

Electronic Thesis and Dissertation Repository

4-12-2011 12:00 AM

Assessment of Occupational Competence in Dementia: Identifying Key Components of Cognitive Competence and Examining Validity of the Cognitive Competency Test

Briana M. Zur
The University of Western Ontario

Supervisor
Dr. Debbie Laliberte Rudman
The University of Western Ontario Joint Supervisor
Dr. Andrew Johnson
The University of Western Ontario

Graduate Program in Health and Rehabilitation Sciences
A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of
Philosophy
© Briana M. Zur 2011

Follow this and additional works at: <https://ir.lib.uwo.ca/etd>



Part of the [Rehabilitation and Therapy Commons](#)

Recommended Citation

Zur, Briana M., "Assessment of Occupational Competence in Dementia: Identifying Key Components of Cognitive Competence and Examining Validity of the Cognitive Competency Test" (2011). *Electronic Thesis and Dissertation Repository*. 114.
<https://ir.lib.uwo.ca/etd/114>

This Dissertation/Thesis is brought to you for free and open access by Scholarship@Western. It has been accepted for inclusion in Electronic Thesis and Dissertation Repository by an authorized administrator of Scholarship@Western. For more information, please contact wlsadmin@uwo.ca.

ASSESSMENT OF OCCUPATIONAL COMPETENCE IN DEMENTIA:
IDENTIFYING KEY COMPONENTS OF COGNITIVE COMPETENCE AND
EXAMINING VALIDITY OF THE COGNITIVE COMPETENCY TEST

(Spine title: Assessing Occupational and Cognitive Competence in Dementia)

(Thesis format: Monograph)

by

Briana Marsha Zur

Graduate Program in Health and Rehabilitation Sciences (Occupational Science Field)

A thesis submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
London, Ontario, Canada

© Briana Zur 2011

THE UNIVERSITY OF WESTERN ONTARIO
School of Graduate and Postdoctoral Studies

CERTIFICATE OF EXAMINATION

Joint-Supervisors

Dr. Debbie Laliberte Rudman

Dr. Andrew Johnson

Supervisory Committee Members

Dr. Eric Roy

Dr. Jennie Wells

Examiners

Dr. Paul Stolee

Dr. Jan Polgar

Dr. J.B. Orange

Dr. Lisa Van Bussel

The thesis by

Briana Marsha Zur

entitled:

**Assessment of Occupational Competence in Dementia: Identifying Key
Components of Cognitive Competence and Examining the Validity of
the Cognitive Competency Test**

is accepted in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

Date

Chair of the Thesis Examination Board

Abstract

Background: Internationally and in Canada, the goal of ‘aging in place’ is increasingly highlighted in social policy and health care, but aging persons with dementia may face challenges that impede their ability to safely do so. Considering the link between dementia and function in daily living, and the aging population, occupational therapists are increasingly called upon to make recommendations regarding appropriate living arrangements and community-based supports for persons with dementia. This concept can be re-framed as the construct of occupational competence, and is often accomplished by an evaluation of cognitive competence. The question becomes one of how to best inform decisions regarding occupational competence, using cognitive competence as an indicator. Occupational therapists often turn to a commonly used measure called the Cognitive Competency Test (CCT) to determine cognitive competence and inform their judgments about occupational competence in individuals with dementia.

Purpose: This thesis is centred on two studies that have endeavoured to clarify the cognitive components that predict occupational competence in individuals with dementia, and to examine evidence to assess the validity of the CCT, using a framework developed by Samuel Messick.

Methods: First, a Delphi study was conducted among Canadian occupational therapists with experience in dementia care. The primary objective was to determine consensus of opinion regarding the components of cognitive competence essential to predict occupational competence in persons with dementia. A secondary question attended to occupational therapists’ current use of methods to assess these components.

A second study addressed the construct validity of the CCT using a retrospective chart review. This study examined the dimensional structure of the CCT and its relationship with other clinical measures typically used in dementia care.

Conclusions: Occupational therapists identified ten cognitive components that they believed are essential to predict occupational competence in individuals with dementia.

The structure of the CCT demonstrates a unitary factor that shows some correlations to clinical measures commonly used in dementia care. These empirical findings support its use but point to the need to address other factors identified in the Delphi such as insight, judgment and awareness, in a formal and consistent manner.

Keywords: cognitive competence, occupational competence, the Cognitive Competency Test, Delphi study, retrospective chart review

Acknowledgements

The PhD journey is more than the writing of a dissertation. The saying goes that it takes a small village to raise a child. In my case it took a small village to help me complete this dissertation successfully and there are many who can now share in my success.

I would like to thank the occupational therapists that took the time and effort to participate in my research study, and the medical records staff for their patience and enthusiasm while retrieving charts over many months.

I am indebted to my fellow PhD students for their collaboration and their contagious desire for learning as we helped advance the first year of the new program in Occupational Science.

I especially want to thank Dr. Maggie Gibson for her mentorship as part of my CIHR Institute on Aging-St. Joseph's Health Care, London Fellowship in Aging, Veterans and Dementia. My gratitude goes also to Dr. Sandi Spaulding for her steadfast support.

While I am thankful to the professors who planted the seeds of scholarship as I expanded my knowledge base, I am forever grateful for the support, wisdom, and encouragement of my advisory committee members Dr. Eric Roy and Dr. Jennie Wells.

I would like to acknowledge my family whose love and respect championed my evolution from graduate student to scholar. Their insights and endless support (as well as editing and computer skills) often helped me overcome significant challenges.

But most important, I owe my deepest gratitude to my supervisors, Dr. Debbie Rudman and Dr. Andrew Johnson. Debbie, your commitment to the highest of academic standards, despite your many other academic and professional commitments, was motivating and inspiring. Andrew, your patience and guidance to teach an old(er) dog new tricks was so sincerely appreciated. You both never tired of answering my endless (or annoying) questions at all hours of the day or night, and always provided unwavering support. You both hold a special place in my heart.

Table of Contents

<u>CERTIFICATE OF EXAMINATION</u>	<u>ii</u>
<u>Abstract</u>	<u>iii</u>
<u>Acknowledgements</u>	<u>v</u>
<u>Table of Contents</u>	<u>vi</u>
<u>List of Tables</u>	<u>x</u>
<u>List of Figures</u>	<u>xi</u>
<u>List of Appendices</u>	<u>xii</u>
<u>Chapter 1</u>	<u>1</u>
<u>1 Evaluating Cognitive Competence and Validity of the Cognitive Competency Test ..</u>	<u>1</u>
1.1 Introduction and Background	2
1.2 Cognitive Competence in the Context of Everyday Living.....	5
1.3 Broadening the Concept of Validity in the Measurement of Cognitive Competence.....	7
1.4 Conceptualizing Measurement.....	8
1.5 Conceptualizing Validity	9
1.6 Messick’s Contribution to Validity.....	10
1.6.1 Messick’s Framework of Construct Validity	11
1.7 Study 1: Delphi Study	13
1.8 Study 2: Retrospective Chart Review	14
1.9 Conclusion	14
<u>Chapter 2</u>	<u>16</u>
<u>2 Overview of the Cognitive Competency Test.....</u>	<u>16</u>
2.1 The History of the CCT	16

2.2	Components of the CCT	17
2.3	Initial Studies on the CCT.....	18
2.4	Use of the CCT in Clinical OT Practice with Older Adults	20
2.5	Subsequent Research on the CCT	22
2.6	Conclusion	25
<u>Chapter 3.....</u>		<u>26</u>
<u>3 Predicting Occupational Competence in Persons with Dementia: Components of Cognitive Competence and ‘Real World’ Demands.....</u>		<u>26</u>
3.1	Understanding Occupational Performance and Occupational Competence	27
3.2	Defining and Assessing Cognitive Competence in Relation to Occupational Competence.....	29
3.3	Insights Gained from the Everyday Cognition Literature.....	31
3.4	Real-World Demands and Ecological Validity.....	35
3.5	Linking Cognition, Cognitive Competence and Occupational Competence	37
3.6	Discussion and Conclusions	38
<u>Chapter 4.....</u>		<u>40</u>
<u>4 Components of Cognitive Competence Predictive of Occupational Competence in Dementia: A Delphi Study with Canadian Occupational Therapists.....</u>		<u>40</u>
4.1	Methodology	41
4.2	Overview of Study Procedure	42
4.3	Study Sample	43
4.4	Data Collection	46
4.4.1	Round 1	47
4.4.2	Round 2.....	47
4.4.3	Round 3.....	48
4.5	Data Analysis.....	48
4.5.1	Round 1	49
4.5.2	Round 2 and 3	49

4.6	Results.....	50
4.6.1	Round 1.....	50
4.6.1.1	Cognitive Components.....	50
4.6.1.2	Assessment Methods.....	50
4.6.1.2.1	Standardized Measures.....	50
4.6.1.2.2	Non-standardized Content-Focused Methods.....	50
4.6.1.2.3	Non-standardized Process-focused Methods.....	53
4.6.2	Round 2.....	54
4.6.2.1	Cognitive Components.....	55
4.6.2.2	Assessment Methods.....	55
4.6.2.2.1	Standardized Measures.....	55
4.6.2.2.2	Non-Standardized Content-Focused Methods.....	58
4.6.2.2.3	Non-standardized Process-Focused Methods.....	58
4.6.3	Round 3.....	58
4.7	Discussion.....	61
4.8	Strengths and Limitations.....	65
4.9	Conclusions.....	65
<u>Chapter 5.....</u>		<u>67</u>
<u>5 Informing Assessment of Cognitive Competence in Dementia: Examination of the Construct Validity of the Cognitive Competency Test.....</u>		<u>67</u>
5.1	Methods.....	68
5.2	Sample.....	68
5.3	Key Variables Selected to Examine the Construct Validity of the CCT.....	69
5.4	Procedure.....	75
5.4.1	Data Extraction.....	75
5.5	Statistical Analyses.....	76
5.5.1	Correlations with Clinical Measures.....	76
5.5.2	Factor Structure.....	77
5.6	Results.....	79
5.6.1	Correlations with Clinical Measures.....	79

5.6.2	Predictors of the Unit-Weighted CCT Composite	81
5.6.3	Factor Structure.....	83
5.6.4	Predictors of the CCT g	86
5.7	Discussion	88
5.8	Strengths and Limitations	95
5.9	Conclusions.....	96
<u>Chapter 6.....</u>		<u>97</u>
6	<u>Discussion and Conclusions</u>	<u>97</u>
6.1	Summary of Results.....	99
6.2	Integrating findings of Delphi and Chart review studies	100
6.3	Clinical Implications.....	103
6.4	Future directions	104
6.5	Conclusions.....	106
6.6	Personal Reflections.....	108
<u>References.....</u>		<u>111</u>
<u>Curriculum Vitae</u>		<u>185</u>

List of Tables

Table 1.1: Messick’s (1989) Framework of Consequential Validity	13
Table 4.1: Sample Size	44
Table 4.2: Round 1 Response by Province	45
Table 4.3: Work Experience in Dementia Care and Location	46
Table 4.4: Round 1 Components of Cognitive Competence	51
Table 4.5: Round 1 Standardized Measures of Cognitive Competence	52
Table 4.6: Round 1 Non-Standardized Content-Focused Methods	53
Table 4.7: Round 1 Non-Standardized Process-Focused Methods.....	54
Table 4.8: Round 2 Ranked Importance of Components of Cognitive Competence.....	56
Table 4.9: Round 2 Ranked Usefulness of Standardized Measures of Cognitive Competence	57
Table 4.10: Round 2 Non-Standardized Content-Focused Methods	59
Table 4.11: Round 2 Non-Standardized Process-Focused Methods.....	59
Table 4.12: Round 3 Consensus of Cognitive Components as Indicators of Occupational Competence.....	60
Table 4.13: Cognitive Components Grouped by Stuss’ Conceptual Framework of Executive Function	63
Table 5.1: Key Variables within the Sample	74
Table 5.2: Case Processing Summary.....	76
Table 5.3: Correlations of Clinical Measures with CCT and MMSE Scores	81
Table 5.4: Clinical Judgment Descriptive Statistics	82
Table 5.5: Factor Loadings	86
Table 5.6: Item Total Correlation and Items-if-Deleted for CCT g.....	87
Table 5.7: Comparison of Correlations of CCT, CCT g with Clinical Measures.....	88
Table 6.1: Study Results Framed by Messick’s Aspects of Construct Validity	101

List of Figures

Figure 3.1: Visual Model of Cognition, Cognitive and Occupational Competence.....	38
Figure 5.1: Scree Plot Analysis 1.....	85
Figure 5.2: Scree Plot Analysis 2.....	85
Figure 6.1: Visual Model of Cognition, Cognitive and Occupational Competence with CCT and MMSE	109

List of Appendices

Appendix A: CCT Scoring Form	128
Appendix B: Delphi Study Ethics Certificate.....	133
Appendix C: Delphi Study Letter of Information (English).....	135
Appendix D: Delphi Study Letter of Information (French).....	139
Appendix E: Delphi Study Survey Rounds 1-3 (English)	144
Appendix F: Delphi Study Survey Rounds 1-3 (French).....	161
Appendix G: Chart Review Study Ethics Certificate	176
Appendix H: Chart Review Study Clinical Research Impact Committee Approval	178
Appendix I: Chart Review Study Data Extraction Form	180

Chapter 1

1 Evaluating Cognitive Competence and Validity of the Cognitive Competency Test

My Ph.D. journey began as a seasoned occupational therapist in dementia care who, in an emerging era of evidence-based practice, was increasingly frustrated with the lack of evidence on which to base my occupational therapy practice. The geriatricians and geriatric psychiatrists that I worked with understood that reality existed outside the institution walls, and in their quest to determine the capacity of their patients to live safely with a diagnosis of dementia, would ask for the scores of a common assessment tool, the Cognitive Competency Test (CCT), to help guide the health care professional team in their intervention and treatment decisions. I began to have questions about the validity of the CCT, and the implications of the scores that were being reported. It was this impetus that compelled me to return to graduate school in order to study the validity of this measurement tool. As an emerging scholar, my queries evolved to issues of measurement, validity, cognition, cognitive competence, and to the study of the construct of occupational competence, which is ultimately the most significant construct in my occupational therapy world.

This dissertation has endeavoured to clarify the cognitive components that predict occupational competence in individuals with dementia, and to examine evidence to assess the validity of the CCT. This assessment tool is commonly used by Canadian occupational therapists working with aging individuals, to inform decisions regarding occupational competence and aging in place (Callahan, 1992; Siebert, 2007). Although the CCT has been in use since 1986, there is minimal psychometric evidence to support its use in clinical practice in general or more specifically, to support its use as an indicator of occupational competence. Examination of its construct validity, in the context of its usefulness for informing decisions regarding occupational competence, is particularly challenging given the lack of consensus surrounding the components of cognitive competence that could predict occupational competence.

Within this chapter, background information is outlined that highlights the need for a valid measure of cognitive competence, for the purpose of informing judgments of occupational therapists regarding the occupational competence of individuals with dementia. Further, the need for consensus will be discussed regarding the components of cognitive competence that are essential to consider when making such judgments. In the context of discussing the research design employed with this research, a framework of validity developed by Samuel Messick (1989b) will be described and the two studies that comprise this dissertation will be introduced .

