was evaluated with the Assessment of Motor and Process Skills (AMPS) (6). Each ADL motor and ADL process skills is rated on a 4-point scale ranging from deficit [1] to competent [4]. A computer program converted raw ordinal skills scores into equal-interval ability measures. The ability measure, expressed in logits (logg-odds probability units), accounted for skills item difficulty, tasks challenge and the severity of the rater. The AMPS demonstrates high reliability and validity cross-culturally with males and females of various ages and diagnosis (6).

6.3.3 Procedure

All assessments were completed in three or four 90 minutes-sessions by an AMPS trained OT. In the first session, eligibility criteria were verified. Demographic and physical variables were also collected. Individuals meeting the study criteria were invited to

complete the cognitive and psychological tests. All tests were conducted in their home and administered following the same order.

In the second and third sessions, the AMPS was administered, in accordance with the standardized procedures described in the AMPS manual (including familiarizing participants with the environments), but with one exception: AMPS tasks offered as options were restricted to cooking standardized tasks that involve the use of an electrical appliance (e.g., stove, oven, micro-wave, toaster, coffee maker machine, electric kettle or can opener). The rationale was that these tasks required close interaction with the environment and potentially harmful material. As stipulated in the AMPS manual, the participants were interviewed to ascertain which tasks were perceived as life-relevant. The AMPS trained interviewer narrowed down the choice to those tasks that would present an appropriate challenge to the participant. All participants performed twice the two tasks selected: once in their home and once in the clinical setting. The same tasks were completed in each environment, following the same order. The clinical setting was a typical OT department's kitchen which the participant had never seen prior to this study.

To minimize order effect, a counterbalanced design was used. Participants were randomly assigned, so that half of the participants first performed the tasks in their homes and the other half first performed the tasks in the clinical setting. The time between the home and clinic assessments ranged from 1 to 3 weeks. This aimed to limit the participants' recall of the test, while reducing the possibility that a fall or an hospitalization may have occurred during this length of time. Participants were videotaped during their performance. This procedure allowed later scoring by another AMPS trained and calibrated OT who was blind to the order of settings and to the study hypothesis. For each participant, assessments in the two environments were scored at least 2 weeks apart to limit the rater's recall of their previous performance. The number of participants scored first in familiar and unfamiliar settings was also counterbalanced. The type and location of the main tools, appliances and facilities used in the home and clinical environments was noted based on the films.

A fourth session took place when some cognitive or psychological tests could not be performed in the first session due to participants' fatigue.

6.3.4 Data analysis

Descriptive statistics were generated for the participants' characteristics. Rasch measurement statistics were performed by AMPS project (2011) (23) to determine if the rater scored the study participants' performance in a reliable and valid manner. A contingency table was also conducted to detect any effect of setting order or any learning effects.

The standard error of measurement (*SEm*) was used to evaluate statistically significant changes in each participant's ADL motor and ADL process ability measures between home and clinical environments (6, pages 15-61). A significant difference in performance is likely to have occurred if the person's home and clinic measures differed by at least ±*2SEm* (6).

The clinical difference between home and clinic measures was based on expected cut-offs indicative of a person's ability to live independently. The latest version of the AMPS manual (6) reported that individuals with a score < 1.5 logits on ADL motor ability measures and < 1.0 logits on ADL process ability measures are more likely to need assistance to live in the community. When ADL motor and ADL process measures do not fall within the same decision zones, ADL process measures are the strongest predictor to live in the community (pages 15-52 and 15-53). As a consequence, we determined that the difference between settings was clinically meaningful if: 1) both motor and process ADL ability measures were below the cut-off in one of the settings and above the cut-off in the other setting or; 2) process ADL measure was below the cut-off in one of the settings and above the cut-off in the other setting.

Bivariate correlation analyses were conducted to examine possible relationships between the independent variables (demographic, physical, cognitive, psychological and environmental characteristics) and the difference between home and clinic ADL motor and ADL process measures. Grip strength (kg) was converted to z-scores based on age- and gender-corrected norms (24). All scores generated by cognitive tests were converted to *z*-scores, scaled scores or percentile based on age- and education-corrected norms. A composite score was used for each of the three cognitive tests (Tower of London, Free and Cued Selective Reminding Test and Stroop Test) in order to reduce the number of independent variables. Partial correlation was used to explore the relationship between physical functions (balance and visual problems) and the difference between home and clinic ADL measures, while controlling for age. Pearson's and point-biserial coefficients were used respectively for the continuous and dichotomous variables. Significant correlations (p<0.10) were retained and entered in the models. Multiple linear regressions were then applied using a stepwise approach (backward method). Regression analyses aimed to explore the factors that may predict differences between home and clinic ability measures. Assumptions required for regression analysis were inspected with regards to multicollinearity (r >0.7) as well as normality, linearity, and homoscedasticity of residuals. Adjusted R^2 were interpreted with Cohen's criteria as small (>.02), medium (>.13) and large (>.26) (25). A level of significance of *p*<.05 was used. Statistical analyses were performed using SPSS for Windows Version 17.0.

6.4 Results

Participants' main characteristics are presented on Table 6-1 (page 132). Rasch analysis performed by the AMPS project (23) indicated that the rater globally scored participants' performance in a valid and reliable manner. However, 4 participants' ability measures were invalid (scores obtained were higher than expected, based on the demographic information provided) and, therefore, could not be used to document a change in ADL performance (6). Thirty-three participants were thus retained for analyses.

The contingency table revealed no effect of order settings or learning effect (Pearson Chi-Square on motor scale: $\chi_1^2 = 0$, $p = 1$ and process scale: $\chi_1^2 = 0.244$, $p = 0.622$). In other words, the number of participants who demonstrated higher ADL ability measures at home was similar whether they first performed at home or in the clinic (see Table 6-2, page 133 for details).

Examination of the home and clinic ADL ability measures revealed that 11 (33.3%) participants demonstrated a significant difference in performance between the two settings on each AMPS scale (Table 6-2, page 133). ADL motor ability measures were significantly higher at home for 9 (27.3%) participants and in the clinical setting for 2 (6.1%) participants. ADL process ability measures were significantly higher at home for 8 (24.2%) participants and in the clinical setting for 3 (9.1%) participants. Only one participant demonstrated statistically significant higher scores at home on both motor and process scales.

Ten participants (30.3%) showed a clinically meaningful difference between home and clinical settings (Table 6-2, page 133). Eight of these (24.4%) experienced an increase in the home compared to the clinical setting. Only one participant showed a clinical difference when matched ADL motor and process results were considered.

Bivariate associations between each independent variable and the difference between home and clinic ADL ability measures on ADL motor and ADL process scales are reported in Table 6-3 (page 134). Four variables were significantly associated with the difference in ADL motor ability scores ($p<.10$): reduced grip strength, poorer vision (even after controlling for age), higher familiarity with the home environment and better performance on an executive function test (TMT B) were correlated with better scores in the clinical environment. Four variables were significantly associated with the difference in ADL process ability scores ($p<.10$): lower performance on some attention and executive

function tests (TMT A, TMT B, Stroop Test-composite score, Tower of London-composite score) were correlated with higher scores in the home environment.

For ADL motor ability measures, results from regression analyses revealed that grip strength, familiarity with the home environment and TMT B made a significant and large contribution (30.4 %) to the difference between home and clinical environments (vision did not improve the explained variance) (Table 6-4, page 135). Of these 3 variables, grip strength made the largest unique and significant contribution. For ADL process ability measures, only one variable (Stroop Test) explained a significant and large portion of the variance (29.5%) between the home and the clinical setting (TMT A, TMT B and Tower of London did not improve the explained variance). No more than 4 variables were entered in each model which allows a 8:1 ratio of participants to independent variable.

6.5. Discussion

This study first examined statistically significant differences between home and clinical environments in cooking task performance in frail older adults. Our results revealed that ADL motor ability as well as ADL process ability significantly differed between environments in one third of our participants. More specifically, our results indicate that most of them (respectively 24% to 27% of the sample on ADL motor and ADL process scales) offered a better performance at home. These results are consistent with previous studies (6-8), which also reported a home advantage in 15% to 21% of their participants for ADL motor ability and in 21% to 50% for ADL process ability. Our study also examined which factors were related to a better performance in each setting. Home advantage on process scale was mostly associated with a decrease in some cognitive functions, while a better performance on motor scale in the clinical setting was more closely related to a decline in some physical functions. Thus the results of this study support the hypothesis that home and clinical assessment settings may have a different impact on task performance, according to frail older adults' characteristics.

More specifically, our results indicated that factors such as decreased attention and executive functions were associated with better ADL process ability measures at home. Even if there is no exact relationship between process skills and cognitive abilities, those factors are congruent with more difficulties to select, use, interact with tools and materials, to carry out individual actions and steps, and to modify performance when problems are encountered in the clinical environment. Our findings might suggest that the familiar and predictable nature of home assessment settings may support routine and automatisms, which help to reduce the cognitive load (26, 27). Conversely, to perform a familiar task in an unfamiliar setting may require to inhibit mental representation of the home environment (such as not to look for a tool where we used to find it at home). This hypothesis is supported by our results, since decreased inhibitory function (as measured by the Stroop Test) was found to be most strongly associated with poorer process ability measures in the clinical setting.

Our results indicated that factors such as reduced grip strength were associated with better ADL motor ability measures in the clinical setting. Even if physical abilities do not equate to motor skills, those factors may be consistent with more difficulties to move oneself and task objects in the home area. It might be hypothesized that the clinical environment may offer to frail elders with a more marked physical decline the opportunity to use some tools and materials more adapted to their needs (e.g. drawers easier to open, lighter pans) which may override the enabling effect of familiarity. Results must however be interpreted with caution because the reported correlations were still modest.

Results of this study also documented the proportion of frail participants who showed a clinically meaningful difference between settings. Our results indicated that this may be found in almost one third of the sample and that most of those participants demonstrated a better performance at home. Those results suggested that, for a proportion of frail elderly, different recommendations could have been made based on AMPS results, whether they are assessed at home or in the clinic. Our results must however be interpreted

with caution, since many participants' ADL ability measures are close to the cut-offs score. More specifically, 60% of those participants fell within the risk zone on the home and clinic process scales (between 0.7 logits and 1.3 logits). Those conclusions are in line with a study from Merritt (2010) (28) which stress the importance to use complementary tools to determine the person's need of assistance in the community. It is also important to remind that AMPS cut-offs can only be used to support OT clinical judgment and that further investigation about "best cut-off" measures is still needed (28).

Taken together, our results thus suggest that home visits should be performed for a more accurate assessment of cooking task performance in some frail older adults, if the objective is to know how they will perform at home. These conclusions are in accordance with those of Nygard et al. (8) and Park et al. (9), which suggest that patients should be evaluated in settings that are relevant to their everyday lives. However, when home visits is not possible, OTs assessing frail older adults in a clinical environment should be aware that some cognitive and physical abilities have to be taken into consideration for a good estimate of their abilities. For some frail elders, clinic assessments may overemphasize or mask difficulties that might be encountered at home. Reliable data about the home environment should also be collected through client or family interviews (weight of tools used, lighting) so that appropriate recommendations can be made. On the other hand, assessments in a clinical setting may still be relevant to reveal how some frail patients with decreased cognitive capacities adapt to unusual challenges or how they can compensate for their limitations in a new environment. Clinic assessments may also be helpful with frail elders with reduced physical capacities to give the best estimate of their potential. It should be noted that both statistically significant and clinically meaningful differences were found in about 15% of our sample (5 participants). Given the large prevalence of frailty, this means that many individuals may be inaccurately assessed in the clinical setting. Our findings may thus help to identify frail clients for whom home visits would be advisable.