1.1 Introduction and Background

In many countries, the proportion of people over 65 years of age is growing faster than any other age group (World Health Organization, 2008). This demographic trend has been associated with increasing attention among policy makers, researchers, and practitioners, to questions regarding how to best provide health care for the aging population. Besides increased incidence of chronic illnesses, increasing age is a significant risk factor for developing dementia, and while not all aging persons will develop dementia, its incidence and prevalence is expected to rise dramatically (Alzheimer Society of Canada, 2009; Canadian Study of Health and Aging Working Group, 1994). It is estimated that 35.6 million people worldwide were living with dementia in 2010, and this figure is expected to increase to 65.7 million by 2030, and to 115.4 million by 2050 (Alzheimer's Disease International, 2010). In Canada in 2009, the number of people estimated to be living with dementia was 500,000, and this number is expected to rise within a generation to 1,100,000 (Alzheimer Society of Canada, 2009).

Internationally and in Canada, the goal of 'aging in place' is increasingly highlighted in social policy and health care, and is often defined as growing older without having to move in order to secure necessary support services in response to changing needs (Carstairs & Keon, 2009; Iwarson et al., 2007; Oswald et al., 2007). In instances where a move is required, aging in place has been expanded by some scholars to include shifting physical space but continuing to assign meaning to place partly through engagement in occupations of meaning to an individual (Cutchin, 2005; Rowles, 1993, 2008). However,

previous research with older adults and their family caregivers indicates that most people age in their primary, community-based residence, and desire to ‘stay put’ or age ‘in place’ within their homes, as opposed to moving to alternative forms of housing (Gitlin, 2003; Iwarrson et al., 2007; Siebert, 2007). In 2008, 55% of Canadians aged 65 years and older with a diagnosis of dementia were living in their own homes, mostly with community supports (Alzheimer Society of Canada, 2009). By 2038, this number is expected to rise to 62%, representing a dramatic increase in the need for community care and demands on informal caregivers (Alzheimer Society of Canada, 2009). The Special Senate Committee on Aging (2009) has gathered compelling evidence to show that there is a pressing need for the integration of the various support options available to seniors to allow them to age in their place of choice. In 2007, the Ontario government launched a 1.1 billion dollar Aging at Home Strategy over four years to enable seniors to live healthy, independent lives in their own homes (Government of Ontario, 2007 August 28).

While aging in place is clearly valued by governments, health care professionals, and seniors themselves, this concept has also been critiqued as denoting a policy ideal which often fails to consider the complex interactions between older adults and place (Cutchin, 2003). Despite its fit with many seniors’ desires, it also needs to be recognized that aging persons may face challenges that impede their ability to safely age in place, particularly for individuals with dementia. Previous research has demonstrated that dementia has a major disabling impact on a person’s ability to function in everyday life, referred to as occupational performance within occupational therapy (Carswell, Dulberg, Carson, & Zgola, 1995; Kurz, Scuvee-Moreau, Rive, & Dresse, 2003; Patrick, Perugini, & Leclerc, 2002; Thom & Blair, 1998). Occupational performance is the ability of an individual to perform meaningful occupations for looking after oneself and enjoying life (Canadian Association of Occupational Therapists, 1997). Understanding the factors that contribute to the ability of older persons with dementia to continue to live in the community safely is necessary in order to make decisions regarding how best to assist them to achieve their goal of aging in place (Gitlin, 2003). In particular, declining cognition raises questions regarding the safety of persons with dementia to age in place (Bertrand, Willis, & Sayer, 2001; Willis, 1996). Traditionally, occupational therapists in dementia care assess cognition and the impact of cognitive impairment on everyday occupational performance,

in order to measure what a person is capable of doing, develop interventions to foster a person's engagement in daily life, and inform decisions regarding appropriate living arrangements (Baum & Katz, 2010).

Considering the link between dementia and occupational performance, combined with an aging population, it appears likely that there will be an increased demand for occupational therapists to conduct assessments that inform recommendations regarding appropriate living arrangements, and community-based supports, for individuals with dementia (Bonder, 2001; Corcoran, 2001; Hartman, Fisher, & Duran, 1999). With the growing shift towards occupation-based practice (Law, Baum, & Dunn, 2005; Polatajko, Davis, Cantin, Dubouloz-Wilner, & Trentham, 2007), supported by the development of occupational science, this role can be re-framed using the construct of occupational competence. The occupational therapy and occupational science literature supports and expands the concept of occupational performance to occupational competence (Polatajko, 1992; Schwammle, 1996). Occupational competence augments occupational performance by acknowledging that social, cultural, temporal and other contextual factors influence what occupations one has to accomplish in order to be competent within a particular environment (Dunn, Brown, & McGuigan, 1994). For example, among seniors who have taken on traditional roles typical of their particular generation there are likely fewer demands to perform occupations related to food acquisition and preparation for an elderly male who lives with a healthy wife, than for a widower. Emphasizing occupational competence can also challenge occupational therapists to think beyond the ability to perform or carry out the everyday activities required for safe and independent living, and to consider the capacity to engage in everyday occupations that provide meaning, sustain identity and facilitate belonging (Christiansen, 2004; Hammell, 2004a; Townsend & Polatajko, 2007). Within dementia care, the assessment of occupational competence is often accomplished by an evaluation of 'cognitive competence', since it is often cognitive impairments that are assumed to be the primary source of interference in a person's performance in daily living (Molloy, Darzins, & Strang, 1999). A key question for occupational therapists, then, becomes one of how to best inform decisions regarding occupational competence, using cognitive competence as an indicator.

A diagnosis of dementia does not necessarily translate to a finding of occupational incompetence; however, deeming an individual to be unable to age in place in their home has significant ethical and moral implications. Cooney, Kennedy, Hawkins and Hurme (2004) believe that “[t]he freedom to live where and as one chooses is one of the most basic of human rights. Any decision to override this freedom and impose society’s choice on an individual must be undertaken with care and with full appreciation of this right” (p. 357). Considering the ethical implications of decisions related to determining occupational competence to remain living in the community, it becomes even more vital that the assessments used by occupational therapists be valid and reliable. A foundation in knowledge of those cognitive components that are essential contributors to the ability to competently perform everyday occupations is required, in order to predict how cognitive impairment in these areas will affect multiple tasks in the real world. As pointed out by Farias et al. (2008), it is often postulated that different neuropsychological impairments result in different functional impairments: “If everyday function could be fractionated...it would permit investigations of the relationships between specific types of neuropsychological deficit and specific types of functional impairments” (p. 532). Thus, in assessing cognitive competence as an indicator of occupational competence, it becomes critical that measures that are used focus on those components of cognitive competence most predictive of occupational competence. Considering the cognitive changes that occur with dementia over time, the construct of cognitive competence is a key consideration, and a comprehensive understanding of what is being measured is required. Differentiating among ‘cognition’, ‘everyday cognition’, and ‘cognitive competence’, is helpful to enhance this comprehensive understanding.

1.2 Cognitive Competence in the Context of Everyday Living

Cognition is described as: a process of thought; information processing; capacity to acquire and use information (Baum & Katz, 2010); cognitive mental processes, coupled with a product of such processes (Collins Dictionary and Thesaurus, 2002). Everyday cognition can be considered to be represented by the cognitive domains underlying competent performance of tasks necessary for everyday living (Burgess et al., 2006; Poon, Welke, & Dudley, 1993; Winograd, 1993). Cognitive competence, on the other hand, has been conceptualized as the ability to execute those cognitive components that

are essential in everyday living (Molloy, Darzins, & Strang, 1999). This conception of cognitive competence involves decision-making to evaluate risks and benefits, and attends to (but is not specific to) occupational concerns (Kuther, 1999). In other words, everyday life requires people to formulate goals, plan how to achieve these goals, and execute them. A higher level of cognition is required that goes beyond basic cognitive skills such as memory or concentration, in order to self-correct, make decisions, regulate behaviour, and use judgment to make decisions regarding safety and well-being (Baum & Katz, 2010; Bullock & Voss, 2006).

To date, a lack of a uniform operational definition of cognitive competence and its measurement has contributed to a lack of standardization in assessment protocols for cognitive competence (Kuther, 1999; Molloy, Darzins, & Strang, 1999). In general, it is commonly proposed that the ability to make decisions falls within the domain of executive function (Alvarez & Emory, 2006; Manchester, Priestley, & Jackson, 2004; Salthouse, 2005). More specifically, deficits in executive function such as planning, organization, self-control and insight into problems affect the ability of individuals to safely care for themselves in everyday life (Manchester, Priestley, & Jackson, 2004). It has been reported that significant deficits in executive function can be the best predictor of functional decline (Cahn-Weiner, Malloy, Boyle, Marran, & Salloway, 2000; Cooney, Kennedy, Hawkins, & Hurme, 2004). For example, in a sample of twenty-nine community dwelling elderly individuals, Cahn-Weiner et al. (2000) did not find that cognitive functions such as memory, language or spatial skills contributed as highly to the prediction of functional status as did scores of executive function, as measured by the Wisconsin Card Sorting Test (sensitive to frontal lobe function), Trail Making A and B (processing speed), Oral Word Fluency Test and Stroop Color-Word Test (verbal fluency).

In the psychology literature, the study of everyday cognitive function considers the cognitive domains underlying competent performance of tasks necessary for everyday living, but often is done with little consideration as to how these tasks are performed in real world environments (Burgess et al., 2006; Poon, Welke, & Dudley, 1993; Winograd, 1993). The neglect of performance in real world environments is significant, as everyday

life involves not only routine, frequently repeated actions, but also responses to a variety of novel situations that can make greater demands on cognitive function (Channon, 2004). Considering the components of cognitive competence required for occupational competence in everyday living, it is vital that assessments be grounded in knowledge of which cognitive components are responsible for the ability to competently perform everyday occupations, in order to predict how cognitive impairment in these areas will affect multiple tasks in the real world. Drawing on definitions of occupational competence that emphasize the context of everyday living, occupational therapists have a key contribution to make in dementia care, by examining a person's cognitive competence, within the context of their daily life occupations (Townsend & Polatajko, 2007).

Despite the challenge of extrapolating possible problems in everyday life from cognitive testing alone, occupational therapists have traditionally drawn on measures of cognition that often purport to assess cognitive competence in order to predict occupational competence in the context of community living. This practice leads to the question of how best to assess occupational competence for those with dementia to age in place, in order to inform clinical decisions regarding health care resources and living situations. From an occupational science perspective, considerations of aging in place must address an assessment of occupational competence, and in the context of dementia, consider how the assessment of cognitive competence might predict occupational competence. Because of the importance of decisions made, it is vital that occupational therapists critically choose the best measures to inform their recommendations, considering both empirical evidence and ethical consequences (Law, 1987; Miller Polgar, 2009).

1.3 Broadening the Concept of Validity in the Measurement of Cognitive Competence

Measures in occupational therapy can be used for decisions to guide interventions and to make decisions about the efficacy of OT practice (Miller Polgar, 2009). The choice of measures should include an appraisal of evidence for the validity of the measures, particularly connected to how occupational therapists want to utilize the tool within clinical practice (Law, Baum, & Dunn, 2005; Miller Polgar, 2009). The increased

emphasis on accountability, coupled with health care spending restraints, has spurred greater interest in the use of evidence within the practice of occupational therapy. With this emphasis in mind, it is critical that we examine and challenge some of the assumptions underlying the current use of measures, as well as the conclusions being drawn from their use (Coster, 2008; Law & Baum, 1998; Miller Polgar, 2009). It is essential that measures of cognitive competence be both reliable and valid indicators of occupational competence, in order to properly inform decisions and clinical judgments. Recent survey data collected in Canada, as well as previous smaller studies described in Chapter 2, indicate that the Cognitive Competence Test is one of the most commonly used tools by occupational therapists in the context of dementia care (Douglas, Liu, Warren, & Hopper, 2007). This finding may be because it is perceived to capture cognitive competence in ways that are related to everyday living. Thus, this dissertation aimed to contribute to the evidence base regarding the CCT, particularly considering its use as an indicator of occupational competence. In order to address this aim, Samuel Messick's (1989b) framework of construct validity was employed.

1.4 Conceptualizing Measurement

Measurement can be defined as “the act or process of measuring; a figure, extent, or amount obtained by measuring; the dimensions, capacity, or amount of something ascertained by measuring; an estimate of what is to be expected (as of a person or situation)” (Collins Dictionary and Thesaurus, 2002). The notion of measurability has facilitated the development of measurement science (Michell, 2001; Rossi, 2007). Traditionally, measurement within the social sciences focuses on the theory that numbers can represent empirical relations between objects or as a mapping between things of one sort and things of another (Michell, 2007).

In health measurement, the ideal is to use statistically correct procedures to refine an instrument whose content is based on clinical wisdom and common sense as well as theory (Streiner & Norman, 2003). As proposed by Michell (1986), it is important to consider “the possibility of measurement as a matter of evidence, rather than simply a matter of constructing a number generating operation” (p. 405). Classical measurement

theorists believe that test scores and rating scales reflect the structure of the underlying theoretical variable since the variables are not directly measurable themselves (Michell, 1986). Therefore, when measuring cognitive competence, there is a need to use indicators to measure certain attributes of this construct. Kielhofner (2006) describes measurement within occupational therapy as a process of using indicators to represent constructs that can be measured in different ways by using different indicators. Representativeness implies that there are a sufficient number of indicators to represent the various facets of the construct being measured, reflecting the notion of validity, which is considered as a framework within which measurement examines the extent to which an instrument represents an underlying construct (Kielhofner, 2006).

1.5 Conceptualizing Validity

The concept of validation is central to measurement, for without it, any inferences made from a measure are meaningless (Zumbo, 1998). Validity can be demonstrated by the accumulation of several types of evidence produced over many studies, and is an ongoing process (Cronbach, 1971; Messick, 1989b). There is a consensus within the measurement literature that tests do not have construct validity, reliability or predictive value; rather, these characteristics are found in the test responses and their interpretation, and not in the measure itself (Benson & Schell, 1997; Kielhofner, 2006; Law, 1987; Messick, 1989b; Sechrest, 2005; Streiner & Norman, 2003). In other words, a validated interpretation of test scores gives meaning to the measure. Validation is not simply a technique or method, and should be made in the context of a particular use (Zumbo, 1998). For example, a test of cognition used to predict capacity to safely complete instrumental activities of daily living (IADLs) should have empirical evidence linking its results to IADL performance of such tasks as meal preparation or medication management.

Validity is not an all or nothing concern, but rather is a matter of degree (Benson & Schell, 1997; Messick, 1989b; Nunally & Bernstein, 1994; Streiner & Norman, 2003). Traditionally, within occupational therapy and in rehabilitation more broadly, the various means of accumulating validity evidence have been categorized as face, content, criterion and construct validity (Kielhofner, 2006; Law, 1987; Streiner & Norman, 2003). Overall,

these various forms of validity focus on the extent to which the content of a measurement tool captures the construct it intends to measure, as well as the extent to which empirical evidence supports its theoretical structure.

The ultimate goal of any measurement instrument is to produce enough information to allow the user to make appropriate judgments. However, a gap often exists in the conception of validity used in occupational therapy literature, namely the absence of any consideration as to the use of the interpretation of the scores and how an individual's daily life will be affected (Coster, 2008). Within current conceptualizations of validity, there is an emphasis on the need to understand what is being assessed, how it can be identified, and what else may be contributing to the resultant scores in order to verify the content and validity of a measure. The work of Samuel Messick adds to the concept of validity by including the consideration of the consequences of the use of a measure's scores.

1.6 Messick's Contribution to Validity

Messick's concept of validity provides a framework that can guide occupational therapists in selecting appropriate measures that fit the purpose for which they intend to use an assessment tool, while considering larger ethical issues. Early in his writings, Messick (1960) recognized that there is multidimensionality within constructs that should be considered within the context of the intended use of the information derived from any testing. Working within the area of educational testing, Messick (1975) established that there was a need to be concerned not only with content but also with the social values inherent in the use of testing results. Because Messick (1989b) considered evidence to be perpetually incomplete, he suggested that validation is a matter of making the most reasonable case to guide the current use of a test and current research to advance understanding of what the test scores mean. He proposed that validity be considered to be an integrated evaluative judgment of the degree to which empirical evidence and theoretical rationales support the "*adequacy and appropriateness of inferences and actions based on assessment scores*" (Messick, 1989b, p.13). To this end, Messick (1989b) believed that "the key issues of test validity are the interpretability, relevance,

and utility of scores as a basis for action, and the functional worth of scores in terms of social consequences of their use” (p. 13).

Thus, Messick (1989b) argued for an expansion of how measurement and validity are conceptualized, in order to provide a more comprehensive perspective that takes into account the ethics and values associated with, for example, the inability of a person with dementia to age in place in their own home. For this reason, the validity of the CCT has been examined within the framework offered by Messick, in the context of assessing cognitive competence in order to predict occupational competence in people with dementia.

1.6.1 Messick’s Framework of Construct Validity

Messick (1989b) described a danger in using only one type of validity, which could imply that one or another type of validity is sufficient. He suggested that there is a relationship between the evidence gathered, and the theory underlying the research question, but this relationship must also be examined within the context of how well the instrument does its job, and whether it is done well enough to justify the actions and potential social consequences of the interpretation of the test’s scores. Thus, Messick (1989b) proposed six aspects of validity that together form a unitary concept of construct validity. These include an examination of the content of a measure, its substantive or theoretical rationales, and its structural, external, generalizability and consequential aspects. These various aspects guided the research design and analyses interpretation for this dissertation, and are explained below and are summarized in Table 1.1.

The *content* aspect includes evidence of content relevance and representativeness for a sample in a specified domain, and technical quality. While this aspect is similar to the more traditional view of content validity, it not only stresses the nature and boundaries of the domain, but also the appraisal of relevance and representativeness of the test items.

The *substantive* aspect refers to the theoretical rationales for the observed consistencies in test responses and includes empirical evidence. As summarized by Messick (1989a) “[t]he substantive component of construct validity entails a veritable confrontation

between judged content relevance and representativeness, on the one hand, and empirical response consistency on the other” (p.42).

The *structural* aspect is concerned with an appraisal of the reliability or trustworthiness of the scoring structure compared to the structure of the construct domain. Messick (1989b) proposed that “the nature and dimensionality of the inter-item structure should reflect the nature and dimensionality of the construct domain, and every effort should be made to capture this structure at the level of test scoring and interpretation” (p. 45).

The *generalizability* aspect refers to the extent to which score properties and interpretations generalize to, and across, populations, settings and tasks. However, Messick (1989b) was careful to caution that measures do not necessarily become more valid with increased generalizability. Rather, the appropriate degree of generalizability for a measure depends more on the nature of the construct assessed and the scope of its theoretical applicability.

The *external* aspect is similar to traditional criterion validity, and refers to the extent to which the test’s relationships with other tests, and with non-test behaviours, reflect the expected interactive relations implied in the theory of the construct being assessed. Both convergent and discriminative correlation patterns are important sources of evidence. Providing empirical evidence of such links attests to the utility of the score for the applied purpose.

The *consequential* aspect, or notion of ‘consequential validity’, is arguably Messick’s greatest contribution to the framework of construct validity. This aspect is concerned with both the intended and unintended consequences of score interpretation and use. Drawing from personal clinical experience, consequential validity is an essential consideration in choosing measurement tools to inform recommendations regarding aging in place for persons with dementia. The primary concern here is that adverse consequences, such as a finding of incapacity with regards to making decisions about living independently, should not be attributable to sources of test invalidity. This aspect of Messick’s (1989b) framework of construct validity challenges occupational therapists

to consider both ethical and empirical issues when choosing measurement tools. A summary of the dissertation studies follows.

Table 1.1 *Messick's (1989) Framework of Construct Validity*

Aspect	Indicator
Content	Evidence of content relevance, representativeness, technical quality
Substantive	Theoretical rationales, empirical evidence for observed consistencies in responses
Structural	Reliability or trustworthiness of the scoring structure compared to the structure of the construct domain
Generalizability	Extent to which score properties and interpretations generalize to and across populations, settings and tasks
External	Extent to which the test's relationships with other tests and non-test behaviours reflect the expected interactive relations
Consequential	Implications of the test values and interpretation as the basis for action and the actual and potential consequences of test use

1.7 Study 1: Delphi Study

To address the knowledge gap of how to consider cognitive competence best when informing decisions about occupational competence, a Delphi study was conducted among Canadian occupational therapists with experience in dementia care. As described below, the results of this Delphi research were also drawn upon in examining the validity of the CCT.

The Delphi technique is a research methodology that develops consensus among knowledgeable individuals where frequent clinical or practical judgments are made but where empirical evidence translatable to practice is limited (Hasson, Keeney, & McKenna, 2000; Kielhofner, 2004; Sumsion, 1998). While no universal guidelines exist for the Delphi methodology, previous studies support its use for consensus-seeking purposes (Hasson, Keeney, & McKenna, 2000; Sumsion, 1998; Yousef, 2007). It involves a multi-stage questionnaire process, wherein the results of each survey are analyzed by the researchers in order to reformulate subsequent questionnaires sent to the same participants. Each round generates a higher level of consensus, with the process

continuing until opinions are refined or consensus reached (Cook, Brismée, Fleming, & Sizer, 2005; Couper, 1984; Sumsion, 1998).

By using successive questionnaires, opinions are considered by participants in a non-adversarial manner, and opportunities exist to change opinions in a non-threatening way (Sumsion, 1998). The primary objective of the Delphi study, reported in Chapter 3, was to determine consensus among Canadian occupational therapists working in the area of dementia care regarding the components of cognitive competence essential to predict occupational competence in persons with dementia. A secondary objective attended to occupational therapists' current use of methods and measures for assessing these essential components.

1.8 Study 2: Retrospective Chart Review

A second study, reported in Chapter 4, addressed a gap in the research on the construct validity of the CCT within the aspects of validity as described by Messick (1989b). A retrospective chart review collected existing data recorded within the context of routine practice at a London-based rehabilitation facility. This study design was chosen because it facilitated efficient collection of a sufficient amount of data to enable required statistical analysis in order to examine the relationship between test scores and other variables commonly recorded in practice. The aspects of validity outlined by Messick were addressed by comparing the CCT with standardized and non-standardized clinical measures, as well as demographic and descriptive patient characteristics. The results were ultimately compared (reported in Chapter 6) to the components of cognitive competence developed during the Delphi study.

1.9 Conclusion

Validity can be demonstrated by the accumulation of several types of evidence produced over many studies, and is ongoing. Further understanding and development of methods to assess the dimensions of cognitive competence that link with occupational competence enhances the evidence on which to base occupational therapy practice. Using Messick's conceptualization of validity enabled an examination of the CCT as a measure of

cognitive competence that considers a dimension of cognition that is required to predict occupational competence. As there is little written in the literature specifically about which cognitive components are important when assessing occupational competence in dementia, the results of the Delphi study provided the ‘expert’ opinions of occupational therapists regarding these components, and served as a means to compare what the CCT appears to tap in the empirical results of the retrospective chart review study.

In Chapter 2, the CCT is described, including previous research addressing its validity, and evidence regarding its use in Canadian OT practice is summarized. Chapter 3 reviews literature relevant to understanding of the relationship between cognitive competence and occupational competence. Chapters 4 and 5 are devoted to the Delphi, and retrospective chart review studies, respectively. Chapter 6 integrates the findings from both studies, discusses the findings in relation to the literature reviewed, and points to future research directions.

Chapter 2

2 Overview of the Cognitive Competency Test

The Cognitive Competency Test (CCT) was described by its developers as an assessment tool that attempts to measure cognition in relation to everyday living, and was designed to close a gap between psychological assessment and everyday functioning (Wang, 1990; Wang & Ennis, 1986). This chapter contains a description of the CCT and the history of its development. The rationale for examining the validity of the CCT is outlined, in relation to its common use within occupational therapy practice, to inform decisions regarding occupational competence. Available research addressing the construct validity of the CCT is reviewed, particularly with regards to its use in clinical practice as an indicator for occupational competence among older adults and those with dementia.

2.1 The History of the CCT

In 1986, Wang and Ennis attempted to address the need for an objective and standardized evaluation of cognitive competence through developing the CCT. These authors wanted to consider the issue of cognitive competence as “an ability to know and to make use of knowledge” (Wang, Ennis, & Copland, 1987, p. 1). The CCT was designed as a test that “incorporates the concept of multidimensionality of cognitive skill and adopts a practical approach by simulating daily living skills” (Wang & Ennis, 1986, p. 120). The popularity of the CCT may in fact be due to its face validity; for example, a test of memory included within the CCT involves remembering a grocery list instead of random words (Douglas, Liu, Warren, & Hopper, 2007).

The authors proposed that the CCT assesses a wide range of cognitive skills they considered essential to cognitive competence, including orientation to personal information, social intelligence, memory, reading, financial management, safety, judgment and spatial orientation (Wang, Ennis, & Copland, 1987). These cognitive skills are assessed using eight sections designed to provide information about a subject’s cognitive strengths and weaknesses. Some subtests are further divided so that in total there are twelve subtests. These subtests are combined to yield an Average Total Score

(ATS), which is “believed to be an objective, direct, and quantifiable documentation of an individual’s level of cognitive competency” (Wang, Ennis, & Copland, 1987. p, 40). The ATS is calculated by dividing the total sum of all raw scores by 115, which is the maximum total score, and multiplying by 100 to obtain a percentage. A higher ATS indicates a higher level of cognitive competence.

2.2 Components of the CCT

A sample score sheet can be seen in Appendix A.

Subtest 1. Personal Information: The individual is asked to complete a written form that resembles an application form requesting information regarding name, address, telephone number and date of birth. A place for signature and date is provided. Each item is worth one point and a maximum score of ten is possible.

Subtest 2. Card arrangement: This subtest uses five sets of cards that demonstrate sequences of baking a pie, preparing a meal, making a phone call, sweeping the floor and doing the laundry. These are intended to portray practical living skills. Each set contains four cards that are placed out of order in a standardized way, and the person is asked to place them in the correct sequence. A score of two points is used if the order is totally correct, and it is possible to obtain a score of 1 if the arrangement is correct but not optimal. A total score of ten is achievable.

Subtest 3. Picture interpretation: Five pictures are presented and the individual is expected to come to a conclusion about the interactions in the picture. One point is scored for a concrete opinion of what is happening in the picture, and another point is scored for a more complex component that involves deductive reasoning about something either preceding or proceeding from the event. A total of ten points is possible. Of note, some of the pictures were changed after collection of normative data, but the authors felt that the underlying concepts were the same (Wang, Ennis, & Copland, 1987).

Subtest 4. Memory: There are two sections to this subtest, immediate recall and delayed recall. Items to be remembered are of a practical nature, such as a grocery list, an appointment time and place, and the cost of bus fare and a stamp. The delayed recall is

done at the end of the entire test. There is a possible score of five for each subsection, for a total of ten possible points.

Subtest 5. Practical reading skills: This section consists of ten pictures which depict various situations such as a pill bottle, supermarket entrance, telephone directory, and cost of grocery items. The individual is required to read the item aloud. Each item is worth one point, for a total of ten possible points.

Subtest 6. Management of finances: This part of the test is designed to see how an individual can handle specifics of managing finances. Some of the items require the ability to discriminate between relevant and irrelevant collection of monetary and banking items, such as bills that need to be paid. There are calculations involved requiring a deposit and summing a balance after a withdrawal. A cheque is required to be written with a signature and a date. There is a maximum of ten points possible.

Subtest 7. Verbal reasoning: ten questions are posed to the individual that involve strategies for problem solving and safety judgment in emergency situations, such as ‘what would you do if you saw smoke coming from your neighbour’s door’. There is one point assigned for a simple, concrete answer, and an additional point assigned for a more complex answer. In the example of the question regarding fire, a score of one point would be given if the answer was to avoid going in, and two points if the answer involves not going in and contacting the fire department. A total of twenty points is possible.

Subtest 8. Routes: This subtest involves spatial orientation using standardized maps of different landmarks and is meant to tap memory for names, locations and routes as well as directional orientation. There are four subsections that involve listing the landmarks (five points), locating the landmarks (ten points), orientation to routes (fifteen points) and pathfinding (five points). A total of thirty five points is possible for this subtest.

2.3 Initial Studies on the CCT

In a pilot study (N=18) reported in a book chapter, scores on the CCT for a group of older individuals (n=10, \bar{M} =65.8 years, \underline{SD} =14.1) who were living independently in the community were compared to another group (n=8, \bar{M} =66.6 years, \underline{SD} =10.1) who required

some degree of supervision secondary to cognitive impairment (Wang & Ennis, 1986). As reported by the Wang and Ennis (1986), analysis by Mann-Whitney U test demonstrated that in eight of the twelve subsections “the CCT indeed has the power to differentiate the two groups at the .01 level of significance” (p. 124). In this study, eight independently living subjects had an ATS equal to or greater than 80%, and no subject in the dependent group scored greater than 80%. Based on these results, the authors proposed that a score of 80% or higher was indicative of cognitive competence for independent daily living, and a score below this suggested the need for assistance. The authors also suggested that in the correlation matrix of the CCT variables, the 12 subtests shared some degree of common variance, suggesting that the CCT may measure a common cognitive skill.

During a subsequent study, performances of a normal aging sample (32 men and 10 women), aged 50 to 93 ($M=66.06$, $SD=9.89$) were reported (Wang, Ennis, & Copland, 1987). This sample was described as representing a wide range of cultural and ethnic backgrounds typical of a large urban sample. All the subjects self-reported living independently in the community, requiring no supports (ATS $M=87.20$, $SD=6.08$). Defining ‘normal ranges’ for the scores on the CCT, based on a ‘normal’ population, the authors suggested cut-off raw scores for CCT subtests and the ATS based on their performance, as either: impaired, scoring 75 or less (<5% of the sample); in a grey area, scoring 76-79 (6%-20% of the sample); and as normal, above 80 (>20% of the sample). Wang and Ennis (1986) reported a significant negative correlation between age and ATS ($r = -.425$, $p < .05$), indicating that the ATS decreased with advancing age. Data for test-retest reliability were collected on twenty subjects over a mean duration of seven days, with values of mean ages and standard deviations comparable to the original sample. Repeated measures t-tests comparing the variables were reported to not reveal significant differences, except on verbal memory. For the ATS, the reliability coefficient was greater than 0.8, and the standard error of measurement was 2.51.