This study has some potential limitations. First, even if our participants were representative of the frail elderly population admitted in rehabilitation units, they were not hospitalized at the time of the study. However, if conducted with hospitalized frail older patients, the study would have raised methological concerns. On one side, unstable medical condition exposes to maturation bias, because a better performance may have been related to their functional improvement more than the environment itself. On the other side, counterbalanced design may be difficult to apply and even raise ethical concerns, since a home visit can create false expectations in patients who are relocated on discharge (29). Those considerations might explain the dearth of robust studies having recruited rehabilitation inpatients. Second, the number of participants enrolled in this study was relatively small. Our sample size limited our ability to include every possible factor that might explain differences in AMPS performance between home and clinical settings. Factors were however selected based on a review (10) which suggested their potential influence. Moreover, initial correlational analysis were performed to avoid overfitting of models. Finally, as a last limitation, some physical functions (e.g. balance problems) could have been measured with well defined criteria from validated tools.

Compared to previous AMPS researches that explored the impact of environment on ADL ability measures, the present study went one step further by identifying factors associated with a better performance in home and clinical settings in a frail population and the proportion of participants who show a clinically difference between settings. Further research is needed to detail the profile of frail elders who tend to demonstrate a clinically meaningful difference between settings. Greater knowledge could ultimately mean that frail clients are provided with services adapted to their needs, fostering their ability to live independently at home while minimizing the cost of delivering inappropriate services.

6.6. Acknowledgements

6.7. References

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Table 6-1 Participants' demographic, physical, cognitive, psychological and environmental characteristics (n=33).

Variables	Mean ± SD	Frequency (%)
Demographic characteristics		
Age (years)	76.4 ± 6.0	
Education (years)	10.7 ± 6.0	
Gender (women)		30 (90.9)
Main diagnosis or conditions		
- Orthopedic/musculoskeletal (eg., osteoarthritis, rhumatoid arthritis, neck/back pain)		30 (90.9)
- Medical (eg., respiratory, diabetes, cardio-vascular)		29 (87.9)
Physical functions		
Grip strength (kg)	16.4 ± 7.7	
Vision problems (yes)		7 (21.2)
Balance problems (yes)		18 (54.5)
Cognitive functions		
- Trail Making Test [a, d] part A (s)	57.2 ± 18.6	
part B (s)	163.8 ± 83.6	
- Stroop Test [a, d] part D (s)	18.8 ± 5.7	
part W (s)	24.9 ± 5.4	
part C (s)	53.1 ± 37.8	
number of errors	1.2 ± 1.5	
- Tower of London [a] N3 (s)	14.1 ± 13.9	
N5 (s)	47.2 ± 35.3	
N5+ (s)	29.5 ± 22.0	
N5- (s)	57.0 ± 45.8	
- Spatial Span [b, e] (number of correct recalls/32)	12.6 ± 3.0	
- Free and Cued Selective Reminding Test (number of words/16) [b]		
Recall 1 [e]	14.6 ± 1.5	
Recall 2 [d]	15.5 ± 1.0	
Recall 3 [e]	15.6 ± 0.9	
Recall after 20 minutes [f]	15.4 ± 1.0	
Psychological functions		
State-Trait Anxiety Inventory (score range: 20-80) [c, d]	39.8 ± 10.2	
Environmental characteristics		
Familiarity with home environment (years) [f]	14.7 ± 11.6	
Similarity between home and clinic settings (%)	52.2 ± 7.43	

Notes: [a] Lower scores indicate better performance; [b] Higher scores indicate better performance; [c] Lower scores indicate fewer symptoms; [d] n=32; [e] n=31; [f] n=28.

Table 6-2 Statistical and clinical differences between home and clinic ADL ability measures for each participant.

Participant	ADL motor ability measures (logits)				ADL process ability measures (logits)			
	Home	Clinic	±2*SEm*	Difference home - clinic	Home	Clinic	±2*SEm*	Difference home - clinic
1	1.95	1.74	.46	.21	1.17	.79	.39	.38†
2 [a]	1.71	1.62	.46	.09	.44	.84	.38	-.40*
3	1.61	1.82	.46	-.21	.78	.81	.38	-.03
4 [a]	1.79	1.23	.45	.56*	.73	.89	.38	-.16
5	1.12	1.01	.44	.11	1.27	.79	.39	.48*†
6 [a]	1.43	1.60	.45	-.17	.69	.02	.38	.67*
7	1.64	1.21	.45	.43	.97	.34	.38	.63*
8 [a]	1.39	1.30	.44	.09	.83	.86	.38	-.03
9	2.09	1.21	.47	.88*	1.70	.69	.40	1.01*††
10	.98	1.47	.45	-.49*	.91	.68	.38	.23
11	1.75	1.75	.46	.00	1.28	1.77	.41	-.49*
12 [a]	2.09	2.00	.48	.09	.89	1.20	.39	-.31†
13	2.07	1.76	.48	.31	.87	.77	.38	.10
14	1.10	1.24	.44	-.14	.50	-.14	.40	.64*
15 [a]	2.81	2.00	.55	.81*	1.62	1.26	.41	.36
16 [a]	2.46	3.08	.68	-.62	1.06	1.29	.40	-.23
17 [a]	1.31	1.22	.44	.09	1.24	.99	.39	.25†
18	2.62	2.00	.55	.62*	1.14	1.66	.41	-.52*
19	.49	1.12	.47	-.63*	1.04	1.11	.40	-.07
20 [a]	2.03	1.42	.47	.61*	.97	1.13	.39	-.16†
21	2.11	2.06	.50	.05	.85	.65	.38	.20
22	2.21	1.33	.47	.88*	1.38	1.03	.40	.35
23	2.13	2.44	.50	-.31	1.45	.97	.39	.48*†
24 [a]	2.80	2.88	.64	-.08	1.21	1.15	.40	.06
25	1.48	0.83	.50	.65*	.32	.28	.38	.04
26 [a]	2.52	2.40	.57	.12	1.09	.93	.39	.16†
27	2.55	1.41	.54	1.14*	1.15	1.22	.40	-.07
28 [a]	1.35	1.39	.44	-.04	.73	.57	.38	.16
29	1.62	1.53	.46	.09	1.42	.91	.39	.51*†
30 [a]	1.72	1.05	.45	.67*	1.41	1.03	.40	.38
31 [a]	1.88	2.01	.48	-.13	1.44	1.09	.40	.35
32 [a]	2.08	2.28	.50	-.20	1.10	1.42	.40	-.32
33 [a]	2.16	1.79	.48	.37	1.15	.57	.39	.58*†

Notes: *SEm* = standard error of measurement
[a] Participants who were first assessed at home.
*Statistically significant difference (> ± 2 *SEm*); † Clinically meaningful difference (process ADL measure is below the cut-off in one of the settings and above the cut-off in the other setting); †† Clinically meaningful difference (both motor and process ADL measures are below the cut-off in one of the settings and above the cut-off in the other setting).

Table 6-3 Correlations between the independent variables (demographic, physical, cognitive, psychological and environmental characteristics) and the difference (home minus clinic) in ADL ability measures.

Independent variables	Δ Motor ability measures	Δ Process ability measures
Demographic characteristics		
- Education (years)	-.280	-.121
Physical functions		
- Grip strength (standard score)	**.309***	.050
- Vision problems (yes)	**-.343***	.171
- Balance problems (yes)	.177	.115
Cognitive functions		
- Trail Making Test[a] part A (per centile)	-.110	**-.329***
part B (per centile)	**-.333***	**-.351***
- Stroop Test[a] part D (standard score)	-.069	-.205
part C and number of errors (composite score)	-.131	**-.564***
- Tower of London (composite score)	-.269	**-.322***
- Spatial Span[b] (scale score)	-.266	-.264
- Free and Cued Selective Reminding Test[b] (composite score)	-.055	-.189[1]
Psychological functions		
State-Trait Anxiety Inventory (score)[a]	.070	.057
Environmental characteristics		
Familiarity with home environment[c] (years)	**-.358***	-.178
Similarity between home and clinic settings (%)	.052	-.099

Notes: Values are Pearson and point-biserial correlation coefficients. [1] Spearman correlation (data not normally distributed).
Positive sign indicates that a higher value on the independent variable (or visual and balance problems) are correlated with a better performance at home.
[a] n=32; [b] n=31; [c] n=28;
*p<.10
Δ = difference (home minus clinic) in AMPS ability measures

Table 6-4 Models of factors associated with differences between settings in ADL ability measures

Variables	Standardized regression coefficient	p value	F model	p value of the model	Adjusted R²
Δ ADL motor ability measures[1]			4.79	.010	**.304**
Grip strength	.413	.021			
Familiarity with home	-.405	.024			
Executive function test performance (TMT B)	-.300	.080			
Δ ADL process ability measures[2]			13.994	.001	**.295**
Executive function test performance (Stroop composite score)	-.564	.001			

Chapitre 7 Discussion générale

L'objectif général de cette thèse consistait à mieux connaître l'influence du milieu d'évaluation sur la réalisation de tâches liées à la préparation de repas auprès de personnes âgées fragiles. Trois objectifs spécifiques ont été poursuivis. Le premier objectif avait pour but de faire état des connaissances relatives au concept de fragilité en ergothérapie et à l'influence du milieu d'évaluation auprès des personnes âgées fragiles. Le second objectif visait à comparer la réalisation de tâches liées à la préparation de repas entre les milieux d'évaluation clinique et domiciliaire auprès de personnes âgées fragiles. Finalement, le dernier objectif cherchait à identifier les facteurs sociodémographiques, physiques, psychologiques, cognitifs et environnementaux susceptibles d'expliquer la différence, s'il y a lieu, entre les milieux d'évaluation.

La discussion générale comporte quatre volets. Le premier résume les principaux résultats de la thèse. Le second volet aborde les aspects novateurs de cette recherche, alors que le troisième traite des limites de nos travaux. Le dernier volet identifie les retombées potentielles de l'étude.

7.1 Principaux résultats

7.1.1. Faire état des connaissances relatives au concept de fragilité et à l'influence du milieu d'évaluation auprès des personnes âgées fragiles

L'analyse critique présentée dans le cadre du chapitre 2 (article 1) révèle que la fragilité se caractérise par un état de vulnérabilité. Cet état de vulnérabilité expose la personne âgée au risque de connaître un déclin marqué de son fonctionnement suite à un "stress" mineur. La fragilité constitue par ailleurs un processus potentiellement réversible, suggérant que les personnes âgées fragiles puissent bénéficier des interventions de prévention et de réadaptation en ergothérapie. Les résultats démontrent la pertinence du

concept de fragilité en ergothérapie, en faisant valoir qu'une meilleure compréhension de ce concept puisse aider les ergothérapeutes à offrir aux personnes fragiles des soins et services mieux adaptés à leurs besoins spécifiques et complexes.

La recension des écrits présentée dans le cadre de ce chapitre 3 (article 2) a permis de répertorier dix articles (1988-2008) ayant comparé la réalisation d'AVD entre les milieux d'évaluation clinique et domiciliaire auprès des personnes adultes et âgées. Les résultats indiquent que les personnes âgées sans déficit cognitif important tendent à offrir une meilleure performance à domicile, plutôt qu'en milieu clinique, lors de la réalisation d'AVD. Quelques facteurs, tels que la familiarité avec l'environnement et des capacités d'adaptation plus limitées, contribueraient à expliquer cette différence entre les milieux d'évaluation. Notre conclusion suggère que des résultats similaires puissent être obtenus auprès de personnes âgées fragiles. Cette recension des écrits fait toutefois état de l'absence d'études spécifiquement menées auprès de cette clientèle. Elle révèle également que les facteurs susceptibles d'expliquer la différence, s'il y a lieu, entre les milieux d'évaluation ont rarement été mesurés ou analysés dans le cadre des études recensées. Les résultats du chapitre 3 (article 2) mettent ainsi en évidence la pertinence de mieux connaître l'influence du milieu d'évaluation auprès des personnes âgées fragiles.