In a third study by the CCT developers (Wang, Ennis, & Copland, 1987), data on the CCT were gathered on individuals with cerebral vascular accidents ($n=10$, $M=64.4$ years, $SD=13.44$), and dementia ($n=16$, $M=70.6$ years, $SD=8.14$), and compared to data

collected in the previous study with 'normal' subjects. A Kruskal-Wallis analysis was conducted, to compare the performances of individuals within CVA, dementia, and normal aging samples. Results suggested statistically significant differences ($\alpha = 0.001$) on all subtests, as well as the ATS. The normal aging sample performed significantly better than the clinical groups on almost all subtests and the ATS. On the single subtest of immediate memory, the difference between the normal aging sample and the CVA group was not statistically significant (Wang, Ennis, & Copland, 1987, p. 53). The CVA and dementia groups did not differ significantly on the subtests. The exception to this finding was on the subtests that involved memory, where the CVA group performed significantly better than the dementia group.

Overall, the authors involved in the development and initial testing of the CCT concluded that the CCT was found to be useful as one component of a comprehensive clinical evaluation for the geriatric population, but that further research was required to expand the normative base and clinical utility of the CCT. They also suggested that no test could replace clinical judgment, and that an individual's score on the CCT should be interpreted in the context of their overall presentation, combined with the information gathered in clinical interviews (Wang, Ennis, & Copland, 1987).

2.4 Use of the CCT in Clinical OT Practice with Older Adults

While cognition is routinely assessed by occupational therapists in older adults, little is known about the assessment tools that are used, or therapists' reasons for choosing them (Douglas, Liu, Warren, & Hopper, 2007). Despite minimal published evidence to support its use since its emergence over 25 years ago there is evidence that suggests that the CCT is commonly used by occupational therapists in Canada to determine an aging person's ability to live independently by assessing cognitive competence and determining safety and risk.

In a recently published Canadian survey study on occupational therapy assessment practice with older adults (N=247), Douglas et al. (2007) reported that respondents listed sixty-five standardized assessments and nine non-standardized assessments of cognition used in practice. These results point to the use of diverse tests and approaches to

assessments, reflecting the challenge that is experienced in the Canadian context of occupational therapy practice when assessing cognition in older adults. In their study, Douglas et al. (2007) found that the CCT was used by 56.4% of the study sample, and it was the second most widely used assessment tool after the Mini Mental State Exam (MMSE). The participants reported their rationale for using the MMSE most frequently was because it was requested by others (physician, team, or program), but they used the CCT to inform predictions of occupational performance of persons with dementia because the tasks were related to daily function and appeared to have face validity .

Within the profession of occupational therapy there is considerable debate about the use of 'top-down' and 'bottom-up' approaches (Brown & Chien, 2009; Weinstock-Zlotnick & Hinojosa, 2004). Top-down approaches focus on a broader construct, and involve the analysis of a task or performance for the purpose of deconstructing the construct into certain components such as cognition, while a bottom-up approach is usually a synthesis of base components that is intended to build an understanding about a construct (Grieve, 2000). For example, the construct of occupational competence would include a component such as cognitive competence, but would also include personal, behavioural, and environmental components. Douglas et al. (2007) described the bottom-up approach as using assessments of impairments in cognitive function, rather than assessments of abilities, to predict performance in certain occupations. These authors reported that occupational therapists tended to use bottom-up assessments of cognition to identify cognitive deficits, and used their clinical reasoning to extrapolate this information to predict occupational performance. Moreover, these clinicians in this study indicated that they preferred to use non-standardized top-down assessments to predict safety or risk, such as the observation of a person engaged in a specific occupation such as meal preparation. The exception was the CCT, considered to be a bottom-up approach, that was also used for the prediction of safety and supports needed, and was reported to be used because of the more functional tasks embedded in it. The CCT was described to be a better fit with their theoretical approach which emphasized client-centredness and the importance of meaningful activity, since bottom-up assessments appear to measure components in ways dissociated from functional tasks or occupations. Thus, the CCT was favoured by this group of occupational therapists as it was viewed as measuring cognitive

components in ways that could be seen as linked to daily occupation, and was also used to monitor baseline and change. These authors concluded that there was a need for further research regarding the predictive properties of cognitive and occupational performance assessments, and emphasized that the “development and promotion of top down assessments that are standardized with older adults, would provide efficient and clinically useful measures for therapists” (Douglas, Liu, Warren, & Hopper, 2007, p. 379).

Further support for the frequent use of the CCT in occupational therapy practice is provided by several smaller studies. An unpublished survey was conducted by occupational therapists from the Geriatric Assessment Unit at The Ottawa Hospital to determine which standardized cognitive assessments are most commonly administered by Canadian occupational therapists for clients with dementia (Aronson, Barr, Kyle, & O'Keeffe, 2002). They found that of the occupational therapists surveyed (N=68), 75 % were using the CCT, and the next most utilized assessment tool was the MMSE used by 72%. The CCT was reported to be the most commonly used tool when assessing function and safety, and the MMSE was used for cognitive screening purposes and to monitor change. Consistent with the conclusions of Douglas et al. (2007), these findings also demonstrated that occupational therapists find the CCT particularly useful as it enabled them to assess cognitive competence in ways that relate to predicting occupational competence.

Another similar but unpublished finding was identified at a workshop in April 2005 sponsored by the Regional Geriatric Programs of Ontario entitled *Evidence Based Specialized Geriatric Services* (Regional Geriatric Programs of Ontario, 2005). An informal survey of geriatric specialty teams in Ontario was completed to determine which cognitive assessments were commonly used. Of the teams surveyed (N=43), the most frequently used tools were the MMSE (n=15) and the CCT (n=14).

2.5 Subsequent Research on the CCT

Although limited, there are a few published and unpublished studies that have examined selected aspects of the CCT. A study by Rutman and Silberfeld (1992) examined the relationship between impairment on the MMSE and the CCT in the context of a

multidisciplinary Competency Clinic in the Department of Psychiatry at the Baycrest Centre for Geriatric Care. Using visual analysis of a scatterplot, they found that subjects (N=14) who were found to be incompetent by the panel generally had lower CCT scores and MMSE scores, and those subjects deemed to be competent by the panel tended to score higher on the CCT and the MMSE (Rutman & Silberfeld, 1992). These authors also found, however, that some subjects who performed poorly on the CCT and MMSE (deemed not competent according to the CCT categories of cognitive competency) were identified as competent by the panel. The authors discussed the “dissociation between knowing and doing or the ‘cognitive’ versus the ‘functional’ or ‘instrumental’ components of competence” (Rutman & Silberfeld, 1992, p. 638). This statement highlights the difference between ‘cognition’ and ‘cognitive competence’ – between ‘having cognitive skills’ and ‘having the ability to make use of those skills’. Clinically, despite some degree of cognitive impairment, an individual can retain competence in a certain capacity, and the reverse can also be true.

An unpublished pilot study explored the relationship between cognitive competence and Instrumental Activities of Daily Living (IADLs) in a sample of frail elderly who were hospitalized (N=5). The objective was to explore the predictive ability of the CCT by comparing the CCT and the Assessment of Living Skills and Resources-Revised, or the ALSAR-R (Denning, Shackleton, & McCallum, 2001). Using Pearson product-moment correlation analysis of the CCT ATS with the ALSAR-R score, results supported the predictive ability of the CCT. These authors found a negative correlation of the CCT score and the ALSAR-R score, indicating increasing risk of not completing IADLs as the CCT score decreased ($r_{xy} = .88, p = .051$). The CCT subtests of personal information ($r = .92, p = .025$) and routes: locate ($r = .92, p = .027$) were significantly correlated with the ALSAR-R score in the expected direction. Cross tabulation results of the CCT functional classifications and the ALSAR-R score demonstrated that as the CCT functional classification indicated as the ATS decreased (more dependent individual), the ALSAR-R score increased, indicating individuals who were more dependent in their abilities to perform IADLs.

Another study examined the relationship between neuropsychological deficits (initiation, disorganization, and insight) and cognitive competence in schizophrenia. In their study, Christensen and Mateer (2005) described cognitive competence as “cognitive skills for independent living” (p. 361) as measured by the CCT. Participants (N=40) ranged in age from 17 to 51 years, and is not a comparable sample of older adults with cognitive impairment. Their results indicated the variables that predicted cognitive competency, as measured by the CCT, in decreasing order of unique contribution were: initiation [$t(36) = 3.82, p < .001, \beta = .42$], disorganization syndrome [$t(36) = -3.40, p < .001, \beta = -.41$], and insight [$t(37) = 3.14, p < .005, \beta = .38$]. Together, initiation, disorganization, and insight accounted for 58% of the variance in cognitive competence as measured by the CCT. It could be argued that these variables are considered to be components of executive function (Salthouse, 2005; Stuss & Alexander, 2000).

Inman and Kulis (1993) examined the concurrent validity and clinical utility of the CCT in a study among individuals with a diagnosis of CVA (N=34). In this unpublished study, the CCT was correlated with the Neurobehavioral Cognitive Status Examination (NCSE), a test that has been shown to be more sensitive to organic impairment than other screening measures (Schwamm, Van Dyke, Kiernan, Merrin, & Mueller, 1987). Statistically significant correlations ($p < 0.05$) between the 12 CCT subtests and the 10 subtests of the NCSE were present, in expected directions. However, immediate memory ($r = .33, p = .063$) and delayed memory ($r = .25, p = .155$) did not demonstrate statistically significant correlations with the NCSE memory subtest. These authors reported that such findings were consistent with their experience that the NCSE measured verbal memory better than the CCT memory subtests. Significant correlations were found among all of the subtests of the CCT ($p < .01$), supporting Wang and Ennis' findings regarding the shared common variance among the subtests of CCT. The authors further suggested that two subtests, pathfinding and practical reading, were passed by most subjects except those who were so impaired that the information was of little value.

2.6 Conclusion

Overall, there are few published studies involving the CCT. Survey studies confirmed that the CCT is commonly used by occupational therapists in practice with older adults. In particular, it appears the CCT is often used to predict ‘safety’ and ‘supports needed’, which could be considered to be indirect indicators of occupational competence. Drawing on Messick’s framework, the studies cited here have attempted to examine the content and external aspects of validity, by comparing the CCT scores to other domains such as a global determination of competency, a test of occupational performance, executive functions such as initiation, organization and insight, and another test of cognition. The study by Rutman and Silberfeld (1992) begins to address the notion of consequential validity by considering the discrepancies between clinical and test evaluations of competence and questions the use of the CCT to determine social outcomes.

Although newer assessments have been developed, such as the Multiple Errands Test and the Kettle Test (Alderman, Burgess, Knight, & Henmen, 2003; Hartman-Maeir, Harel, & Katz, 2009), that incorporate tests of executive function in an everyday context, they do not purport to measure cognitive competence. The decision to study the CCT was made mainly because of its widespread use. Sample sizes of the CCT studies are small, and their scientific rigor is questionable since few studies were ever published in peer-reviewed journals. In order to address existing gaps in the research addressing the construct validity of the CCT, there needs to be a clearer understanding of the construct that the CCT is being used to measure – that is, cognitive competence as an indicator of occupational competence. Thus, in Chapter 3, literature relevant to enhance understanding of the relationship between cognitive competence and occupational competence will be reviewed in order to identify key components to consider when assessing cognitive competence for the purpose of predicting occupational competence in people with dementia.

Chapter 3

3 Predicting Occupational Competence in Persons with Dementia: Components of Cognitive Competence and 'Real World' Demands

One of the main consequences of dementing illnesses is the effect of cognitive impairment on a person's ability to competently complete the range of daily activities necessary for safe, independent living (Farias, Harrell, Neumann, & Houtz, 2003; Thom & Blair, 1998). Health care professionals are asked to predict the capacity of a person with dementia to perform such activities, in order to inform decisions related to appropriate housing – in particular, community living versus some form of institutional living, as well as the need for support services. Traditionally, occupational therapists in dementia care have drawn on measures of cognitive competence to infer occupational performance in the context of community living. While acknowledging the difficulties of extrapolating possible problems in everyday life from cognitive testing alone, given the complexity of personal and environmental factors (Thom & Blair, 1998), having well-validated tests to contribute to such extrapolation is important. More recently, there has been a call to expand the construct of occupational performance to the broader construct of occupational competence, by including not only what is required for safe and independent living, but also to consider context-specific demands and supports, as well as the meaning of engagement to the person (Townsend & Polatajko, 2007). This expansion leads to the question of how to determine the occupational competence of a person with dementia to execute those occupations necessary for safe and meaningful community living, considering dimensions of cognitive competence.

Within this chapter, key constructs addressed in this dissertation are defined, and the gaps in understanding how cognitive competence can be used as an indicator of occupational competence in people with dementia are highlighted. Following a discussion of the concepts of occupational performance and occupational competence, the construct of cognitive competence is addressed, particularly definitions that explicitly consider cognitive competence in relation to everyday living. In the final sections of this background chapter, contemporary literature regarding everyday cognition is examined for what it can contribute to the identification of the components of cognitive competence

essential for occupational competence, considering real-world demands and ecological validity. In the concluding section, it is argued that there is a lack of consensus regarding the cognitive components that are essential to include within a measure of cognitive competence for everyday living, a construct that overlaps with occupational competence.

3.1 Understanding Occupational Performance and Occupational Competence

Occupational scientists and therapists believe that occupation, in the broad sense of a person's engagement in the world through doing, is at the root and core of human life (Wilcock, 1993, 2003). Occupations are the activities that people do in everyday life (Whiteford, Townsend, & Hocking, 2000), encompassing "how humans occupy their time, dedicate their energy, realize their sense of personhood, and organize their societies" (Christiansen & Townsend, 2004, p. xiii). There is a growing acceptance of the value of occupation in the lives of humans and its contribution to health and well-being, as well as empirical support for its contribution to longevity and well-being (Clark et al., 1997; Glass, Mendes de Leon, Marottoli, & Berkman, 1999; Molineux, 2004; Wilcock, 2003; Yerxa et al., 1990).

The concept of occupational competence first emerged in the Canadian occupational therapy literature in 1992 by Polatajko, defined as the ability to answer all the requirements of the environment through occupation within everyday life, and the ability to derive meaning and identity from occupation. Polatajko (1992) proposed a model of occupational competence consisting of three dimensions: the individual, the environment, and occupation, and proposed that assessment and interventions to enhance occupational competence require an understanding of their intersections. Subsequently, occupational competence has also been defined as the capacity to deal with one's surroundings; to interact with and influence the environment through daily occupations (Schwammle, 1996).