7.1.2. Comparer la réalisation de tâches liées à la préparation de repas entre les milieux d'évaluation auprès de personnes âgées fragiles

Les résultats présentés dans le cadre des chapitres 4 à 6 de la thèse témoignent globalement d'une différence entre la réalisation de tâches liées à la préparation de repas évaluée en milieu clinique et celle évaluée à domicile. De façon plus spécifique, les trois études menées dans le cadre de la thèse (articles 3, 4 et 5) concourent, dans l'ensemble, à démontrer une meilleure performance des personnes fragiles lorsqu'elles sont évaluées au sein de leur domicile. Ces conclusions sont confirmées par les résultats obtenus au moyen des deux outils d'évaluation utilisés, à savoir le AMPS (articles 3&5) et le PASS (article 4).

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D'abord, le chapitre 4 (article 3) révèle une performance significativement supérieure à domicile au niveau des habiletés procédurales et motrices évaluées par le AMPS pour l'ensemble des participants. Parallèlement, le chapitre 5 (article 4) indique globalement une performance significativement meilleure à domicile pour les mesures d'indépendance, de sécurité et d'efficacité évaluées par le PASS. Enfin, le chapitre 6 (article 4) indique que, pour environ le tiers des personnes âgées fragiles, la différence détectée par le AMPS entre les milieux d'évaluation peut être considérée comme statistiquement significative et, dans une proportion similaire, cliniquement significative. Bien que ces derniers résultats ne doivent servir qu'à supporter le jugement clinique (Fisher & Jones, 2010), ils suggèrent que des recommandations différentes puissent être formulées selon le milieu dans lequel ces personnes âgées fragiles sont évaluées.

La présence d'une différence significative sur le plan des habiletés procédurales évaluées par le AMPS (article 3) et des mesures d'indépendance et de sécurité évaluées par le PASS (article 4) concorde avec les résultats obtenus dans le cadre d'études similaires menées auprès de personnes âgées sans déficit cognitif important (Park et al., 1994; Raina et al., 2007). Par ailleurs, la différence significative détectée par nos travaux sur le plan des habiletés motrices au AMPS (article 3) et des mesures de sécurité au PASS (article 4) diffère des résultats rapportés par ces précédentes études. Une des hypothèses avancées pour expliquer cette disparité a trait à la population étudiée dans le cadre de notre recherche. Nos résultats peuvent ainsi être interprétés comme le reflet d'une plus grande vulnérabilité des personnes âgées fragiles à l'égard du "stress" mineur que peut représenter l'évaluation au sein d'un milieu qui leur est non familier. Cette hypothèse s'arrime avec les propos de Lally & Crome (2007) qui stipulent que, chez les personnes âgées fragiles, des modifications mineures de l'environnement peuvent avoir des impacts importants sur leur niveau d'autonomie. Cette influence plus marquée du milieu d'évaluation sur la réalisation de tâches liées à la préparation de repas confirme l'importance et la pertinence d'étudier cette problématique auprès de la population âgée fragile.

7.1.3. Identifier les facteurs sociodémographiques, physiques, cognitifs, psychologiques et environnementaux susceptibles d'expliquer la différence entre les milieux d'évaluation (clinique vs domicile)

L'ensemble des résultats des chapitres 4 à 6 de la thèse concourent à démontrer que les fonctions exécutives constituent un facteur prépondérant pour expliquer la différence observée entre les milieux d'évaluation. En effet, ces composantes cognitives ont été identifiées comme un des principaux facteurs par les études menées dans le cadre la thèse (articles 3, 4, 5). Ces résultats suggèrent que les personnes âgées fragiles présentant des fonctions exécutives altérées (particulièrement celles liées à l'inhibition, définie comme la capacité de s'empêcher de donner une réponse dominante ou automatique, lorsque requis [Speth & Ivanoiu, 2007]) éprouvent plus de difficultés lors de la réalisation de tâches liées à la préparation de repas au sein d'un milieu d'évaluation qui leur est non familier.

Les études menées dans le cadre de la thèse ont également permis d'identifier des facteurs environnementaux, sociodémographiques, cognitifs et psychologiques susceptibles d'expliquer, dans une moindre mesure, cette différence entre les milieux d'évaluation. En effet, nos résultats indiquent que des différences plus importantes entre les appareils utilisés en milieux clinique et domiciliaire, une familiarité accrue avec l'environnement domiciliaire, un plus faible niveau de scolarité, des symptômes dépressifs (article 4) ainsi qu'un ralentissement psychomoteur (révélé par la performance au Trail Making Test A) (article 5) sont associés à une meilleure performance à domicile. L'ensemble des résultats obtenus permettent d'avancer l'hypothèse selon laquelle les personnes âgées fragiles ayant éprouvé plus de difficultés à réaliser les tâches en milieu clinique disposent globalement de ressources plus restreintes ou d'une réserve cognitive moins importante. En effet, toute personne disposerait d'un bassin limité de ressources cognitives (par ex. vitesse de traitement, attention, inhibition) (Burke & Shafto, 2008; Kramer & Madden, 2008) pouvant être atténuées par un état dépressif (Fossati, Ergis & Allilaire, 2002; Nebes et al., 2000) et autres problèmes de santé. Les ressources cognitives contribueraient notamment à la

réalisation de tâches complexes et à la mise en oeuvre de stratégies efficaces (Lemaire & Berher, 2005). Parallèlement, les individus disposent d'une réserve cognitive variable, qui serait étroitement liée au niveau de scolarité (Stern, 2002). Cette réserve cognitive permet notamment de répondre efficacement aux demandes de la tâche, en misant sur des mécanismes cognitifs moins susceptibles de connaître un déclin (Stern, 2002). Il est conséquemment possible que certaines personnes âgées fragiles (par ex. présentant une altération de certaines fonctions exécutives, un ralentissement psychomoteur, des symptômes dépressifs et un niveau de scolarité plus faible) ne parviennent pas à recruter les ressources ou les mécanismes cognitifs nécessaires lorsqu'elles sont confrontées à des situations plus exigeantes (par exemple, utiliser des appareils nouveaux lors de la préparation d'un repas au sein d'un milieu non familier). Elles disposeraient toutefois des ressources ou réserves cognitives suffisantes pour réaliser la tâche au sein d'un environnement familier et prévisible, impliquant l'utilisation d'objets connus. Il importe toutefois de rappeler que ces conclusions, outre celles portant sur les fonctions exécutives (articles 3 et 5), reposent sur des corrélations modérées.

Les résultats des chapitres 5 et 6 (articles 4 et 5) révèlent parallèlement une association modérée entre le déclin de certaines fonctions physiques (équilibre, vision, force de préhension) et une meilleure performance en milieu clinique chez la personne âgée fragile. Ces résultats supportent l'hypothèse selon laquelle certains éléments environnementaux que l'on retrouve souvent en milieu clinique (telle que la présence d'aides techniques) puissent aider les personnes âgées fragiles à compenser le déclin de leurs capacités physiques. Ces conclusions sont en accord avec celles de Raina, Rogers & Holm (2007) et Rogers et al. (2003) qui reconnaissent que, dans certains cas, le caractère adapté d'un objet puisse supplanter son caractère familier. Il n'est toutefois pas exclu que le milieu domiciliaire, en favorisant l'instauration d'un climat de confiance (Hagedorn, 1995), amène la personne à être moins vigilante à l'égard de la tâche à réaliser (Raina et al., 2007). Or, chez les personnes présentant certaines déficiences physiques (telle une diminution de l'équilibre), il est possible que cet excès de confiance les expose à des risques accrus de

chutes ou d'incidents. Il importe toutefois de rappeler que ces conclusions reposent sur des corrélations modérées.

En conclusion, les résultats de la thèse supportent donc l'hypothèse découlant du modèle conceptuel, à savoir que les caractéristiques de l'environnement clinique (*standard*) et domiciliaire (*réel*) puissent influencer différemment la réalisation de tâches liées à la préparation de repas (*capacité et performance*), selon certaines caractéristiques sociodémographiques *(facteurs personnels),* physiques, cognitives et psychologiques des personnes âgées fragiles (*intégrité des fonctions organiques et structures anatomiques*).

7.2 Aspects novateurs de la thèse

Ce volet de la discussion souligne les principaux aspects novateurs de la thèse, de façon à faire ressortir l'apport de la thèse d'un point de vue méthodologique et scientifique.

Le chapitre 3 de la thèse (article 2) a permis de mettre en évidence les diverses lacunes méthodologiques des études antérieures ayant cherché à comparer la réalisation d'AVD entre les milieux d'évaluation. En effet, plusieurs de ces études (Nygard, Bernspang, Fisher, & Winblad, 1994; Raina et al., 2007; Rogers et al., 2003; West et al., 1997) ont d'abord évalué les participants en milieu clinique puis à domicile et, pour la plupart d'entre elles, à l'intérieur d'un court laps de temps (2 à 22 jours). L'adoption d'un tel dispositif amène à se demander si la meilleure performance observée à domicile est réellement imputable à l'effet de l'environnement, ou plutôt à un effet d'apprentissage. D'autres études (Darragh, Sample, & Fisher, 1998; Nygard et al., 1994; Park, Fisher, & Velozo, 1994) ont rapporté que l'évaluation a été effectuée au sein des deux milieux par l'auteur principal de l'étude, exposant conséquemment aux biais liés aux attentes de l'expérimentateur. Enfin, la plupart des études n'ont pas cherché à mesurer ou à analyser formellement les facteurs susceptibles d'expliquer la différence observée entre les milieux, s'appuyant généralement sur des observations anecdotiques.

La thèse innove en intégrant, dans les études qui la composent, divers mécanismes visant à mieux contrôler les biais précédemment évoqués. La portée de ces mécanismes sur l'appréciation de la qualité des évidences scientifiques de la thèse justifie qu'on s'y attarde plus longuement. Premièrement, nous avons opté pour l'utilisation d'un dispositif quasi-expérimental de type contrebalancé (carré-latin). Ce dernier consiste à répartir aléatoirement les participants, de façon à ce que la moitié d'entre eux soit d'abord exposée au milieu clinique, alors que l'autre moitié est d'abord exposée au milieu domiciliaire. L'emploi de ce dispositif a permis de limiter les biais liés à l'accoutumance au test (les participants risquent de mieux maîtriser la tâche lors de la seconde évaluation) et à la réactivité face à l'évaluation (les participants risquent d'être plus anxieux lors de la première évaluation). L'allocation d'un délai de 1 à 3 semaines entre les évaluations, effectuées au même moment de la journée, permet parallèlement de mieux contrôler les biais de mémoire (rappel de la tâche réalisée précédemment), d'histoire (survenue d'une chute) et de maturation (changement dans la condition médicale, fluctuation de la performance liée à une fatigue plus importante en fin de journée) (Contandriopoulos et al., 2005). Deuxièmement, les données recueillies ont été analysées par un évaluateur indépendant, aveugle aux principales hypothèses de l'étude ainsi qu'à l'ordre dans lequel la collecte de données en milieux clinique et domiciliaire était effectuée. Ces mesures de contrôle visaient à limiter les biais liés aux attentes de l'expérimentateur et de l'évaluateur. De plus, un délai d'au moins 2 semaines entre les visionnements a été alloué afin de limiter les biais de mémoire de la part de l'évaluateur. Enfin, l'emploi combiné de deux outils d'évaluation distincts pour mesurer notre principale variable dépendante constitue un des principaux aspects novateurs de la thèse. En effet, cette particularité méthodologique aide à s'assurer que l'écart noté entre les milieux est davantage imputable à l'influence du milieu, plutôt qu'aux caractéristiques de l'outil d'évaluation utilisé. En somme, l'ensemble des mesures de contrôle adoptées contribue à accroître la validité interne des études réalisées dans le cadre de la thèse, en permettant de mieux s'assurer que les changements notés entre les milieux d'évaluation soient davantage imputables à l'effet de l'environnement.