To examine the interaction between individuals and occupations, and to inform occupational therapy practice, there are several models of occupational performance in the occupational therapy literature, such as the Person–Environment–Occupation (PEO) model (Law et al., 1996), the Model of Human Ecology (Dunn, Brown, & McGuigan,

1994), the Model of Occupational Performance (MOP) (Chapparo & Ranka, 1997), the Model of Human Occupation (MoHO) (Kielhofner, 2002), and the Canadian Model of Occupational Performance and Engagement (CMOP–E) (Polatajko, Townsend, & Craik, 2007). Within these models, the term occupational performance encompasses the complexity of person–occupation–environment relationships, as in the PEO model (Law et al., 1996), is considered within the environment, space and time as proposed in the MOP (Chapparo & Ranka, 1997), or in terms of primary concepts of motivation, patterns or routines, performance capacity (the physical and mental abilities that underlie occupational performance), and environmental context as outlined in the MoHO (Kielhofner, 2002). The CMOP–E emphasizes the “result of a dynamic, interwoven relationship between persons, environment, and occupation over a person’s lifespan” (Polatajko, Townsend, & Craik, 2007). Each of these models use occupational performance as a frame of reference, and emphasize the complex interaction of biological, social and psychological phenomena that occur as people interact with their environments while performing those occupations that are necessary and important to them (Baum & Katz, 2010).

The work on these models has facilitated a shift of emphasis in the occupational therapy literature from *activity* and *function* to *occupational performance* and *occupational competence* (Law et al., 1996). This shift requires a broader consideration of what is important to assess when looking at the ability to live safely and meaningfully in the community, and is reflected in the modification of the CMOP (Townsend et al., 2002) to include the ‘E’– the element of ‘engagement in occupation’ (Townsend & Polatajko, 2007). Beyond concern with the capacity to carry out basic activities necessary for everyday living in relation to safety and basic needs, is the capacity to engage in activities that add meaning to life, sustain identity, and facilitate social belonging. Thinking contextually allows these complexities to be understood while avoiding reductionistic views of a person’s occupational behaviour or performance. A contextual approach ensures that an assessment of the ability to age in place is relevant to the person, by determining which contextual features support or create barriers to occupational competence, as well as what occupations need to be performed within specific contexts. As such, occupational competence builds upon the concept of occupational performance,

continuing to address elements of person and environment, while also highlighting the importance of considering abilities to execute particular occupations in particular contexts and the implications of occupation for meaning and identity.

3.2 Defining and Assessing Cognitive Competence in Relation to Occupational Competence

Declining cognition raises questions regarding the competence and safety of persons with dementia to age in place (Baum & Katz, 2010; Kane & Levin, 1998). The word ‘competent’ means ‘having sufficient ability to meet the demands of a situation’ (Collins Dictionary and Thesaurus, 2002), and as such parallels the recognition of contextual demands inherent in the concept of occupational competence. When elderly individuals are evaluated regarding their competence to make decisions regarding their personal care or finances, a finding of incompetence can compromise their autonomy to make these decisions. Many legal and ethical questions are associated with such evaluations as the outcomes of competency assessments have major implications in the lives of those individuals, affecting their sense of identity and independence, their inherent dignity, and their basic human rights (Silberfeld & Fish, 1994).

Various terms are used to address the ability of individuals to make and enact the decisions necessary for aging in place. Wang (1990) referred to cognitive competence as “a psychological construct that cannot be directly observed but can be inferred from an individual’s behaviour or performance on content-relevant tasks” (p. 219). Health professionals generally use the term ‘competency’ to describe “the mental ability to perform a particular task or tasks” (Silberfeld & Fish, 1994, p. 5). Legal professionals tend to use the word ‘capacity’ although the words are often used synonymously, with the term ‘mental capacity’ frequently used in legal contexts (Wahl, 1996). Capacity can be considered to be the ability to execute those mental abilities that are being inferred by the term competent (Cooney, Kennedy, Hawkins, & Hurme, 2004; Molloy, Darzins, & Strang, 1999). Capacity, in the intersection of health care and law, such as in the Health Care Consent Act, is defined as the “ability of an individual to understand and appreciate the information relevant to making a specific treatment decision; and to appreciate the

reasonably foreseeable consequences of a decision or lack of a decision” (College of Occupational Therapists of Ontario, 1996, p. 11). Cooney (2004) et al. described this process of decision-making in the following statement:

The primary issue in evaluating capacity to make a choice should be the process of making the decision, not the decision itself. Does an individual demonstrate the capacity to receive, comprehend, and relate relevant information? Can the individual integrate the information received and relate it to the personal situation? Does the individual have the capacity to evaluate benefits and risks? Does the person have the ability to carry out the decision? (p. 358).

Within the context of everyday living and competence, cognitive competence has been described as the capacity to make decisions regarding actions and choices (Clarke & Heyman, 1998). Molloy, Darzins and Strang (1999) differentiate between operationalizing a daily living task and the decision-making related to that task. These authors described this concept as:

...the difference between the ability to thrive (perform activities of daily living) and the ability to make decisions about the activities of daily living (specific decision-making capacity) particularly important in the personal care domain. Most personal care tasks (walking, dressing, feeding, bathing, and toileting) are practical physical tasks. Decision making regarding these tasks is a cognitive function (p. 49).

The lack of a uniform or consistent operational definition of cognitive competence to guide its measurement has contributed to a lack of standardization in assessment protocols, including a lack of consensus as to what aspects of cognition are most important to include when assessing cognitive competence (Kuther, 1999; Molloy, Darzins, & Strang, 1999). It is a major challenge within the field of rehabilitation and psychological measurement that concepts such as cognitive competence cannot be measured directly; they can only be measured indirectly, by comparing indicators (Streiner & Norman, 2003). As a more theoretical approach is required than straightforward measurement of performance, a network of explanatory ideas creates a stronger case for supporting validity, demanding a more comprehensive understanding of the dimensions involved in a complex construct such as cognitive competence, in order to evaluate if it is a useful indicator of occupational competence in people with dementia (Messick, 1989b).

Although there have been recent developments addressing the assessment of cognition in relation to occupational performance, there is a lack of consensus within the occupational therapy literature regarding the components of cognitive competence that are essential to assess in order to inform judgments regarding occupational competence. The assessment literature in occupational therapy has seen some progression from non-standardized observations of activities of daily living, to standardized quantitative measures that consider cognitive strengths and weaknesses (Baum & Katz, 2010). For example, the Assessment of Motor and Process Skills is a standardized observational tool that focuses on skills necessary to complete ADL tasks by evaluating the quality of effort, efficiency, safety and independence of motor and process skills of client-chosen ADL tasks (Hartman, Fisher, & Duran, 1999). This measure is an example of a standardized top-down tool, that is used to assess underlying cognitive or physical impairments (Cooke, Fisher, Mayberry, & Oakley, 2000). Another example is the Kettle Test, targeted for the stroke population, that was designed to tap into basic and higher level cognitive processes such as working memory, problem-solving, attention, and safety judgment, using the preparation of a hot beverage (Hartman-Maeir, Harel, & Katz, 2009). More recently, occupational therapists have developed evaluation processes, such as the Cognitive Functional Evaluation, that include interview, standardized screening measures, general measures of cognition and executive function, and measures of specific cognitive domains in occupations and environmental assessment (Baum & Katz, 2010). However, despite the recent development of such tools that measure cognitive skills that can underlie occupational performance, there is still a gap regarding the consideration of cognitive competence, and the establishment of evidence as to which cognitive components are necessary for the execution of occupational tasks that impact on a person's safety, in the context of everyday life.

3.3 Insights Gained from the Everyday Cognition Literature

Everyday life involves both routine, frequently repeated actions and a variety of novel situations (Channon, 2004). The everyday cognition literature found in psychology focuses on the study of cognitive function in an everyday context, and has the potential to address this gap in identifying the components of cognitive competence most predictive

of occupational competence. To understand everyday cognition there is a need to identify cognitive factors that contribute to the performance of tasks that have predictive ability and external validity, and ensure adequate representation of the construct (Hartley, 1993). A measure such as the MMSE was intended to be used as a predictor of function (Folstein & Folstein, 1975; Patrick, Perugini, & Leclerc, 2002) but lacks sensitivity and specificity (Nieuwenhuis-Mark, 2010). Laks et al. (2005) determined that impairment in function, as measured by a questionnaire assessing activities of daily living in community-dwelling elderly, served as a more reliable indicator for dementia in populations with low education than tests of cognition alone such as the MMSE. Other studies using paper and pencil tests have focused on more global cognitive constructs such as speed of processing, episodic memory and verbal abilities to use as predictors of everyday problem solving ability (Burton, Strauss, & Hultsch, 2006; Patrick, Perugini, & Leclerc, 2002). However, few investigations have focused on the extent to which impairments in cognitive skills translate to difficulties in performing necessary and meaningful daily activities in everyday life contexts as experienced in non-clinical settings (Cullum et al., 2001), or in other words, to occupational competence.

A study by Farias, Harrell, Neumann, and Houtz (2003) examined the relationship between performance on a wide range of neuropsychological tests and functional status evaluations, in 42 individuals diagnosed with Alzheimer's disease. Functional status was measured using both a performance-based scale of activities of daily living (ADL) and by a caregiver/informant-based rating of instrumental activities of daily living (IADL). Their findings suggested that neuropsychological functioning is moderately predictive of functional status. Using multiple regression analyses, neuropsychological variables accounted for 25% of the variance in the IADL scale, and 50% of the variance in the performance-based ADL test. The findings provide evidence of a relationship between neuropsychological test performance and ADLs in this Alzheimer disease patient population. However, these authors suggest that based on their findings it is inappropriate to make predictions regarding the ability of a person with dementia to perform competently based solely on their neuropsychological functioning (Farias, Harrell, Neumann, & Houtz, 2003). Their study supports the notion that cognitive components, while not perfectly predictive, do show a relation to performance of ADLs and IADLs.

One of the earliest applications of cognitive testing was the detection and localization of brain pathology (Marcotte, Scott, Kamat, & Heaton, 2010). Some of the everyday cognition research with older adults has gone beyond this historical focus by focusing directly on the objective measurement of the cognitive components of everyday task performance (Allaire & Marsiske, 1999; Cornelius & Caspi, 1987; Denney & Pearce, 1989). While this literature shows substantial heterogeneity with regard to the domains examined and measurement approaches used (Diehl, Willis, & Schaie, 1995; Marsiske & Willis, 1995), they tend to use paper-and-pencil and interview-based simulations of everyday problems and occupations. Even studies that show a high correlation between assessment of cognition and assessment of function tend to focus on individual tasks, such as changing money or using the telephone (Cullum et al., 2001; Diehl et al., 2005; Williams et al., 1991; Zanetti, Frisoni, Rozzini, Bianchetti, & Trabucchi, 1998). Thus, while providing support for a link between cognition and occupational performance, this literature has not yet captured the contextually-specific and dynamic nature of occupational competence.

While there is also evidence in this body of literature to suggest that testing performance within specific tasks is significantly related to measures of global cognitive ability such as the MMSE, studies show that only about 40% to 50% of the variance in global cognitive ability is accounted for (Willis et al., 1998), leaving at least half of the variance unaccounted for. This finding suggests that direct assessment of the cognitive demands of daily living appears to be measuring something beyond, or different than, the cognitive abilities that are represented in global measures, thus supporting the need to focus on cognitive components most predictive of everyday task performance (Willis et al., 1998). There are at least three tests that purport to measure the cognitive domains of everyday problem-solving; the Practical Problems Test (Denney & Pearce, 1989), the Everyday Problem Solving Inventory (Cornelius & Caspi, 1987), and the Everyday Problems Test (Willis, 1996). Confirmatory factor analysis revealed that there was little correlation between these different instruments, demonstrating that these measures were assessing very different constructs highlighting the absence of a unifying measurement for everyday cognition (Marsiske & Willis, 1995). These results support the view that everyday competence is a multidimensional construct requiring examination of many

dimensions. Thus, the everyday cognition literature provides further support for the link between components of cognition and occupational performance, but also has not clearly identified which components are most essential to predict occupational competence.

Several studies have examined the issue of the relationship between cognition and occupational competence in the other direction, noting that the assessment of everyday function has been found to be highly correlated to cognitive impairment (Hartman, Fisher, & Duran, 1999; Juva, Makela, Erkinjuntti, & Sulkava, 1997; Laks et al., 2005; Mehta, Yaffe, & Kovinsky, 2002). These studies have demonstrated that the assessment of daily function is a more sensitive measure of cognitive decline in people with dementia than tests of cognition alone. Juva et al. (1997) found that the functional scales they used (Instrumental Activities of Daily Living Questionnaire and Functional Assessment Questionnaire) were able to discriminate participants with dementia versus those without and could even discriminate those without dementia versus those with mild dementia. It has been demonstrated that adding a measure of instrumental activities of daily living to the strategy of diagnosing dementia considerably improved the predictive value of the MMSE alone in screening for dementia (Barberger-Gateau et al., 1992).

Another approach to everyday cognition and occupational competence is to consider executive functions such as problem solving and abstract reasoning to be strong neuropsychological predictors of functional status. Studies have shown that memory and visual spatial skills together, and memory and problem solving abilities were significant predictors of executive function and performance in everyday life (Richardson, Nadler, & Malloy, 1995; Salthouse, 2005). Apraxia has also emerged as a significant predictor across a number of functional domains (Farias, Harrell, Neumann, & Houtz, 2003). Thus, this body of research suggests that there are multiple routes and means of how cognition contributes to everyday living.

It has been proposed that everyday cognition involves applications of cognitive abilities and skills, that practical problems are experienced in naturalistic or everyday contexts (Schwartz, 2006), and that everyday problems are complex and multidimensional (Poon, Welke, & Dudley, 1993). Yet, just because an individual has the ability to perform

certain behaviours does not necessarily mean they will actually perform or execute those behaviours in the natural environment. The cognitive psychology literature examines the components of the cognitive skills necessary to everyday living in several ways that can contribute to our understanding of cognitive competence as it relates to occupational competence. The literature points to the importance of executive functions; however the measurement of cognitive competence is limited by the use of testing methods that do not occur in 'real-life' contexts.

3.4 Real-World Demands and Ecological Validity

While psychologists and neuropsychologists use highly standardized testing to determine competency for everyday living, these assessments are rarely, if ever, completed in real-world environments. For example, the Everyday Cognition Battery measures four cognitive abilities of inductive reasoning, knowledge, declarative memory, and working memory, within three real-world domains, namely medication use, financial planning, and food preparation and nutrition (Allaire & Marsiske, 1999). However, this battery uses paper and pencil tests, and even the section on food preparation is measured using a written questionnaire. In relation to capturing occupational competence, the problem with this approach is that measures arising out of laboratory based paper and pencil testing can provide a decontextualized approach to assessing cognitive competence. Thus, traditional psychometric measures of cognition based on this type of approach may not appropriately capture a person's performance when actually faced with real-world problems (Farias et al., 2008; W. L. Thornton, Deria, Gelb, Shapiro, & Hill, 2007).

Ecological validity has been described as "the functional and predictive relationship between the patient's performance on a set of neuropsychological tests and the patient's behaviour in a variety of real world settings" (Sbordone, 1996, p. 15). Parallel to the occupational therapy literature and the shift to occupational competence, there is a growing body of literature in psychology on everyday cognition that endorses the significance of examining how the environment and other influences inter-relate in everyday life. As stated by Blanchford-Fields and Hertzog (1999):

Current trends are empirically based and acknowledge that cognitive mechanisms cannot be considered in a vacuum, but instead must be considered in context in order to evaluate the functional significance of age-related changes in cognition identified by laboratory research (p.550).