L'originalité de la thèse repose également sur une mesure et une analyse formelle des différents facteurs susceptibles d'expliquer la différence entre les milieux d'évaluation. Afin de vérifier l'hypothèse selon laquelle une altération des fonctions exécutives constituait à cet effet un des principaux facteurs (article 3), deux groupes ont été constitués en fonction du degré d'altération des fonctions exécutives présenté par les participants (Groupe 1: Fonctions exécutives préservées; Groupe 2: Fonctions exécutives altérées). Au sein de chacun des groupes formés, un dispositif contrebalancé était appliqué. Le recours à ce procédé méthodologique, couplé à des analyses statistiques, a ainsi permis de générer des données probantes et conséquemment contribué à l'apport scientifique dans ce domaine.

Enfin, les résultats du chapitre 3 (article 2) révèlent que l'influence du milieu d'évaluation n'a pas été spécifiquement étudiée auprès des personnes âgées fragiles. Malgré des recoupements entre notre population et celle ciblée par les études de Park et al. (1994), Raina et al. (2007), Rogers et al. (2003) et West et al. (1997), la thèse se distingue en s'appuyant sur des critères définis et reconnus de fragilité pour définir son échantillon. Or, la réalisation d'études en ergothérapie portant sur les personnes âgées fragiles s'avère particulièrement importante, considérant que cette population constitue une proportion notable de la clientèle vue au sein des différents services d'évaluation et de réadaptation gériatrique (Wells, et al., 2003). Les études constituant la thèse contribuent ainsi à l'avancement des connaissances, non seulement en palliant aux lacunes méthodologiques des études antérieures, mais également en s'intéressant à une population fragile bien définie et pertinente au domaine de la réadaptation.

7.3 Limites des travaux

Plusieurs limites de nos travaux ont été énoncées dans les articles scientifiques faisant partie du corps de la thèse. Dans la présente section, nous nous attarderons aux principales limites se rapportant à l'ensemble de la thèse. À cet effet, quatre limites méritent d'être énoncées.

La première limite a trait à la constitution de l'échantillon. D'abord, le tiers des personnes contactées ont décliné l'offre de participer à l'étude, évoquant principalement de la fatigue ou la peur de sortir (notamment liée à la peur de tomber). Pourtant, plusieurs stratégies ont été déployées afin de réduire leur niveau de fatigue (fragmentation des séances au besoin) et faciliter leurs déplacements (accompagnement des participants en taxi, disponibilité d'un fauteuil roulant pour les séances hors du domicile). Notre taux de refus (33%) n'est toutefois que légèrement supérieur à celui rapporté par West et al. (1997) (27%) dans le cadre d'une étude similaire réalisée auprès de personnes âgées présentant des troubles visuels. Mentionnons également que peu d'hommes ont été recrutés dans le cadre de cette recherche. Bien que ceux ayant participé à l'étude aient offert une performance comparable à celle des femmes, leur faible nombre au sein de l'échantillon peut être évoqué comme une limite potentielle. Notons enfin qu'il s'agit d'un échantillon de convenance constitué d'un nombre relativement restreint de participants.

Une seconde limite se rapporte à l'utilisation d'informations médicales auto-rapportées pour établir l'admissibilité des participants recrutés par le biais d'annonces diffusés dans les journaux. On ne peut ainsi exclure la possibilité que certaines personnes n'aient pas rapporté une condition médicale pouvant constituer un critère d'exclusion selon le concept de fragilité proposé par Fried et al. (2001) (par exemple, prise d'antidépresseurs). Il est également possible que des personnes présentant des déficits cognitifs légers aient été admises dans l'étude. Toutefois, l'ensemble des participants présentait une performance non pathologique au test de mémoire épisodique, suggérant l'absence de démence (Dupont et al., 2008; Vanderlinden, 2004). De plus, les intervenants des services d'évaluation et de réadaptation gériatriques pouvaient s'appuyer sur les informations contenues dans le dossier médical (par exemple, un MMSE [Folstein, Folstein, & McHugh, 1975] réalisé au cours de la dernière année) pour juger de l'absence de déficit cognitif important, avant que la personne ne nous soit référée. Il est à noter que l'admissibilité potentielle des participants

reposait sur le jugement clinique de professionnels d'expérience détenant, pour la plupart, plus de cinq ans de pratique clinique.

À titre de troisième limite, évoquons la possibilité que la différence observée entre les milieux puisse s'expliquer par d'autres facteurs n'ayant pas été considérés dans le cadre de la thèse. Sur le plan des facteurs liés à la personne, il est possible que le déclin de l'audition, souvent associé à la fragilité, aie interféré avec la capacité à réagir efficacement à des indices environnementaux, particulièrement au sein du milieu non familier (par exemple, entendre le sifflement de la bouilloire qui s'éteint automatique à domicile). Cette perte sensorielle n'a pu être analysée de façon valide dans le cadre des études réalisées, en raison d'un trop faible échantillon. La peur de tomber constitue une autre condition prévalente chez les personnes âgées fragiles (Arfken, Lach, Birge, & Miller, 1994; Murphy, Williams, & Gill, 2002) qui aurait pu être mesurée. En effet, il est raisonnable de croire que la peur de chuter soit plus importante au sein d'un environnement non familier, mobilisant conséquemment davantage de ressources cognitives lors de la réalisation de tâches en ce milieu (Gage, Sleik, Polych, McKenzie, & Brown, 2003). L'impact de la fatigue (ou d'une endurance limitée) représente également un autre facteur lié à la fragilité (Fried et al., 2001) susceptible d'influencer différemment la performance entre les milieux. En effet, le milieu clinique se caractérise souvent par un éloignement plus important des aires de travail (Hagedorn, 1995) susceptible d'engendrer une plus grande fatigue chez la personne âgée fragile, et ultimement affecter la performance au sein de cet environnement. Enfin, le rôle potentiel de certains facteurs sociodémographiques (statut économique) non mesurés dans le cadre de la thèse a également été évoqué au sein des chapitres 5 et 6 (articles 4 et 5). Sur le plan des facteurs environnementaux, malgré une familiarisation au préalable des participants avec les appareils électriques se trouvant au sein de l'environnement non familier, il est possible que des différences quant à la vitesse et à l'intensité de la cuisson des appareils (ex: cuisinière, grille-pain) aient pu affecter la réalisation de la tâche en milieu clinique. En effet, un réchauffement plus rapide des éléments prédispose, en l'absence d'une supervision étroite, à une cuisson inadéquate des aliments (ex: nourriture calcinée). Le rôle

potentiel d'autres facteurs environnementaux (qualité du matériel, utilisation des appuis disponibles dans l'environnement) non mesurés dans le cadre de la thèse a également été mentionné dans les chapitres 5 et 6 (articles 4 et 5).

Enfin, à titre de quatrième limite, il importe de rappeler que les travaux menés dans le cadre de la thèse s'intéressent à l'impact de l'environnement dans un contexte d'évaluation. Il est par ailleurs légitime de se demander si les exigences liées à la standardisation des outils peuvent contribuer à mettre en évidence des difficultés, qui ne seraient pas rencontrées par la personne âgée dans sa vie quotidienne. Par exemple, dans une de nos études (article 4), les procédures d'administration exigeaient du participant de couper une orange en morceaux avec un couteau, alors que la majorité des personnes ont l'habitude de réaliser la tâche en utilisant leurs doigts. Le respect des procédures de standardisation est toutefois nécessaire pour assurer la validité et la fidélité des outils utilisés dans le cadre de la thèse. De plus, l'évaluation basée sur des outils standardisés est conforme à la procédure utilisée actuellement par les professionnels de la santé pour déterminer l'aide requise à domicile.

En somme, les deux premières limites précédemment évoquées peuvent, dans une certaine mesure, avoir nui à la représentativité des participants recrutés, et conséquemment, à la généralisation des résultats à la population fragile. Les troisième et quatrième limites précédemment énoncées pourraient, à certains égards, constituer une menace potentielle à la validité interne de l'étude, dans la mesure où elles ont possiblement pu influencer les résultats obtenus.

7.4 Retombées de la thèse

Les études réalisées dans le cadre de la présente thèse comportent des retombées intéressantes pour les ergothérapeutes cliniciens et les gestionnaires, comme en témoigne la portée potentielle de nos travaux pour la pratique clinique et les services de santé.

Les résultats de cette thèse amènent, dans un premier temps, les ergothérapeutes cliniciens à se questionner quant aux risques de sous-estimer les capacités de certaines personnes fragiles lorsqu'elles sont évaluées au sein d'un milieu clinique (par exemple, les unités d'évaluation et de réadaptation gériatriques). Cette sous-estimation peut contribuer à offrir à ces personnes âgées une assistance inadéquate au moment de leur congé, voire même favoriser leur réorientation vers un autre milieu de vie. Les résultats de la thèse peuvent ultimement aider les ergothérapeutes cliniciens à identifier les personnes âgées fragiles pour qui une visite à domicile devrait être préconisée afin que les recommandations formulées au moment du congé reflètent davantage leurs besoins réels. Nos travaux peuvent parallèlement contribuer à identifier les personnes âgées fragiles dont les résultats de l'évaluation en milieux clinique et domiciliaire sont comparables et conséquemment, pour qui une visite à domicile ne semble pas nécessaire pour émettre des recommandations appropriées. En somme, en aidant à mieux distinguer la clientèle susceptible de profiter d'une évaluation à domicile, les études menées dans le cadre de cette thèse peuvent contribuer à optimiser la qualité des évaluations réalisées par les ergothérapeutes, tout en minimisant leur temps de déplacement.

Un nombre croissant d'études font valoir les bénéfices de réaliser des évaluations à domicile préalablement au congé de l'hôpital, tout en évoquant les contraintes que cela comporte d'un point de vue financier et logistique (Lannin et al., 2011; Nygard, Grahn, Rudenhammar, & Hydling, 2004). Cette étude pourrait ainsi démontrer aux gestionnaires la pertinence de réaliser des visites à domicile auprès de certaines personnes âgées présentant des caractéristiques particulières, malgré les ressources que ces évaluations requièrent en termes de coûts et de temps. Nos travaux pourraient donc ultimement contribuer à offrir aux personnes âgées fragiles des services adaptés à leurs besoins, tout en favorisant une gestion efficiente des ressources financières et humaines en matière de santé.

Les visites à domicile ne sont toutefois pas toujours possibles, particulièrement dans un contexte où la durée séjour en milieu hospitalier tend à diminuer (Lannin et al., 2011).

Dans cette perspective, les résultats découlant des études réalisées pourraient aider les ergothérapeutes à mieux identifier les éléments à tenir compte lors de l'évaluation en milieu clinique. De façon plus spécifique, nos résultats soulignent l'importance de proposer des appareils semblables à ceux utilisés à domicile pour que l'évaluation réalisée en milieu clinique soit davantage représentative de celle effectuée en milieu domiciliaire. Ces considérations pourraient éviter que les difficultés ne soient exacerbées, voire -dans le cas des personnes âgées fragiles présentant certaines déficiences physiques- possiblement masquées par le milieu clinique.