Thus, one fruitful way forward in the measurement of cognitive competence is to endorse assessments of everyday cognition that have more ecological validity, both for those completed in the lab or clinical settings and those completed in naturalistic settings. Examples of such tests are the Multiple Errands Test (Burgess et al., 2006) and the Kettle Test (Hartman-Maeir, Harel, & Katz, 2009), which are performance measures based on complex everyday tasks. Burgess, Alderman, Forbes, Costello, Coates, and Dawson (2006) argued that the time has come to create tests specifically intended for clinical applications rather than adapting measures emerging from purely experimental use, and to consider a “function-led” approach (p. 194). The underlying assumption informing such work is that the more life-like an assessment approach is, the more likely it is to reflect real-world functioning. The clinical reality is that often there are time constraints and at times these tests are not conducive for use in a clinic setting.

Burgess et al. (2006) make an interesting distinction between operations and functions that supports the use of ecologically valid measures of everyday cognition. These authors defined operations as the individual component steps of cognition that are not directly observable, but are inferred from a combination of task analysis and some behavioural change that can be made in reference to an outcome in the real world. These are understood at the level of the individual, rather than the individual’s interaction with the environment. In contrast, functions are the directly observable behavioural outputs that are the product of a series of operations usually understood in the context of a goal, such as preparing a meal or mailing a letter. From a historical perspective within neuropsychology, the authors further explained from a construct level how traditional scientific investigations emphasizing operations have dominated the field of studying executive functions. They argued that such studies have not adequately captured the dynamic interplay between situation factors and the hypothesized resources, which are more function-led than operation-led. Further, it is exactly at this level, the ‘functional

level' where the interaction between the individual and his or her context occurs, that the clinician is interested.

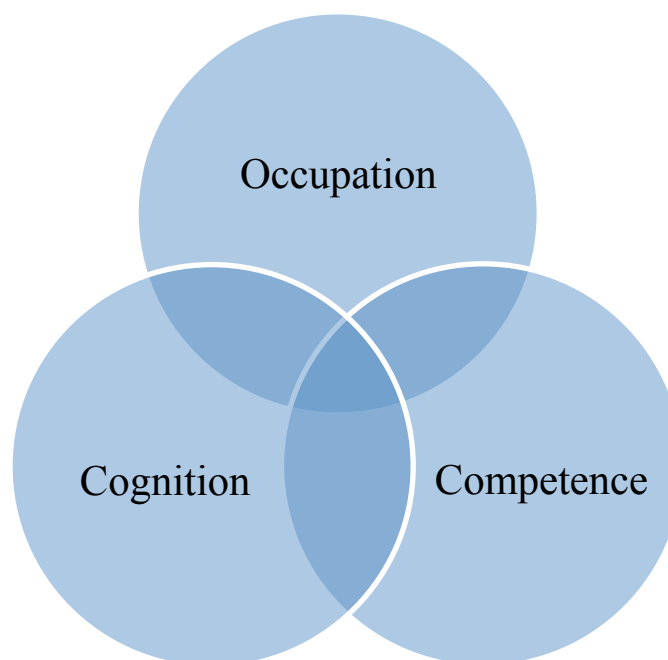
The need for ecological validity, articulated within the neuropsychological literature, and supported within the occupation-based literature, translates into an awareness and understanding of the interaction between the person, the environment, and the occupation in question (Law et al., 1996). Tests that incorporate real world demands are consistent with the construct of occupational competence, and resonate with the findings of Douglas et al. (2007) that occupational therapists use the CCT because they see the tasks as being related to real-world function.

3.5 Linking Cognition, Cognitive Competence and Occupational Competence

Figure 3.1 shows a visual model of links between occupation, cognition and competence. The overlap between occupation and competence can be considered to be occupational competence. Everyday cognition, or the cognitive skills required for particular occupations in everyday life, can be conceptualized as the overlap between occupation and cognition. The overlap between competence and cognition can represent cognitive competence, or the ability to execute those cognitive skills needed for everyday living. The centre could be conceptualized as components of cognitive competence that are predictive of occupational competence. It is this intersection of occupation, cognition, and competence that provides a conceptual rationale for the Delphi study described in the next chapter; to identify those components based on occupational therapists' expertise that can guide future practice and research linking cognitive competence and occupational competence, and to provide a structure to consider the construct validity of the CCT.

Figure 3.1

Visual Model Linking Occupation, Cognition and Competence



3.6 Discussion and Conclusions

Living in a place that is safe, familiar, and comfortable, is important to everyone, including people living with dementia (Iwarrson et al., 2007). Furthermore, a diagnosis of dementia does not automatically mean that a person is incapable of continued community living. For some, living with a diagnosis of dementia means living with support services, even if there are some safety risks. For others, the risk for harm is too great. An evaluation of occupational competence is required for this determination, and in dementia care, is often based on an assessment of cognitive competence, or those cognitive abilities underlying occupational performance.

The everyday cognition literature supports the link between components of cognitive competence and everyday functioning, but as yet there is no consensus surrounding the components that are most important in contributing to such functioning. While recognizing the importance of considering performance and competence in relation to

real-world environments, there is a gap in the ability to operationalize this link with current measurement tools.

If one of the major barriers to occupational competence among people with dementia is cognitive competence (Kurz, Scuvee-Moreau, Rive, & Dresse, 2003; Patrick, Perugini, & Leclerc, 2002), then the inclusion of the cognitive components such as planning, organization, and attention, as identified in the everyday cognition literature, should be incorporated into real-world assessments of occupational competence. Such assessments could determine the extent to which a person is at risk for harm due to their impairment in cognitive competence. This compromise in cognitive competence may not be due to declining executive function per se, but rather decline in those executive functions that produce a diminished competence to perform the occupations needed to maintain safe living within a particular environmental context. Thus, an important way forward in enhancing assessment of occupational competence in dementia care involves consideration of the merit of breaking down everyday cognition into cognitive components, and then rebuilding these components within the context of everyday tasks, highlighting the contribution of cognitive competence as an indicator of occupational competence.

Although the literature does not seem to provide a consensus, it does suggest some important indicators found in the everyday cognition literature, such as problem-solving, working memory, and inductive reasoning, to name a few (Allaire & Marsiske, 1999; Diehl, Willis, & Schaie, 1995; Marsiske & Willis, 1995; Willis, 1996). To date, there is not a large network of evidence identifying those cognitive components that underlie cognitive competence. This lack of evidence is a significant barrier to a more widespread use of cognitive competence as an indicator of occupational competence, for persons with dementia.

Chapter 4

4 Components of Cognitive Competence Predictive of Occupational Competence in Dementia: A Delphi Study with Canadian Occupational Therapists

Occupational therapists, along with other health care professionals, are encouraged to use evidence in their clinical decision-making (Law & Baum, 1998; Law, Baum, & Dunn, 2005). However, as outlined in Chapter 3, there is a gap in the literature examining the relationship between cognitive competence and its ability to predict occupational competence in people with dementia. In particular, there is a lack of consensus regarding specific aspects of cognitive competence that are most predictive of occupational competence. In order to advance approaches to assessment used by occupational therapists in dementia care, it is critical to identify the components of cognitive competence that are most important for the measurement of occupational competence.

To begin to dissect the construct of cognitive competence, it would be helpful to have a definition of cognitive competence, in order to deconstruct the cognitive components underpinning it. While there is no universal consensus on how cognitive competence is defined (Allaire & Willis, 2006; Cooney, Kennedy, Hawkins, & Hurme, 2004; Kuther, 1999), the definition offered in Chapter 3 by Molloy, Darzins and Strang (1999) was particularly helpful in conceptualizing this study: the ability to execute those cognitive components that are essential in everyday living, leading to a question of which cognitive abilities, or components, underlie cognitive competence in persons with dementia for tasks required for occupational competence in everyday living. As there is little in the literature to inform this judgment, one option was to turn to the knowledge and expertise of clinicians to address this question. Thom and Blair (1998) suggested that “[i]n practice, the occupational therapy contribution to risk assessment and management [in dementia] ...is largely based on tacit knowledge generated from experience” (p. 445). Thornton (2006) argued that best practice rests on a body of tacit knowledge that forms a foundation of good clinical judgement, and integrates research, expertise and values.

The objective of the study outlined in this chapter was to determine a consensus opinion among Canadian occupational therapists’ regarding the components of cognitive

competence that are essential to predict occupational competence in persons with dementia. A secondary objective attended to occupational therapists' opinions on current methods of assessing these essential components, and to gather information on how clinicians were currently informing their determinations of cognitive competence.

4.1 Methodology

The name "Delphi" derives from the Oracle of Delphi. This methodology was developed in the 1960's as a structured communication technique that was originally designed as an interactive method of forecasting that relied on a panel of experts (Linstone & Turoff, 1975). It has many applications, but while no universal guidelines exist, the use of Delphi studies has been emerging recently in the rehabilitation literature, and has been shown to be useful for gathering data from respondents within their domain of expertise (Atwal & Caldwell, 2003; Cook, Brismée, Fleming, & Sizer, 2005; Couper, 1984; Deane, Ellis-Hill, Dekker, Davies, & Clarke, 2003; Jenkins & Smith, 1994; Manthorpe, 2003; Sumsion, 1998).

Within health care, the Delphi methodology develops consensus of opinions among knowledgeable individuals in situations where clinical judgments are made but where empirical evidence is limited (Hasson, Keeney, & McKenna, 2000; Kielhofner, 2004; Sumsion, 1998). This methodology was chosen to address the primary objective of this study because it provided a framework for utilizing the expertise of experienced occupational therapists to identify a consensual definition of the essential components of cognitive competence required to evaluate occupational competence.

Delphi methodology involves a multi-stage process, in which the results of a series of questionnaires or rounds are analyzed by the researcher so that each round generates a higher level of consensus, with the process continuing until opinions are refined, or consensus is reached (Cook, Brismée, Fleming, & Sizer, 2005; Couper, 1984; Sumsion, 1998; Yousef, 2007). By using successive questionnaires, opinions are considered by participants in a non-adversarial manner, and opportunities exist to change opinions in a non-threatening way (Sumsion, 1998).

4.2 Overview of Study Procedure

This study involved 3 phases (rounds) of surveys, all of which were administered electronically to occupational therapists working with individuals with dementia. Participants were asked to identify, and subsequently rank, the essential components of cognitive competence in persons with dementia in order to predict or determine occupational competence. A secondary question attended to opinions on current methods and approaches used to assess these essential components. The study was approved by the Health Sciences Research Ethics Board at the University of Western Ontario (see Appendix B).

A web-based survey tool, SurveyMonkey, was used to disseminate the information and to track respondents across rounds. Surveys were available in French, with forward and backward translation done by a French-speaking speech-language pathologist and bilingual occupational therapist. As an understanding of the study's purpose builds on the research relationship that supports ongoing participation (Hasson, Keeney, & McKenna, 2000; Van Selm & Jankowski, 2006), letters of information were distributed via SurveyMonkey in English (see Appendix C) and in French (Appendix D). This letter informed participants of the study's expectations, time requirements, and the intention to build consensus on the essential components of cognitive competence needed to predict occupational competence in people with dementia. Consent to participate was determined by the therapists' completion of the initial survey, as outlined in the letter of information. Each participant was asked to participate in 3 survey rounds and was asked to respond to each survey within 2 weeks. Surveys for all three rounds can be found in Appendix E (English), and in Appendix F (French).

Several recommended strategies were utilized to optimize the response rate. A lottery was conducted within each round of the survey, wherein participants had an opportunity to win \$50 (Bowling et al., 2006). Additionally, participants who completed all three rounds were entered into a draw for \$250. Finally, reminders were sent via email to non-responders two weeks after completion of the each round (Dillman, 2007).

4.3 Study Sample

In a Delphi study, participants should be experts, or at least individuals who are knowledgeable about the topic, and are associated with the disciplinary areas of expertise required by the specific issue (Hsu, 2007). There is debate within the literature, however, over the use of the term ‘expert’ (Hasson, Keeney, & McKenna, 2000). It can be argued that if the question being investigated relates to clinical intervention, then clinicians practicing in that field are the experts (Jones & Hunter, 2000). There are very few designations of ‘expert’ within the profession of occupational therapy. In practice, it could be argued that occupational therapists with any level of experience and expertise could be assessing cognitive competence. In the absence of professional guidelines, the literature suggests establishing key competencies, and to highlight experience and expertise (Hoening et al., 2005; Marshall & Luffingham, 1998). To determine a minimum level of expertise for inclusion in the study, it was decided to mirror the requirements for an advanced clinical practitioner. Job descriptions for advanced clinical practitioners were drawn from the Canadian Arthritis Society and the Hospital for Sick Children, which required two and three years of experience in a specific field of practice respectively. For the purpose of this study, occupational therapists with a minimum of two years of experience working with people with dementia within the past ten years were considered to be ‘expert’.

The primary source for recruitment was the Canadian Association of Occupational Therapists (CAOT). At the time of recruitment, CAOT membership statistics (2008-2009) revealed that 792 members (19%) indicated that the primary age group they worked with was seniors over the age of 65. Five hundred and ninety-six members (14%) indicated that they worked within the area of cognition, one hundred and fifteen (2%) indicated that they worked specifically with dementia, and two hundred and ninety two (6%) worked in the home care sector which typically deals with seniors, many of whom may have dementia.

A recruitment script was posted in the CAOT monthly electronic newsletter, which is sent to all members. In addition, 614 CAOT members who had previously indicated in

their membership registration that they were willing to participate in research were sent electronic invitations to participate in the study. These did not necessarily meet the inclusion criteria. Recruitment advertisements were also placed in all provincial and territorial occupational therapy association electronic newsletters. Although total memberships varied from 2000 in Ontario, to 200 in Saskatchewan, only a proportion would be working in dementia care. For example, in Ontario at the time of recruitment, 432 occupational therapists described working with people with dementia as their primary area of practice (Ontario Society of Occupational Therapists, 2006-2007).

The sample size varied across three rounds (see Table 4.1). One hundred and twenty seven therapists responded to round 1, one hundred and sixteen responded to round 2, and one hundred and twenty five to round 3. If the retention rate was evaluated against the total number of therapists that responded to round 1, it would result in a retention rate of 91.3% for round 2, and 99.2% for round 3. Complicating these retention rate statistics, however, is the fact that some individuals completed round 2 or 3 without completing one or more of the preceding rounds. Their responses were included in the analysis, within the phase(s) to which they responded. In all, 95 therapists completed all 3 rounds.

Table 4.1

Sample Size

Round 1	n	Round 2	n	Round 3	n
English	101	English	91	English	98
French	26	French	25	French	27
Total	127	Total	116	Total	125

Response rate by province, derived from round 1 data, can be seen in Table 4.2. As expected, considering the distribution of Canadian occupational therapists, just over 50% of responses were from Ontario and Quebec. This figure is reflective of CAOT membership statistics of the percentage of members who work in dementia (Canadian Association of Occupational Therapists, 2009-2010).