Par ailleurs, l'évaluation en milieu clinique peut s'avérer utile pour évaluer les capacités de la personne à s'adapter à un environnement non familier, comme par exemple un nouveau milieu de vie. Considérant que les personnes âgées constituent une population particulièrement à risque d'être réorientée vers un nouveau milieu de vie (par exemple, une résidence privée), l'évaluation en milieu non familier peut ainsi permettre de mettre en lumière des difficultés, qui auraient possiblement été camouflées en milieu familier. L'évaluation en milieu clinique peut également s'avérer utile pour déterminer si des caractéristiques de l'environnement (par exemple, la présence d'aides techniques) peuvent aider les personnes âgées à compenser certaines de leurs déficiences physiques. Comme de petits changements peuvent avoir des impacts cliniquement importants chez la clientèle âgée fragile, il est légitime de croire que l'émission de recommandations optimales et appropriées par les ergothérapeutes puissent, dans certains cas, s'avérer déterminantes pour permettre le maintien de la personne au sein de son milieu de vie (Gitlin, Hauck, Winter, Dennis, & Schulz, 2006; Gitlin, Winter, Dennis, & Hauck, 2008).

Chapitre 8 Conclusion

Dans le contexte de soins actuel, l'évaluation de la capacité des personnes âgées fragiles hospitalisées à réaliser certaines AVD importantes pour déterminer l'aide requise à domicile est souvent effectuée en milieu clinique par l'ergothérapeute. Il importe conséquemment pour les ergothérapeutes de mieux connaître l'influence du milieu d'évaluation sur la réalisation d'AVD auprès de personnes âgées fragiles. Les résultats découlant de la présente thèse contribuent à l'avancement des connaissances à l'égard de cette problématique importante et encore peu documentée. En effet, nos résultats témoignent globalement d'une meilleure performance des personnes âgées fragiles lorsqu'elles sont évaluées au sein de leur domicile, particulièrement pour celles présentant des fonctions exécutives altérées. Cette étude se distingue de celles réalisées précédemment en s'intéressant à l'étude d'une population âgée fragile bien définie. L'originalité de l'étude réside également en l'adoption d'une méthodologie robuste, dont les conclusions ont été confirmées à l'aide de deux outils d'évaluation distincts. Enfin, à notre connaissance, il s'agit d'une des rares études ayant cherché à mesurer et à analyser formellement les facteurs susceptibles d'expliquer cette différence entre les milieux d'évaluation. Les résultats de cette thèse peuvent aider les ergothérapeutes à mieux identifier les personnes âgées fragiles pour qui une visite à domicile devrait être préconisée, afin que les recommandations formulées au moment du congé reflètent davantage leurs besoins réels.

Les connaissances générées par la thèse amènent à proposer quelques pistes de recherche. Premièrement, il importe que les études présentées soient reproduites auprès d'un plus large échantillon, malgré les difficultés inhérentes liées au recrutement et à la rétention de la clientèle âgée. À cet effet, le développement de stratégies de recrutement novatrices est essentiel pour assurer la validité interne et externe des études conduites auprès de cette population (par exemple, accroître les partenariats avec des organismes communautaires connus des participants, favoriser la tenue de séances d'information sur

l'étude au sein de lieux de rassemblement "naturels" (centres de jour, clubs de l'âge d'or, églises), s'assurer de disposer des ressources humaines et financières suffisantes pour permettre une grande flexibilité quant au moment des rencontres avec les participants). Deuxièmement, de futures recherches devront vérifier si des résultats similaires peuvent être obtenus lorsque d'autres activités de la vie courante sont évaluées. Troisièmement, cette étude met en lumière l'importance que de futures recherches s'attardent à la validité prédictive des outils d'évaluation standardisés, notamment en regard des difficultés réellement rencontrées par la personne âgée fragile dans sa vie quotidienne. En continuité avec les travaux menés dans le cadre de la présente thèse, il serait à cet effet intéressant de vérifier si l'évaluation conduite en milieu familier est un meilleur prédicteur de l'aide réellement requise à domicile, comparativement à l'évaluation réalisée en milieu non familier. Enfin, il serait pertinent de déterminer si d'autres facteurs - non mesurés dans le cadre des études présentées - sont susceptibles d'expliquer la différence observée entre les milieux auprès de la population âgée fragile. Il serait parallèlement intéressant de connaître les facteurs cognitifs (par exemple, les fonctions visuospatiales) et physiques (par exemple, l'équilibre) qui devraient être considérés auprès d'autres populations de personnes âgées, telles que celles ayant subi un accident vasculaire cérébral ou atteintes de la maladie de Parkinson. Ces recherches futures pourraient contribuer à l'avancement des connaissances en regard de l'influence du milieu d'évaluation et, ultimement aider à offrir aux différentes clientèles de personnes âgées des services mieux adaptés à leurs besoins.

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Annexe 1 Certificats d'éthique

- Certificat d'éthique émis le 14 août 2008 par le comité d'éthique principal (Institut universitaire de gériatrie de Montréal) pour le projet multicentrique "Influence du milieu d'évaluation (clinique vs domiciliaire) sur la réalisation d'activités familières et significatives de la vie domestique auprès de personnes âgées"(MP-IUGM-08-001). La décision a été endossée par le comité d'éthique de l'Agence de la santé et des services sociaux de Montréal.

- Certificat d'approbation d'une modification à un projet de recherche émis le 1er juin 2009.

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CERTIFICAT D'ÉTHIQUE

Le comité d'éthique de la recherche de l'IUGM a examiné la demande pour le projet multicentrique intitulé:

Influence du milieu d'évaluation (clinique vs domiciliaire) sur la réalisation d'activités familières et significatives de la vie domestique auprès de personnes âgées fragiles (réf. : MP-IUGM-08-001)

présenté par : **Mme Louise Demers, Ph.D.**

et juge la recherche acceptable au point de vue éthique.

Paule Savignac, Présidente

14 août 2008

Ce rapport est valide jusqu'au :   14 août 2009

INSTITUT UNIVERSITAIRE DE GÉRIATRIE DE MONTRÉAL

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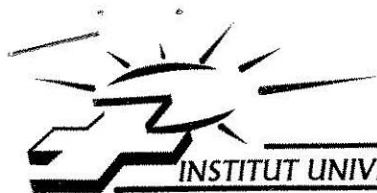
Montréal, le 14 août 2008.

Madame Louise Demers, Ph.D.
Centre de recherche
IUGM
4565, chemin Queen Mary
Montréal, Québec   H3W 1W5

Objet : **Demande d'évaluation du projet : « Influence du milieu d'évaluation (clinique vs domiciliaire) sur la réalisation d'activités familières et significatives de la vie domestique auprès de personnes âgées fragiles » (réf. : MP-IUGM-08-001)**

Madame,

Il nous fait plaisir de vous informer que la décision préliminaire prise le 5 juin 2008 par notre CÉR, qui agit à titre d'instance principale dans le présent dossier, a été endossée par le CÉR de l'Agence de la santé et des services sociaux de Montréal.   Le projet en titre est donc définitivement approuvé, sur le plan éthique, pour le CSSS de Bordeaux - Cartierville - St-Laurent.

Nous tenons à vous rappeler que la décision préliminaire qui est confirmée par la présente avait été rendue alors que le quorum était atteint.

Les formulaires d'information et de consentement que vous pouvez utiliser pour la réalisation de votre projet sont datés du 4 juillet 2008.   Une copie de ces formulaires ainsi que votre réponse du 12 juin 2008 ont été acheminées au CÉR concerné.

Cette approbation suppose également que vous vous engagiez :

1) à respecter la décision du CÉR principal ;

2) à rendre compte, au CÉR principal et aux établissements en cause, du déroulement du projet, des actes des chercheurs locaux et de l'équipe de recherche ainsi que du respect des normes de l'éthique s'appliquant au projet ;

3) à respecter les moyens relatifs au suivi continu et à utiliser les formulaires préparés à cette fin. Ces formulaires sont téléchargeables à partir du site web de l'IUGM, sous l'onglet : l'Institut – Les Comités ;

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4) à conserver les dossiers de recherche pendant au moins deux ans (ou une période plus longue, selon le cas ou l'exigence particulière d'un CÉR local) après la fin du projet afin de permettre leur éventuelle vérification par une instance déléguée par le comité ;

5) à respecter les modalités arrêtées au regard du mécanisme d'identification des sujets de recherche de chacun des établissements en cause.

La présente décision vaut pour une année et peut être suspendue ou révoquée en cas de non-respect de ces conditions.

En terminant, nous vous demandons de bien vouloir mentionner, dans votre correspondance, le numéro attribué à votre demande par notre institution.

Avec l'expression de nos sentiments les meilleurs.

Paule Savignac
Présidente du CÉR IUGM

p. j. Lettre du CÉR concerné.

c. c.   Madame Marie-Eve Bouthillier
         Présidente du CÉR
         Agence de la santé et des services sociaux de Montréal<

**Agence de la santé
et des services sociaux
de Montréal**

Québec ⬧⬧
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Direction de santé publique

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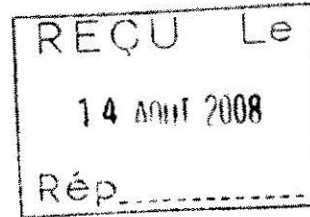
Le 13 août 2008

Madame Danielle Dubois
Directrice de la qualité et de la mission universitaire
CSSS de Bordeaux-Cartierville – Saint-Laurent
Centre affilié universitaire (CAU)
████████████████████████

Objet :   Finalisation du processus de l'examen éthique du projet n*MP-IUGM-08-001, intitulé : *Influence du milieu d'évaluation (clinique vs domiciliaire) sur la réalisation d'activités familières et significatives de la vie domestique auprès de personnes âgées fragiles*, mené par **Madame Louise Demers**.

Madame Dubois,

Le comité d'éthique de la recherche de l'Agence de la santé et des services sociaux de Montréal (CÉR) a fait l'examen préliminaire de la demande précitée, en comité plénier, à sa réunion du 27 mai 2008 tenue dans les locaux de la Direction de santé publique de Montréal. À cette fin, les documents suivants avaient été examinés :

- Lettre de soumission d'un projet de recherche au CÉR, datée du 15 avril 2008, signée V. Provencher et L. Demers
- Formulaire de soumission de protocole de recherche IUGM, daté du 18 avril 2008, signé L. Demers
- Formulaire de demande d'évaluation d'un projet multicentrique, daté du 18 avril 2008, signé L. Demers
- Enregistrement du sujet de recherche, Université de Montréal, daté du 23 octobre 2006, signé V. Provencher et L. Demers
- Protocole de recherche, daté du 1er mai 2008
- Formulaire de consentement (quatre versions – française, anglaise, IUGM et DSP – datées du 22 avril 2008)
- Protocole téléphonique
- Liste de toutes les activités de recherche en cours du chercheur principal
- Ventilation du budget
- Lettre d'appui du CSSS Bordeaux-Cartierville-St-Laurent
- Lettre d'appui de l'IUGM
- Annexe 1 : Grille de faisabilité
- Annexe II : Grille de cotation du AMPS et du PASS
- Annexe III : Tests évaluant les fonctions exécutives (TMT B, TOL)

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- Annexe IV : Questionnaire évaluant les autres composantes psychologiques et cognitives
- Annexe V : Déroulement de l'étude
- Annexe VI Tests vérifiant les critères ayant trait à la fragilité et au statut cognitif

À la suite de son examen, le comité avait formulé des commentaires au CÉR de l'Institut univers gériatrie de Montréal (IUGM) qui agit à titre d'instance principale dans le présent dossier, le 27 mai ⁊

Le CÉR principal faisait parvenir à notre comité, le 5 juin 2008, sa décision préliminaire conditionnelle à l'apport de précisions au protocole et à des modifications au formulaire d'informat consentement par les chercheuses. Les modifications ont été adressées à notre CÉR le 29 juillet décision préliminaire du CÉR de l'IUGM ainsi que les modifications demandées ont été examinées ⬩ restreint, le 11 août 2008, à savoir :

- Lettre ayant pour objet la demande d'évaluation du projet de recherche, datée du 5 juin signée par P. Savignac, présidente du CÉR de l'IUGM
- Lettre ayant pour objet les réponses aux modifications demandées par le CÉR, datée dı 2008 et signée de V. Provencher et L. Demers, respectivement co-chercheuse et ch principale
- Projet de recherche, daté du 12 juin 2008
- Formulaire d'information et de consentement du participant, en français et en anglais, mis 4 juillet 2008

Le comité fait sienne la décision rendue sans qu'il soit nécessaire d'apporter des changements ⎸ administratifs au projet.