Table 4.2

Round 1 Response by Province

Province (N=125)	Response Count	Response Percent	% of CAOT Members*
Alberta	19	15.2	13.9
British Columbia	18	14.4	13.9
Manitoba	11	8.8	1.7
New Brunswick	2	1.6	6
Newfoundland and Labrador	0	0	4.3
Northwest Territories/Nunavut	0	0	0
Nova Scotia	3	2.4	6
Ontario	34	27.2	45
Prince Edward Island	0	0	0
Québec (6 English+26 French)	32	25.6	6
Saskatchewan	4	3.2	2.6
Yukon	2	1.6	0

* % of CAOT members estimated to have met the inclusion criteria

Since not all occupational therapists practicing in Canada are CAOT members, it was difficult to estimate the response rate. It was also not possible to ascertain how many participants might have been recruited by way of provincial association newsletters. CAOT statistics were consulted, to determine the likely target population size for round 1. These statistics indicated that 2% of practicing CAOT members worked primarily in dementia at the time of recruitment (Canadian Association of Occupational Therapists, 2008-2009). As provincial organizations were used in the solicitation of occupational therapists from across Canada, it is reasonable to estimate the sampling frame using the Canada-wide OT population of 13,122 in 2009 (Canadian Institute for Health Information, 2009). Using the CAOT statistic of 2% working in dementia as a reference suggests that 262 OTs could be eligible. Thus, round 1 sampled (conservatively) 48.4% of the target population that is greater than the expected response rate of 30% for electronic surveys and is considered to be a robust sample size (Bowling et al., 2006).

Descriptive data were obtained for the sample in the first round, regarding years of experience, recency of experience, and place of work (community, hospital, or long term

care facility). Years of working experience among this group of therapists ranged from 2 years to 40 ($n=116$, $M = 10.81$, $SD = 7.30$). At the time the survey was completed, 71.3% of the sample worked in the field of dementia. Most therapists worked either in the hospital or the community compared to long term care, but many worked in more than one location (See Table 4.3). One hundred and seventeen therapists were trained in Canada, and nine were trained outside of Canada.

Table 4.3

Work experience in dementia care and location

Recency	n	% of sample
Currently	102	71.3
Last 5 years	3	9.1
Within 6-10 years	11	7.7
<hr/>		
Location*		
Hospital	95	66.4
Community	94	65.7
Long term care	31	21.7

Note: Data available for 116 respondents

**More than one response could be provided for practice location*

4.4 Data Collection

Participation in the electronic survey required basic computer literacy. Eighty four percent of the membership in CAOT had indicated that they had internet at home and eighty per cent had internet at work (Canadian Association of Occupational Therapists, 2007-2008). Those who did not wish to use SurveyMonkey had the option of communicating directly with the researcher via email or could receive and complete the survey by fax or post. Procedures for collection and analysis were similar for both the primary and secondary objectives. Demographic information was generated via questions in SurveyMonkey in the first round.

4.4.1 Round 1

The primary purpose of round 1 was to generate items for inclusion in the consensus process, to determine components of cognitive competence. A secondary purpose was to generate a list of methods and approaches used to assess cognitive competence. While the literature suggests that ideas or statements to be ranked can be pre-generated, a potential for bias exists if these ideas were predetermined by the researcher (Hammell, 2004b). In this study, open-ended questions were utilized to generate as large a pool of items as possible, which was then presented for ranking in subsequent rounds. Participants were presented with two open-ended questions: 1) *“Please list all the components of cognitive competence that you think are essential to predict occupational competence in persons with dementia”* and 2) *“What current methods do you use in your practice to assess cognitive competence”*.

4.4.2 Round 2

The purpose of round 2 was to generate a convergence of opinion regarding the ranked importance of components of cognitive competence. Participants were provided with a list of the components generated from round 1, and were asked: *“Please indicate how important you think each of the following components of cognitive competence is to the prediction of occupational competence in persons with dementia”*. A 4-point Likert scale was used to elicit an opinion and to force a decision (there was no neutral option). Categories on the Likert scale included: ‘very important’, ‘important’, ‘not important’, and ‘not at all important’. Participants were also asked to rank the usefulness of a list of standardized assessment tools, non-standardized content-focused methods, and non-standardized process-focused methods, generated from round 1 responses, using a 4-point Likert scale with the following anchors: ‘very useful’, ‘useful’, ‘not useful’, ‘not useful at all’. For the question pertaining to assessments, there was also a category to indicate if the therapist was not familiar with a standardized test.

4.4.3 Round 3

The purpose of round 3 was to further determine consensus by examining the therapists' agreement with the ranked choices of the group from the previous round, using the same 4-point Likert scale. Therapists were asked to *“Please indicate how important YOU think each of the following components of cognitive competence is to predict occupational competence in persons with dementia, considering the groups' responses”*. Participants were provided with a summary of the ratings for each component that resulted from the analysis of round 2 data to inform them of how the group responded as a whole, providing them with an opportunity to review or revise their own positions in comparison (Hammell, 2004b). This summary included the percentage of respondents who rated the component according to each of the four available importance ratings. No questions pertaining to assessment approaches were included in the third round.

4.5 Data Analysis

Sumsion (2002) recommends that a decision should be made regarding how consensus will be determined before rounds are sent out. Based on general practice in the literature regarding the use of the Delphi methodology, consensus is considered to be achieved when 50% to 70% of respondents are in agreement (Hammell, 2004b; Hasson, Keeney, & McKenna, 2000). An agreement threshold of 60% was set for this study so that items ranked as important by at least 60% of the sample would be included in the final consensus statement regarding cognitive components essential to determine occupational competence in persons with dementia. The data analysis and interpretation process were informed by an interdisciplinary advisory team comprising of: an occupational therapist with qualitative research experience, a psychologist experienced in the field of measurement, a psychologist experienced in cognitive psychology, and a geriatrician. In addition, a senior occupational therapist experienced in dementia care assisted in the analysis of round 1 data to ensure relevancy of terminology to current practice.

4.5.1 Round 1

Responses to the open-ended questions included in round 1 were collected in both English and French. French responses were translated to English. A working group was created consisting of the author, a senior occupational therapist experienced in working with people with dementia, and an occupational therapist with qualitative analysis experience. The working group members independently coded the responses to the first question pertaining to the essential cognitive components, and generated a list of cognitive components identified by respondents that involved grouping individual responses into component categories. The working group then met to compare and contrast categories generated. Once a list of categories of cognitive components was generated, responses were collectively grouped into component categories to ensure the categories encompassed all responses. Responses that were not initially seen as similar by the raters were discussed until 100% consensus of agreement was reached regarding which component category it was assigned to. For example, individual responses such as *time sense* and *temporal awareness* were grouped together within an *orientation to time* component category. A decision rule was created whereby components identified by at least 5% of the participants were included for distribution in round 2, resulting in 35 identified components. The same process of independent coding and discussion was used to analyze data regarding assessment methods and approaches, resulting in 3 categories into which the listed methods and approaches fit.

4.5.2 Round 2 and 3

Data were analyzed by frequency of ratings. Raw scores of English and French responses were not analyzed separately but were combined, and percentages were calculated for each response category on the Likert scales. In addition, to explore any relationships between cognitive components ranked for importance and experience, age, and location of practice, bivariate correlations were computed between the cognitive components as rated on round 2 and the demographic variables on the questionnaire.

4.6 Results

4.6.1 Round 1

4.6.1.1 Cognitive Components

Forty-five different categories of cognitive competence were identified through the analysis of the open-ended responses, and codes were assigned accordingly. Thirty five components were and are listed in Table 4.4. Those identified by at least 5% of the participants are marked with an asterisk (*). The categories of ‘orientation’ and ‘memory’ were not used as there were more explicit types of memory that were identified by the analysis.

4.6.1.2 Assessment Methods

Data for this section were analyzed by the working group until consensus was reached for three categories: standardized measures, non-standardized content-focused methods and non-standardized process-focused methods. Content-focused methods dealt with non-standardized measures used, and process-focused methods were unstructured ways in which information was obtained.

4.6.1.2.1 Standardized Measures

Twenty seven standardized measures were identified by the group, with eleven identified by at least 5% of respondents. Table 4.5 lists all assessment measures listed with frequency of responses. Those that were subsequently used in round 2 are marked with an asterisk (*). The 3MS was collapsed into the MMSE group as it is a variation of the original test.

4.6.1.2.2 Non-standardized Content-Focused Methods

Sixteen non-standardized methods of assessing cognitive competence that were content-focused were identified by the respondents and are listed with the number of responses in Table 4.6. Only eight items were identified by at least 5% of therapists and subsequently included in round 2 and are marked with an asterisk (*).

Table 4.4

Round 1 Components of Cognitive Competence (N=127)

Component	Number of responses	Component	Number of responses
Abstract thinking*	13	Memory: long term*	16
Attention*	58	Memory: procedural	6
Attention: divided*	11	Memory: recall*	9
Awareness*	11	Memory: recognition*	7
Awareness: environmental	5	Memory: short term*	31
Awareness: safety*	13	Memory: visual	4
Awareness: self	12	Memory: working*	13
Awareness: social*	10	Mental flexibility*	12
Calculation*	7	Motor Planning*	17
Communication	21	New learning	6
Communication: comprehension*	10	Object identification*	8
Communication: expression*	8	Orientation†	28
Compensatory strategies	3	Orientation: person*	9
Concentration*	27	Orientation: place*	11
Decision-making*	7	Orientation: time*	8
Executive Function*	28	Perception*	12
Following instructions	6	Planning*	48
Initiation*	17	Problem solving*	46
Insight*	31	Processing speed*	7
Insight into abilities*	8	Reasoning*	17
Judgment*	58	Sequencing*	18
Memory†	40	Understanding consequences*	7
		Visual-spatial skills*	18

*Components which at least 5% of participants named for inclusion in round 2

†Collapsed into more specific categories

Table 4.5

Round 1 Standardized Measures of Cognitive Competence (N= 124)

Standardized Measures	Number of responses
Allen Cognitive Level Screen (ACLS)	3
Assessment of Motor Processing Skills (AMPS)*	9
Clock Test*	13
Cognistat*	13
Cognitive Assessment of Minnesota	2
Cognitive Assessment Scale of the Elderly (CASE)*†	6
Cognitive Competency Test (CCT)*	23
Cognitive Performance Test (CPT)	3
Executive Cognitive Performance Test	2
Executive Interview (EXIT-25)*	8
Frontal Assessment Battery (FAB)	2
Functional Activities Questionnaire	1
Financial Assessment and Capacity Test (financial component)	1
Independent Living Scales (ILS)*	13
Independent Living Scales subparts	2
Kingston Standardized Cognitive Assessment – Revised (KSCA-R)	2
Kohlman Evaluation of Living Skills (KELS)	2
Middlesex Elderly Assessment of Mental State	5
Mini Mental State Exam (MMSE)*	58
Modified Mini Mental State Exam (3MS)+	13
Montreal Cognitive Assessment (MoCA)*	56
Motor Free Visual Perceptual Test (MVPT)	2
Ontario Society of Occupational Therapists (OSOT) Perceptual Battery	4
Protocole d'Examen Cognitif de la Personne Agée (PECPA2r)*	16
Rivermead Behavioural Test	4
Timed Up and Go	1
Trailmaking*	14

*Assessments that at least 5% of participants identified

† English version of the PECPA

+Collapsed with MMSE

Table 4.6

Round 1 Non-Standardized Content-Focused Methods (N=124)

Non-Standardized Content-Focused Methods	Number of responses
Activities of Daily Living Assessment (non-specific)*	39
Activities of Daily Living Assessment: self-care*	13
Activities of Daily Living Assessment: feeding	2
Cognitive Competency Test: subparts*	8
Community Access*	5
Instrumental Activities of Daily Living (non-specific)*	10
Instrumental Activities of Daily Living: banking	4
Instrumental Activities of Daily Living: driving	2
Instrumental Activities of Daily Living: kitchen*	28
Instrumental Activities of Daily Living: laundry	1
Instrumental Activities of Daily Living: medication management*	7
Instrumental Activities of Daily Living: phone use	4
Instrumental Activities of Daily Living: shopping	2
Topographical Orientation	2
Power Wheelchair Use	4
Wheelchair Use and Transfers*	5

**Assessments that at least 5% of participants identified*

4.6.1.2.3 Non-standardized Process-focused Methods

In this grouping, 19 different assessment approaches were identified by therapists and 11 components were included for round 2. These are listed in Table 4.7 and are marked with an asterisk (*). The categories of ‘gathering collateral information’, ‘interview’ and ‘observation’ were collapsed as these were captured by more specific categories.

Table 4.7

Round 1 Non-Standardized Process-Focused Methods

Non-Standardized Process-Focused Methods	Number of responses
Activities of Daily Living*	7
Activities of Daily Living: self-care*	13
Cognitive Competency Test subcomponents*	8
Community Access	3
Conversation	2
Determine Supports	2
Interview†	11
Interview with client*	13
Interview with family/caregiver*	26
Functional Assessment	3
Gathering Collateral Information*	7
Gathering Collateral Information from Staff†	15
Groups	2
Home Visit*	10
Observation†	8
Observation: ADLs*	7
Observation: environment*	11
Observation: IADLs*	10
Observation: cognitive tasks*	9

*Reported by at least 5% of participants

† Categories collapsed within table

4.6.2 Round 2

Bivariate correlations were computed between the cognitive components rated on round 2 and the demographic variables. The only significant correlation was found between years of experience and memory recall ($r = -0.224, p < .05$), where less experienced therapists were more likely to consider recall an important cognitive component compared to more experienced therapists. No other correlations were statistically significant. Since the study is largely descriptive with the intention of eliciting a consensus statement, these findings demonstrate that results are relatively homogeneous across the sample.

4.6.2.1 Cognitive Components

Results of round 2 identified the percentage of participants who ranked each of the 35 cognitive components identified in round 1 in the 4 available rankings of importance, when considering how essential each component was to predict occupational competence (Table 4.8).

4.6.2.2 Assessment Methods

4.6.2.2.1 Standardized Measures

Overall it would seem that many of the participants in this sample were not familiar with standardized tests to a large degree. Only 1.7% of therapists were not familiar with the MMSE and the Clock Test, 6.1% were not familiar with the MoCA, and 13% were not familiar with Trailmaking. 33% were not familiar with the CCT, meaning 77% were familiar with it. More than half (55.7%-69.6%) were not familiar with the other standardized measures (see Table 4.9). A large proportion of therapists were not familiar with the PEPCA-r since this tool is available in French only. The two standardized tests most frequently rated as very useful were the MoCA (51.3%) and Trailmaking (40%). The Clock test (63.5%) and the MMSE (51.3%) were the two tests most frequently reported to be useful, and the CCT (39.1%) was identified as being the third most useful assessment tool.