Je demeure disponible pour vous apporter de plus amples renseignements.

Je vous prie d'agréer, Madame Dubois, mes meilleures salutations.

Marie-Ève Bouthillier
Présidente du Comité d'éthique de la recherche
Agence de la santé et des services sociaux de Montréal

c.c.   Madame Paule Savignac
       Présidente du Comité d'éthique de la recherche
       Institut universitaire de gériatrie de Montréal
       4565, chemin Queen-Mary
       Montréal (Québec) H3W 1W5

INSTITUT UNIVERSITAIRE DE GÉRIATRIE DE MONTRÉAL

AFFILIÉ À
Université
de Montréal

Montréal, le 5 juin 2009

Madame Louise Demers, Ph.D.
Centre de recherche
IUGM
4565, chemin Queen Mary
Montréal, Québec   H3W 1W5

OBJET: Demande de modification au projet intitulé : **« Influence du milieu d'évaluation (clinique vs domiciliaire) sur la réalisation d'activités familières et significatives de la vie domestique auprès de personnes âgées fragiles »** (réf. : MP-IUGM-08-001).

Madame,

Vous avez soumis au Comité d'éthique de la recherche de l'IUGM, le 1er juin 2009, une demande de modification à votre projet de recherche cité en rubrique. À cet effet, vous avez soumis au Comité les documents suivants :

- Le formulaire de demande d'approbation de modification dûment complété et signé le 1er juin 2009
- L'annonce de recrutement dans les journaux locaux
- La version française du formulaire d'information et de consentement du 1er juin 2009
- La version anglaise du formulaire d'information et de consentement du 1er juin 2009

Essentiellement, la modification consiste en la demande d'accès aux dossiers médicaux des patients ayant fréquenté l'UCDG, l'hôpital de jour et l'URFI au cours des deux dernières années, la demande de publier une annonce dans les journaux locaux, et des modifications mineures au formulaire d'information et de consentement.

Nous avons le plaisir de vous informer que votre demande de modification a été approuvée par le Comité d'éthique de la recherche de l'IUGM. Ce faisant, le Comité vous autorise à utiliser les documents pour la réalisation de votre projet.

Il est important, par ailleurs, d'acheminer au chercheur local les nouveaux formulaires d'information et de consentement.

Avec l'expression de nos sentiments les meilleurs.

Paule Savignac
Présidente du Comité d'éthique de la recherche
IUGM

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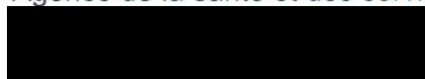☎ (514) 340-2800
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c.c.   Président du CÉR
        A/S Mme Isabelle Mondou
        Agence de la santé et des servies sociaux de Montréal

PS/gs

Annexe 2 Formulaire d'information et de consentement

- Formulaire en français (version révisée et approuvée le 1er juin 2009) par les comités d'éthique de l'Institut universitaire de gériatrie de Montréal et du Centre de santé et des services sociaux de Bordeaux-Cartierville-Saint-Laurent pour le projet "Influence du milieu d'évaluation (clinique vs domiciliaire) sur la réalisation d'activités familières et significatives de la vie domestique auprès de personnes âgées".

- Formulaire en anglais (version révisée et approuvée le 1er juin 2009) par les comités d'éthique de l'Institut universitaire de gériatrie de Montréal et du Centre de santé et des services sociaux de Bordeaux-Cartierville-Saint-Laurent pour le projet "Effect of assessment settings (clinic *vs* home) on familiar and significant instrumental activities of daily living in older adults".

FORMULAIRE D'INFORMATION
ET DE CONSENTEMENT DU PARTICIPANT

TITRE DU PROJET
Influence du milieu d'évaluation (clinique vs domiciliaire) sur la réalisation d'activités familières et significatives de la vie domestique auprès de personnes âgées.

RESPONSABLES DU PROJET
<u>Chercheure principale</u>: Louise Demers, Ph.D., Centre de recherche de l'IUGM.
<u>Co-chercheures</u> : Véronique Provencher, erg., Ph.D (c), Université de Montréal; Isabelle Gélinas, Ph.D., Université McGill; Lise Gagnon, Ph.D., Université de Sherbrooke.
<u>Collaborateurs</u> : Jean-François Labadie, Adjoint au développement de la mission universitaire, CSSS Bordeaux-Cartierville/St-Laurent; Isabelle Ménard, assistante-chef, service d'ergothérapie, IUGM.

PRÉAMBULE
Nous sollicitons votre participation à un projet de recherche. Avant d'accepter de participer à ce projet de recherche, veuillez prendre le temps de lire, de comprendre et de considérer attentivement les renseignements qui suivent.

Votre participation à ce projet de recherche est volontaire. Vous êtes donc libre de refuser d'y participer.

Ce formulaire d'information et de consentement vous explique le but de ce projet de recherche, les procédures, les avantages, les risques et inconvénients, de même que les personnes avec qui communiquer au besoin.

Le présent formulaire d'information et de consentement peut contenir des mots que vous ne comprenez pas. Nous vous invitons à poser toutes les questions que vous jugerez utiles au chercheur responsable du projet ou aux autres membres du personnel affecté au projet de recherche et à leur demander de vous expliquer tout mot ou renseignement qui n'est pas clair.

OBJECTIFS DU PROJET DE RECHERCHE
Cette étude cherche à savoir s'il existe des différences liées à la réalisation de la préparation de repas, selon qu'elle est évaluée à l'hôpital ou à domicile. Les résultats pourraient aider à s'assurer que les services offerts aux personnes âgées au congé de l'hôpital correspondent à leurs besoins réels à domicile.

Dans le cadre de ce projet (d'une durée approximative d'un an), environ 30 participants seront recrutés. Vous avez été approché pour participer à cette étude parce que vous répondez jusqu'à présent aux critères d'admissibilité établis dans le cadre de ce projet de recherche.

DÉROULEMENT DU PROJET DE RECHERCHE

Pour participer à cette recherche, vous devrez passer différents tests répartis sur 4 rencontres. Ces rencontres seront réalisées à l'intérieur d'une période d'environ un mois correspondant à plus ou moins une rencontre par semaine. Chaque rencontre durera approximativement 1h30 et pourra être divisée en périodes plus courtes avec des pauses au besoin.

Lors de la 1ère rencontre, qui aura lieu à votre domicile, vous passerez des tests qui évaluent votre vitesse de marche, la force de vos mains ainsi que votre capacité à organiser mentalement certaines informations. Toutefois, si vous avez déjà passé certains de ces tests au cours de la dernière année et que vous nous autorisez à avoir accès à leurs résultats, vous n'aurez pas à passer ces tests de nouveau.

Lors de la 2e et 3e rencontre, qui auront lieu à votre domicile <u>et</u> à l'École de réadaptation de l'Université de Montréal, située au Pavillon 7077, avenue du Parc, 4e étage à Montréal (ou dans la cuisine d'un des membres de votre famille, si vous préférez), vous passerez des tests ayant un lien avec la préparation de repas. Il est prévu que nous apporterons à votre domicile les aliments dont nous aurons besoin pour compléter l'activité, si vous ne les avez pas. On vous demandera par exemple de préparer un déjeuner consistant en un café, œufs et rôties. Après une pause d'environ 15 minutes, on vous demandera de préparer un repas léger (réchauffer une soupe en boîte et couper un fruit) et de faire la vaisselle.

Le protocole de recherche prévoit également un enregistrement vidéo lors de la préparation des repas afin que les responsables de l'étude examinent davantage la façon dont vous réalisez les activités. Vous avez le choix d'accepter ou de refuser d'être filmé sans que cela ait une répercussion sur votre participation au projet. Si vous acceptez que ces enregistrements soient utilisés à des fins de communications scientifiques, nous utiliserons des moyens techniques afin de brouiller l'image, de sorte qu'il sera impossible de vous reconnaître. Si vous ne souhaitez pas être filmé(e), une autre ergothérapeute sera également présente lors de l'évaluation à la préparation de repas.

Enfin, lors de la 4e rencontre, vous répondrez à des questions sur vos habitudes, votre mémoire (ex : se rappeler des mots) et votre état psychologique (ex: sentiment de bien-être).

Acceptez-vous que les personnes responsables du projet aient accès aux résultats de tests pertinents à notre recherche et réalisés au cours de la dernière année par d'autres professionnels de la santé, si cela s'applique? Oui ☐   Non ☐   non applicable ☐

Acceptez-vous d'être filmé(e) lors des séances?   Oui ☐   Non ☐

Acceptez–vous que les enregistrements (avec votre visage brouillé à l'écran) soient utilisés à des fins de communications scientifiques? Oui ☐   Non ☐

Acceptez-vous que les photographies prises dans le cadre du projet de recherche soient utilisées à des fins de communications scientifiques?   Oui ☐   Non ☐

RISQUES POUVANT DÉCOULER DE VOTRE PARTICIPATION

À notre connaissance, votre participation à ce projet de recherche ne vous fera courir aucun risque sur le plan médical. Il est également entendu que votre participation n'aura aucun effet sur toute intervention à laquelle vous serez éventuellement soumis. De plus, toutes les précautions nécessaires seront prises pour réduire les risques de brûlure, de coupure et de chute lors de vos déplacements, tant dans la cuisine que pour sortir et revenir chez vous. En effet, vous serez accompagné dans tous vos déplacements par l'évaluateur, de façon à vous offrir l'aide dont vous pourriez avoir besoin (ex : pour sortir de la voiture, pour utiliser un fauteuil roulant en cas de longues distances).

INCONVÉNIENTS POUVANT DÉCOULER DE VOTRE PARTICIPATION

Il n'y a aucun inconvénient direct pouvant découler de votre participation, si ce n'est que vous pourriez ressentir un certain état de frustration, de stress ou de fatigue relié à l'étude, notamment en lien avec l'enregistrement vidéo, le transport et le temps consacré à la recherche.

AVANTAGES POUVANT DÉCOULER DE VOTRE PARTICIPATION

Vous ne retirerez aucun avantage direct de votre participation à ce projet, si ce n'est que la satisfaction de contribuer à l'avancement des connaissances scientifiques dans le domaine de l'ergothérapie.

Le cas échéant, vous serez dirigé vers des services médicaux appropriés.

INDEMNISATION EN CAS DE PRÉJUDICE

Si vous deviez subir quelque préjudice que ce soit dû à votre participation à ce projet, vous recevrez tous les soins nécessaires, sans frais de votre part.

DROITS DU PARTICIPANT

En acceptant de participer à ce projet de recherche, vous ne renoncez à aucun de vos droits ni ne libérez les chercheurs ou l'établissement où se déroule ce projet de recherche de leur responsabilité civile et professionnelle.

COMPENSATION

Un dédommagement global de 60 $ vous sera versé à la dernière rencontre, à titre de compensation financière incluant le coût des aliments et produits utilisés à votre domicile. Si vous vous retirez du projet de recherche avant qu'il ne soit complété, vous recevrez un montant proportionnel à votre participation. De plus, vous n'aurez pas à payer pour vos déplacements. La compagnie de taxi facturera directement au chercheur de l'IUGM, qui en assumera les coûts.

PARTICIPATION VOLONTAIRE ET RETRAIT DU PROJET

Votre participation au projet de recherche décrit ci-dessus est tout à fait volontaire et vous restez, à tout moment, libre de mettre fin à votre participation sans avoir à motiver votre décision, ni à subir de préjudice de quelque nature que ce soit.

ARRÊT DU PROJET DE RECHERCHE

Le chercheur responsable et/ou le comité d'éthique de la recherche peuvent aussi mettre fin à votre participation, sans votre consentement, pour différentes raisons : si vous ne répondez plus aux critères d'inclusion, si vous ne respectez pas les consignes du projet, si le chercheur responsable de l'étude pense que cela est dans votre meilleur intérêt, s'il existe des raisons administratives d'abandonner l'étude.

CONFIDENTIALITÉ

Durant votre participation à ce projet de recherche, le chercheur responsable du projet ainsi que son personnel recueilleront et consigneront dans un dossier de recherche les renseignements vous concernant. Seuls les renseignements nécessaires à la bonne conduite du projet de recherche seront recueillis.

Ces renseignements peuvent comprendre les informations sur votre état de santé passé et présent, vos habitudes de vie ainsi que les résultats des tests que vous aurez à réaliser lors de ce projet. Votre dossier peut aussi comprendre d'autres renseignements, tels que votre nom, votre sexe, votre date de naissance et votre origine ethnique.

Tous ces renseignements recueillis au cours du projet de recherche demeureront strictement confidentiels dans les limites prévues par la loi. Afin de préserver votre identité et la confidentialité de ces renseignements, vous ne serez identifié que par un numéro de code. La clé du code reliant votre nom à votre dossier de recherche sera conservée par le chercheur responsable du projet de recherche dans un lieu sécuritaire.

Dernière mise à jour : 01/06/09

Le chercheur responsable utilisera les données du projet de recherche à des fins de recherche dans le but de répondre aux objectifs scientifiques du projet de recherche décrits dans le formulaire d'information et de consentement. Vos renseignements personnels seront détruits cinq ans après la fin du projet de recherche.

Les données du projet de recherche pourront être publiées dans des revues médicales ou partagées avec d'autres personnes lors de discussions scientifiques. Aucune publication ou communication scientifique ne renfermera quoi que soit qui puisse vous identifier.

Pour les personnes qui accepteront d'être filmées pendant la réalisation des repas, seuls les responsables de l'étude auront accès aux films, qui seront gardés sous clés et détruits après 5 ans.

À des fins de surveillance et de contrôle, votre dossier de recherche pourra être consulté par une personne mandatée par le comité d'éthique de la recherche de l'IUGM, par une personne mandatée par le ministre de la Santé et des Services sociaux ou par des organismes gouvernementaux mandatés par la loi. Toutes ces personnes et ces organismes adhèrent à une politique de confidentialité.

À des fins de protection, notamment afin de pouvoir communiquer avec vous rapidement, vos noms et prénoms, vos coordonnées et la date de début et de fin de votre participation au projet seront conservés pendant un an après la fin du projet dans un répertoire maintenu par le chercheur responsable.

Vous avez le droit de consulter votre dossier de recherche pour vérifier l'exactitude des renseignements recueillis aussi longtemps que le chercheur responsable du projet de recherche, l'établissement ou l'institution de recherche détiennent ces informations. Cependant, afin de préserver l'intégrité scientifique du projet de recherche, vous n'aurez accès à certaines de ces informations qu'une fois l'étude terminée.

PERSONNES-RESSOURCES

Si vous avez des questions concernant le projet de recherche, vous pourrez joindre, tout au long du projet de recherche, **Dre Louise Demers** au ███████████████████ ███████ **Véronique Provencher**, ergothérapeute, co-chercheure et coordonnatrice du projet, au ██████████████████████████

Pour tout problème concernant les conditions dans lesquelles se déroule votre participation à ce projet, vous pouvez faire part de vos préoccupations à la responsable des plaintes à l'adresse suivante : 4565, chemin Queen Mary, Montréal (H3W 1W5). ████████████████████ 555 boul, Gouin Ouest Montréal (Qué), H3L 1K5, ██████████████████████████ (pour le **CSSS Bordeaux-Cartierville/St-Laurent**).

SURVEILLANCE DES ASPECTS ÉTHIQUES DU PROJET

Le comité d'éthique de la recherche de l'Institut universitaire de gériatrie de Montréal a approuvé ce projet de recherche et en assure le suivi. De plus, il approuvera au préalable toute révision et toute modification apportée au présent formulaire et au protocole de recherche. Pour toute information, vous pouvez joindre le secrétariat du comité d'éthique de la recherche au (█████████████████████

AUTORISATION DE TRANSMETTRE LES RÉSULTATS

Autorisez-vous les personnes responsables de ce projet de recherche à transmettre vos résultats aux professionnels de la santé vous offrant des services si cela était pertinent ?
Oui ☐   Non ☐

CONSENTEMENT DU PARTICIPANT

Je déclare avoir lu le présent formulaire, particulièrement quant à ma participation au projet de recherche et l'étendue des risques qui en découlent. Je reconnais qu'on m'a expliqué le projet, qu'on a répondu à toutes mes questions et qu'on m'a laissé le temps voulu pour prendre une décision.

Je consens librement et volontairement à participer à ce projet. On me remettra une copie signée du présent formulaire.

En signant le présent formulaire, je ne renonce à aucun de mes droits ni ne libère le chercheur ou l'établissement de leur responsabilité civile et professionnelle.

_____   _____

Nom et signature du participant   Date

ENGAGEMENT DU CHERCHEUR

Je certifie que j'ai expliqué au participant les termes du présent formulaire, que j'ai répondu aux questions que le participant avait à cet égard et que j'ai clairement indiqué qu'il demeure libre de mettre un terme à sa participation, et ce, sans préjudice et je m'engage à respecter ce qui a été convenu au formulaire de consentement.

_____   _____

Nom et signature du chercheur ou de son représentant   Date

iugm
Institut universitaire
de gériatrie de Montréal

Centre de santé et de services sociaux
de Bordeaux-Cartierville–Saint-Laurent

CENTRE AFFILIÉ UNIVERSITAIRE

INFORMATION AND CONSENT FORM
FOR PARTICIPATION IN A RESEARCH PROJECT

RESEARCH PROJECT TITLE

Effect of assessment settings (clinic vs home) on familiar and significant instrumental activities of daily living in older adults

PERSONS IN CHARGE OF THE RESEARCH PROJECT

Principal investigator: Louise Demers, Ph.D., principal investigator, Research Center/IUGM.

Co-investigators: Véronique Provencher, OT, Ph.D. candidate, co-investigator, Université de Montréal. Isabelle Gélinas, Ph.D., co-investigator, Université McGill; Lise Gagnon, Ph.D., co-investigator, Université de Sherbrooke. **Collaborators** : Jean-François Labadie, adjunct mandated in developing the university activities, CSSS Bordeaux-Cartierville/St-Laurent; Isabelle Ménard, assistant chief, Occupationnal therapy department, IUGM.

INTRODUCTION

We invite you to participate in a research project. Before agreeing to participate in this study, please take the time to read, to understand and to pay particular attention to the following information.

Your participation in this research project is voluntary. You are thus free to refuse to participate.

This information and consent form explains the aims of this research project, the course of the study, the advantages, the risks and disadvantages, as well as the people you can contact if required.

The present form contains words you may not understand. We thus invite you to ask the investigators or other members of the research team all questions that may help your comprehension. We also invite you to ask them to explain any words or information that may not be clear.

OBJECTIVES OF THE RESEARCH PROJECT

The objective of this study is to determine if differences exist when assessing meal preparation tasks when undertaken in the home environment as compared to the hospital environment. The results may help in the allocation of services. offered to older adults

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upon discharge from hospital, so as to ensure that their real needs are met upon their return home.

The project (which should be approximately one year in length) will require the recruitment of 30 participants. You have been recruited as a participant for this project as you presently meet the eligibility criteria.

COURSE OF THE RESEARCH PROJECT

As a participant in this project, you will be required to undergo several tests within a 4 session time period. The sessions will be carried out over a period of about 1 month, approximately one session per week. Each session will be approximately 1 ½ hours in length with rest periods as required.

The 1st session will take place in your home. During this first session your walking speed, grip strength and ability to mentally organize information will be assessed. If you have undergone some of the tests during the last year and that you agree that the persons in charge of the project have access to the test results, you will not have to undergone those tests again.

During the 2nd and the 3rd sessions, which will take place in your home and at the School of Rehabilitation of the University of Montreal, which is located at 7077 Parc Avenue (4th floor) (or in the kitchen of a member of your family, if you prefer). you will undergo assessments that relate to the task of meal preparation. The food items required for the activity will be provided if you do not have them on hand yourself. More specifically, you will be asked to prepare breakfast, which may for example consist of an egg, toast and coffee. After a 15 minute break, you will be asked to prepare a light meal (this will include reheating a can of soup and the cutting up of a piece of fruit) and then to wash the dishes.

The research protocol foresees the videotaping of the meal preparation tasks to assist the researchers to assess in greater detail the tasks that the participants will be completing. You can accept or refuse to be videotaped and this without any risk of penalty or prejudice to you. If you agree that the recorded videos be used for scientific presentations, we will ensure that your identity be concealed by ensuring that your image be blurred. If you do not agree to be videotaped, another occupational therapist will also be present during the meal preparation tasks,

Finally, during the 4th session, you will be requested to answer questions about your daily habits, your memory (ex: to remember words) and your psychological state (ex: sense of well being).

Do you agree that the persons in charge of the project have access to results from tests relevant for the current study and that you may have undergone during the last year with other health professionals, if applicable?   Yes ☐   No ☐ ___   not applicable ☐

Do you agree to be videotaped during the sessions?   Yes ☐   No ☐

Do you allow the recorded videos (with the blurring of your image) to be used for scientific presentations?   Yes ☐   No ☐

Do you allow photographs taken for the research project to be used for scientific presentations?   Yes ☐   No ☐

POSSIBLE RISKS RESULTING FROM YOUR PARTICIPATION

To the best of our knowledge, your participation in this research project will not expose you to any medical risks. It is understood that your participation will not interfere with any possible future interventions. Furthermore, all precautions will be taken to prevent any burns, cuts or falls as you move about in the kitchen and during your transportation to and from your home. You will be accompanied by the evaluator at all times in order to provide you with the assistance you may require (example: getting in and out of the car or for the use of a wheel chair for long distances).

POSSIBLE DISADVANTAGES RESULTING YOUR PARTICIPATION

There are no direct disadvantages to your participation in this study. However, you may experience feelings of frustration, stress or fatigue as a result of the videotaping of the sessions, the transportation, and time requirements, all part of the research project.

POSSIBLE ADVANTAGES RESULTING FROM YOUR PARTICIPATION

You will not experience any direct benefits as a result of your participation in this research project, apart from the satisfaction of knowing that you are assisting in the advancement of scientific knowledge in the field of occupational therapy.

If required, you will be referred to appropriate health services.

COMPENSATION IN CASE OF HARM

If you happen to be injured in the context of your participation in this project, you will receive all the care required, without having to pay any fees.

RIGHTS OF THE PARTICIPANT

By agreeing to participate in this research project, you do not waive any of your rights nor release the researchers and nor the institution involved of their civil and professional obligations.

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COMPENSATION

A total of 60 $ will be given to you at the end of the last session, as a financial compensation to cover the cost of food items and products you have used in your home. If you withdraw from the research project before it ends, the financial compensation awarded will be proportional to your participation time. You will not have to pay for the transportation. The taxi services will be directly charged to the researcher, who will pay for it.

VOLUNTARY PARTICIPATION & WITHDRAWAL OF THE PROJECT

Your participation in the research project (as described above) is completely voluntary and you are free to withdraw at anytime during the project, without having to justify your decision and without any penalty or prejudice as a result of it.

INTERRUPTION OF THE RESEARCH PROJECT

The investigator in charge of the project and/or the ethics research committee can also end your participation, without your consent, for different reasons: if you no longer meet the eligibility requirements, if you do not respect the instructions of the project, if the investigator in charge of the study thinks that it is in your best interest or if there are administrative reasons leading to the cessation of the study.

CONFIDENTIALITY

During this project, the research team and its staff members will gather information concerning you and it will be kept in a research log. Only information relevant to the research question will be collected.

The said information may include your past and present medical status, your life habits as well as test results of tests you will have undergone during the project. The research log may also contain other personal information, such as your name, your birth date, and your ethnic origin.

The information collected throughout the research project will remain strictly confidential as required by law. To ensure that your identity remains anonymous and confidential, you will be identified by a code number. The key to the code, which enables a person to connect your name to your research file, will be kept in a safe place by the investigator in charge of the project.

The investigator in charge of the project will use the data collected solely to meet the scientific aims of the study, as described in the information and consent form. Your personal information will be destroyed 5 years after the end of the project.

Results from this research project may be published in medical journals or shared with others in scientific communications. Your anonymity will be preserved at all times when the information is used in the publications or scientific communications.

For those participants who agree to be videotaped during the meal preparation task, only those who are in charge of the project will have access to the videos, and these will be kept under lock and key and destroyed after five years.

For supervision and monitoring purposes, and if required, your research file could be reviewed by someone mandated by the Research ethics committee, by someone mandated by the minister of Health and the Social services or by a government agency mandated by the law. These individuals and these organizations all adhere to policies regarding confidentiality.

To ensure your safety, especially if the researchers need to communicate with you, your name, your address, and phone number as well as the dates (entry/ending) of your participation in the project, will be kept for a year after the end of the project in a file by the investigator in charge of the project.

You have the right to consult your research file to ensure that the information collected is correct, as a long as the investigator in charge of the project or the institution whereby the research is being conducted has the information on hand. However, to ensure the scientific integrity of the research project, you will only have access to some of the information once the study has been completed.

CONTACT PERSONS
For any further information regarding this project, you may at any time contact **Dre Louise Demers** at ▮▮▮▮▮▮▮▮▮▮ **Véronique Provencher**, occupational therapist, co-investigator and project coordinator, at ▮▮▮▮▮▮

If you should have any concerns regarding the ethical conditions of your participation in this study, you are free to express your concerns to the person in charge of complaints at the following address: ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮

ETHIC SUPERVISION

This project has been approved by the Institut universitaire de gériatrie de Montréal ethic's committee, which also ensures its continuance. The committee also ensures good ethical functioning during the course of the research. Furthermore, all revisions and/or modifications made to the consent form as well as the study must undergo the

committee's approval. For any ethical questions, please feel free to communicate your concerns to the ethics committee of the Institut universitaire de gériatrie de Montréal at the following contact number: █████████████ .

AUTORISATION TO COMMUNICATE THE RESULTS

Do you authorize those in charge of this project to communicate the results to health professionals that currently provide you services, if required?   Yes ☐   No ☐

DECLARATION OF THE PARTICIPANT

I declare that I have read the present form and have paid special attention to the features related to my participation in this project, and the potential risks involved. I declare that I received sufficient explanations about the nature of the study, as well as satisfactory answers to my questions and that I have been given sufficient time to decide whether or not to participate.

I hereby consent to participate freely and voluntarily in this study.

I will be given a signed copy of the present form.

In signing the present form, I do not waive any of my rights nor release the researchers or the institution involved of their civil and professional obligations.

_____   _____

Participant's name and signature   Date

DECLARATION OF THE INVESTIGATOR

I hereby certify that I explained the contents of this form to the person who signed it, answered the questions he/she asked about the project, and clearly explained that he/she is free to stop participating in this study at any time, without any harm and I agree to respect what has been stated in the consent form.

_____   _____

Name and signature of   Date

Investigator or person responsible for obtaining the consent

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Annexe 3 Grille de similitude entre les milieux d'évaluation

Photo de la cuisine non familière

Photo de la cuisine
familière

Schéma de la cuisine non familière (vue de haut)

Lavabo

Cuisinière

Réfrigérateur

Entrée

Poubelle

Lavabo

Plaque de cuisson

Table à manger

Schéma de la cuisine familière (vue de haut)

Matériel et outils

	Type			Localisation		
	Non Familier	Familier	Similaire (O/N)	Non Familier	Familier	Similaire (O/N)
Bouilloire □						
Mode d'arrêt	Non-auto auto	Non-auto auto	O/N	Branché Non branché	Branché Non branché	O/N
Mécanisme d'activation	Électrique Non-Électrique	Électrique Non-Électrique	O/N	Comptoir Armoires Tiroirs	Comptoir Armoires Tiroirs	O/N
ou **Cafétière** □						
Mécanisme d'activation	Bouton-Pressoir Électronique	Bouton-Pressoir Électronique	O/N	Branché Non branché	Branché Non branché	O/N
Grille-pain □ ou four grille-pain □			O/N	Comptoir Armoires Tiroirs	Comptoir Armoires Tiroirs	O/N
Ouvre-boîte Manuel □ Électrique □ Adapté			O/N	Comptoir Armoires Tiroir	Comptoir Armoires Tiroir	O/N
				Branché Non Branché	Branché Non Branché	O/N
Ouvre-pot			O/N	Comptoir Armoires Tiroir	Comptoir Armoires Tiroir	O/N

	Type — Non Familier	Type — Familier	Similaire (O/N)	Localisation — Non Familier	Localisation — Familier	Similaire (O/N)
Vaisselle — Type de matériau	Assiettes, bols, tasses → céramique, verre, plastique Verre → céramique, verre, plastique	Assiettes, bols → céramique, verre, plastique Verre → céramique, verre, plastique	O/N O/N	Comptoir Armoires - Supérieures - inférieures Tiroirs	Comptoir Armoires - Supérieures - inférieures Tiroirs	O/N O/N
Casseroles — Type de matériau	Chaudrons → fonte, aluminium ou acier inoxydable, T-fal (anti-adhésif) Poêle → fonte, aluminium ou acier inoxydable, T-Fal	Chaudrons → fonte, aluminium ou acier inoxydable, T-fal (anti-adhésif) Poêle → fonte, aluminium ou acier inoxydable, T-Fal	O/N O/N	Comptoir Sous le four Armoires - inférieures - supérieures	Comptoir Sous le four Armoires - inférieures - supérieures	O/N O/N
Ustensiles	Couteaux Louche et spatule autre	Couteaux Louche et spatule autre	O/N O/N	Comptoir Armoires Tiroirs	Comptoir Armoires Tiroirs	O/N O/N
Chiffon et lavette			O/N	Comptoir Sous l'évier Tiroir autre	Comptoir Sous l'évier Tiroir autre	O/N

Produits/Denrées	Type		Similaire (O/N)	Localisation		Similaire (O/N)
	Non Familier	**Familier**		**Non Familier**	**Familier**	
Pain Type Mécanisme d'ouverture	avec ou sans attache	avec ou sans attache	O/N	Comptoir Armoires Réfrigérateur	Comptoir Armoires Réfrigérateur	O/N
Café ☐ Mécanisme d'ouverture	Sachet, récipient de plastique, récipient en métal	Sachet, récipient de plastique, récipient en métal	O/N	Comptoir Armoires Réfrigérateur	Comptoir Armoires Réfrigérateur	O/N
Thé, tisane ☐ Mécanisme d'ouverture	Sachet de plastique ou non	Sachet de plastique ou non	O/N	Étagère Réfrigérateur	Étagère Réfrigérateur	O/N
Beurre ☐ ou **Margarine** ☐ **Huile** ☐ Mécanisme d'ouverture	Pot de plastique, bouteille, papier d'aluminium, beurrier	Pot de plastique, bouteille, papier d'aluminium, beurrier	O/N	Comptoir Armoires	Comptoir Armoires	O/N
Lait Mécanisme d'ouverture Poids	Sac, boîte avec ou sans embout de plastique . 1L, 2L	Sac, boîte avec ou sans embout de plastique 1L, 2L	O/N O/N	Réfrigérateur - Porte - Partie inférieure - Partie supérieure	Réfrigérateur - Porte - Partie inférieure - Partie supérieure	O/N
Savon à vaisselle Mécanisme d'ouverture	Bouchon pressoir, autre	Bouchon pressoir, autre	O/N	Comptoir Sous le lavabo Autre	Comptoir Sous le lavabo Autre	O/N

Mobilier et Facilités	Type			Localisation		
	Non familier	Familier	Similaire (O/N)	Non familier	Familier	Similaire (O/N)
Lavabo Robinet — Mécanisme d'ouverture	Ouverture horaire et/ou anti-horaire / Résistance faible ou modérée / Poignée à manivelles, rondes, autres	Ouverture horaire et/ou antihoraire / Résistance faible ou modérée / Poignée à manivelles, rondes, autres	O/N O/N O/N	Voir photo et schéma		O/N
Cuisinière ☐ — Mécanisme d'activation	Résistance faible ou modérée des manivelles / Manivelles à presser, à tourner / Localisation horizontale, verticale	Résistance faible ou modérée des manivelles / Manivelles à presser, à tourner / Localisation horizontale, verticale	O/N O/N O/N	Voir photo et schéma		O/N
ou **Plaque encastrée** ☐	Faible résistance / Pousser et tourner les manivelles	Faible résistance / Pousser et tourner les manivelles	O/N			O/N
ou **Micro-ondes**	Ouverture avec ou sans bouton pressoir	Ouverture avec ou sans bouton pressoir	O/N			O/N
Réfrigéra-teur	Résistance faible, modérée, forte de la porte / Poignée ou non / Ouverture de G à D ou D à G	Résistance faible, modérée, forte de la porte / Poignée ou non / Ouverture de G à D ou D à G	O/N O/N O/N	Voir photo et schéma		O/N
Poubelle — Mécanisme d'ouverture	avec ou sans couvercle, avec ou sans pédale	avec ou sans couvercle, avec ou sans pédale	O/N O/N			O/N

Autres caractéristiques	Non Familier	Familier	Similaire (O/N)
Type			
Surface	Tapis (carpette) Surface plane Surface inégale	Tapis (carpette) Surface plane Surface inégale	O/N
Éclairage	Fort Moyen faible	Fort Moyen faible	O/N
Bruits ambiants	Présents Absents	Présents Absents	O/N
Type d'aide à la mobilité	Marchette à roulettes, à patins Canne simple, quadripode Aucune	Marchette à roulettes, à patins Canne simple, quadripode Aucune	O/N
Encombrement (vaisselles souillées)	Léger Modéré Important	Léger Modéré Important	O/N

Optionnel :

Autres outils/matériel	Non Familier	Familier	Similaire (O/N)
Napperons, linge à vaisselle			
Sucre, confiture, sel et poivre			
Table, chaise, prise de courant, interrupteurs			
Armoires, tiroirs			

Taux de similitude total : %