Table 4.8

Round 2 Ranked Importance of Components of Cognitive Competence

Component	N	Very Important	Important	Not Important	Not at all Important
Abstract thinking	113	13.30	62.80	23.90	0.00
Attention	114	86.00	14.00	0.00	0.00
Attention: divided	113	53.10	41.60	5.30	0.00
Awareness	114	52.60	45.60	1.80	0.00
Awareness: safety	114	71.10	27.20	1.80	0.00
Calculation	112	0.90	48.20	48.20	2.70
Communication: Comprehension	113	62.80	37.20	0.00	0.00
Communication: Expression	113	23.90	64.60	10.60	0.90
Concentration	114	35.10	63.20	1.80	0.00
Decision-making	114	46.50	50.00	3.50	0.00
Executive Function	114	62.30	35.10	2.60	0.00
Initiation	114	56.10	39.50	4.40	0.00
Insight	114	36.80	52.60	10.50	0.00
Insight into abilities	113	56.60	40.70	2.70	0.00
Judgment	114	68.40	30.70	0.90	0.00
Memory: long term	113	11.50	54.90	32.70	0.90
Memory: recall	114	44.70	52.60	2.60	0.00
Memory: recognition	112	39.30	58.00	2.70	0.00
Memory: short term	114	52.60	45.60	1.80	0.00
Memory: working	114	71.90	26.30	1.80	0.00
Mental flexibility	114	19.30	63.20	16.70	0.90
Motor Planning	114	39.50	55.30	5.30	0.00
Object identification	111	39.60	53.20	7.20	0.00
Orientation: person	114	49.10	43.00	7.90	0.00
Orientation: place	114	38.60	50.90	9.60	0.90
Orientation: time	112	27.70	56.30	15.20	0.90
Perception	114	28.10	64.90	6.10	0.90
Planning	114	45.60	50.00	4.40	0.00
Problem solving	114	53.50	45.60	0.09	0.00
Processing speed	114	13.20	59.60	25.40	1.80
Reasoning	113	38.10	56.60	5.30	0.00
Sequencing	114	30.70	65.80	3.50	0.00
Social awareness	113	7.10	66.40	26.50	0.00
Understanding consequences	114	50.90	43.90	5.30	0.00
Visual-spatial skills	113	22.10	71.70	6.20	0.00

Note: Highest percentage response for each component in bold

Table 4.9

Round 2 Ranked Usefulness of Standardized Measures of Cognitive Competence

Standardized Measures	% Not		% Very		% Useful		% Not at	
	Familiar	Useful	Useful	Useful	Useful	Useful	all Useful	Useful
Assessment of Motor Processing Skills (AMPS)	65.2	9.6	22.6	1.7	0.0			
Clock Test	1.7	25.2	63.5	7.8	0.9			
Cognistat	55.7	15.7	27.0	0.9	0.0			
Cognitive Assessment Scale of the Elderly* (CASE)	75.7	7.8	13.9	1.7	0.0			
Cognitive Competency Test (CCT)	33.0	19.1	39.1	7.0	0.0			
Executive Interview (EXIT-25)	63.5	12.2	19.1	4.3	0.0			
Independent Living Scales (ILS)	58.3	21.0	17.4	0.9	0.0			
Middlesex Elderly Assessment of Mental Status	64.3	8.7	20.9	4.3	0.0			
Mini Mental State Exam (MMSE)	1.7	22.6	51.3	20.9	2.6			
Montreal Cognitive Assessment (MoCA)	6.1	51.3	38.3	1.7	0.0			
PECPA2r†	69.6	8.7	13.0	3.5	0.0			
Trailmaking	13.0	40.0	33.0	11.3	1.7			

* CASE is an adapted English version of the French PECPA-2r

†Protocole d'Examen Cognitif de la Personne Agée

Note: Highest percentage responses for very useful and useful in bold

4.6.2.2.2 Non-Standardized Content-Focused Methods

Therapists were more familiar with the non-standardized content-focused methods in comparison to standardized measures rated, and all but one (CCT subcomponents) were rated as very useful in practice by more than half of the sample. Overall, ratings indicated that therapists found ADL and IADL assessments to be very useful in their practice (see Table 4.10). It is interesting to note that 35.7% of the sample found using subcomponents of the CCT useful.

4.6.2.2.3 Non-standardized Process-Focused Methods

Over 80% of therapists found observation of ADLs, IADLs, cognitive tasks and client's environment to be very useful methods to assess cognitive competence. 75% found interviews very useful. Gathering collateral information was the only method that did not receive a majority rating of 'very useful', although it was described as useful by 71.3% of the sample (see Table 4.11).

4.6.3 Round 3

Consensus was achieved using the 60% rule as determined at the outset of the study; however, all 35 cognitive components had 60% agreement of being important or very important. Since using such a large number of cognitive components would make a consensus statement cumbersome and less meaningful, it was agreed by the advisory committee members to include only those components that were identified by 60% of therapists as being 'very important'. In fact, using this criterion answered the research question more directly, which was to identify the components of cognitive competence that are *essential* to predict occupational competence in people with dementia. Ten cognitive components were produced: attention, awareness, comprehension, initiation, insight into abilities, judgment, working memory, problem solving, safety awareness, and sequencing (see Table 4.12). Executive function was eliminated since the advisory committee agreed by consensus that all these components could be considered components of executive function. The last column (Not at all Important) was also eliminated in this table as there was only one response (Processing speed).

Table 4.10

Round 2 Non-Standardized Content-Focused Methods

Non-standardized Content	% Not Familiar	% Very Useful	% Useful	% Not Useful	% Not at all Useful
ADL: non-specific	2.6	72.2	22.6	0.9	0.0
ADL: self-care	0.0	80.0	17.4	0.9	0.0
CCT Subcomponents	31.3	29.6	35.7	1.7	0.9
Collateral Information	4.3	66.1	26.1	1.7	0.0
Community Access	5.2	47.8	35.7	5.2	0.9
IADL: kitchen	3.5	74.8	17.4	0.9	0.9
IADL: medication management	4.3	69.6	22.6	0.0	0.9
IADL: non-specific	5.2	54.8	34.8	0.9	0.0
Wheelchair Use/Transfers	2.6	47.8	39.1	6.0	0.9

Note: Highest percentage response for each component in bold

Table 4.11

Round 2 Non-Standardized Process-Focused Methods

Non-standardized Process	% Not Familiar	% Very Useful	% Useful	% Not Useful	% Not at all Useful
ADL Assessment	1.7	63.5	23.5	0.0	2.6
Collateral Information	0.0	0.0	71.3	27.8	0.0
Home Visits	2.6	69.6	12.2	0.0	0.9
Interview: with client	0.0	74.8	24.3	0.0	0.0
Interview: with family/caregiver	0.0	77.4	21.7	0.0	0.0
Observation: ADLs	0.0	82.6	16.5	0.0	0.0
Observation: cognitive tasks	0.0	80.9	18.3	0.0	0.0
Observation: IADLs	0.0	80.9	15.7	0.9	0.0
Observation: client's environment	2.6	83.5	12.2	0.0	0.0

Note: Highest percentage response for each component in bold

Table 4.12

Round 3 Consensus of Cognitive Components as Indicators of Occupational Competence

Cognitive Components	N	%Very Important	% Important	%Not Important
Abstract thinking	125	11.2	76.8	12.0
Attention*	125	92.0	8.0	0.0
Attention: divided	124	55.6	43.5	0.8
Awareness*	124	61.3	37.9	0.8
Awareness: Safety *	124	80.8	18.4	0.8
Calculation	125	43.2	56.0	0.8
Communication: Comprehension*	125	80.8	19.2	0.0
Communication: Expression	125	13.6	80.8	5.6
Concentration	124	29.8	70.2	0.0
Decision-making	125	48.0	51.2	0.8
Executive Function*	124	76.6	23.4	0.0
Initiation*	125	72.0	28.0	0.0
Insight	123	27.6	71.5	0.8
Insight into abilities*	125	69.6	30.4	0.0
Judgment*	124	89.5	10.5	0.0
Memory: long term	125	4.0	66.4	29.6
Memory: recall	125	20.8	72.8	6.4
Memory: recognition	124	29.0	71.0	0.0
Memory: short term	125	52.8	47.2	0.0
Memory: working*	124	84.7	15.3	0.0
Mental flexibility	124	27.4	68.5	4.0
Motor Planning	124	29.8	66.9	3.2
Object identification	124	38.7	58.1	3.2
Orientation: person	124	50.0	48.4	1.6
Orientation: place	125	36.8	56.0	7.2
Orientation: time	125	18.4	75.2	6.4
Perception	125	18.4	80.8	0.8
Planning	125	36.8	62.4	0.8
Problem solving*	125	62.4	37.6	0.0
Processing speed	125	19.2	64.0	16.0
Reasoning	124	28.2	69.4	2.4
Sequencing*	125	71.2	28.0	0.8
Social awareness	125	58.4	37.6	4.0
Understanding consequences	125	58.4	37.6	4.0
Visual-spatial skills	125	26.4	70.4	3.2

* Consensus over 60% very important

4.7 Discussion

Occupational therapists in this study generated a consensus of opinion on the cognitive components essential to predict occupational competence among individuals with dementia, with the following ten components being judged as essential: attention, awareness, awareness of safety, comprehension, initiation, insight into abilities, judgment, working memory, problem-solving, and sequencing. At face value, it appears that these components fit into two larger groups: cognitive (i.e. problem-solving, sequencing) and awareness groupings (i.e. judgment and insight). Based on a review of the responses to the open-ended question posed in round 1 of the Delphi, the awareness responses were interpreted to relate to awareness of the environment, self-awareness (insight into abilities) and safety awareness. These occupational therapists have identified components of executive function similar to propositions in the neuropsychological literature, emphasizing the centrality of executive function to everyday cognition as discussed in the literature review of Chapter 3 (Bell-McGuinty, Podell, Franzen, Baird, & Williams, 2003; Burgess et al., 2006; Manchester, Priestley, & Jackson, 2004; Royall, 2000; Salthouse, 2005).

To guide this discussion, the literature of the discipline of occupational science and the profession of occupational therapy currently have not sufficiently developed the construct of cognitive competence as it relates to occupational competence. Exploring the literature in other disciplines was required to further understand and interpret this consensus statement. Thus, the consensus statement was interpreted in relation to recent neuropsychological models in order to conceptualize how these components might reflect broader cognitive constructs. It is proposed that the work of Stuss and colleagues on frontal lobe function provides a particularly useful framework to consider.

Executive functions are considered to be higher order cognitive functions of the frontal lobes (Aron, 2008; Godefroy, 2003). One of the most important roles of the frontal lobes may be for affective responsiveness, self-awareness, and consciousness (Stuss & Alexander, 2000). In considering the cognitive functions of the frontal lobes, Stuss and Alexander (2000) emphasize that unlike the motor cortex and homunculus, there is no

unitary executive function. Rather, “the central supervisory system is the sum of the processes recruited at any moment, for any given task” (Stuss & Alexander, 2000, p. 296). Stuss and Alexander (2007) also believe that “it may be the interaction of emotional status and cognition that determines many behaviours, but it is the cognitive aspect of tasks that are defined by executive functions” (p. 902). This statement supports the findings of this study, as the components identified as indicating cognitive competence are considered to be executive functions and focus on the cognitive aspects of tasks of everyday living.

Within the body of neuropsychological literature, impairment in performance of executive function is now being referred to as “dysexecutive syndrome” (Burgess, Alderman, Emslie, Evans, & Wilson, 1998) rather than a “frontal lobe syndrome” (Stuss & Benson, 1986). The change in terminology not only represents a movement away from trying to capture the linkage of psychology and anatomy but also a movement towards more ecologically valid indicators of executive functions. In other words, persons with dysexecutive syndrome have difficulties with decision-making, risk taking, and problem-solving, and these are not measured adequately by the classic neuropsychological executive function measures (Alvarez & Emory, 2006). This statement highlights the need to capture and measure such cognitive components in everyday tasks of real-life contexts that ensure ecological validity.

Stuss and Alexander (2000) describe cognitive functions of the frontal lobes to be memory, attention, verbal fluency, and self-awareness. These authors describe executive function as strategic processes necessary to complete tasks. Stuss (2007) believes that while the frontal lobes are not domain specific, or anatomically tied to behaviours as once thought, they form two major functional divisions: executive cognitive and behavioural-emotional self-regulatory functions. Within the executive cognitive division are task setting and monitoring components. Two other functional domains are also described: energization regulating and metacognitive or higher-order integrative functions. Stuss (2007) describes executive cognitive functions as “high-level cognitive functions...that are involved in the control and direction (e.g., planning, monitoring, energizing, switching, inhibiting) of lower level, more automatic functions” (p. 293). Behavioural

emotional self-regulation is required in situations where analysis by cognition, habit or environmental cues is not sufficient for the most adaptive response. Disorders of energization include apathy and an inability to act or make decisions, both of which can have an important impact on self-regulation. The fourth category is related to the metacognitive aspects of human nature that integrate social cognition and self-awareness. “Self-awareness implies a metacognitive representation of one’s own mental states, beliefs, attitudes, and experiences” (Stuss, 2007, p. 298).

Comparing this model to the cognitive components identified in the consensus statement, it is interesting to see that the 10 essential components identified by the occupational therapists in this study can be grouped according to the proposed executive cognitive and behavioural-emotional self regulatory functions (or processes that underpin self-awareness), as well as in relation to energization and metacognition (see Table 4.13). The consensus of the occupational therapists in this study is supported by this evidence in the neuropsychology literature.

Table 4.13

Cognitive Components Grouped by Stuss’ (2002) Conceptual Framework of Executive Function

Executive Cognition		Behavioural Self-	Energization	Metacognition
Task setting	Monitoring	Regulation		
Attention		Judgment	Attention	Comprehension
Problem-solving	Judgment	Safety awareness	Initiation	
Sequencing		Insight into abilities		
		Awareness		
W o r k i n g m e m o r y				

Stuss’ (2006) description of frontal lobe function as ‘adaptability’ rather than being domain-specific can help shed more light onto identifying the cognitive determinants of occupational competence. Stuss (2006) describes this adaptability as the fluid recruitment of different processes under different task demands. This concept is important to consider as occupational scientists and occupational therapists work to gain an understanding of the cognitive components necessary for everyday living. The ability to deconstruct

everyday occupations could improve our ability to assess those cognitive components required for competence in maintaining safe, meaningful everyday occupations which are so often compromised in people with dementia (Farias, Harrell, Neumann, & Houtz, 2003). It is hard to imagine that a complex construct such as cognitive competence could be considered a unitary localized process; rather it would seem more likely that multiple processes interact and interconnect to form a network that contribute to it. The challenge is to try to differentiate these components, in order to consider indicators that can be predictive of occupational competence. If these essential components are valid indicators of cognitive competence, then they should be included and addressed in a measure used to predict occupational competence. The question then becomes one of determining how well a commonly used measure, such as the Cognitive Competency Test, attends to these components.

Given the focus of this dissertation, it is interesting to note how often the CCT was mentioned in this study, as the findings show that it was used the most frequently after the MMSE and the MoCA. This result replicated the results of Douglas et al. (2007), with regards to the use of the CCT and the MMSE. The MoCA was not in use at the time of their study. The non-standardized use of sub-components of the CCT was also mentioned by this group of therapists, causing some concern about the validity of using only parts of a measure to inform judgments.

The findings of this study support previous studies that occupational therapists rely on bottom-up standardized measures, as therapists found the MoCA and the Trailmaking tests very useful, and the MMSE and Clock Test useful, to assess cognitive competence as a predictor of occupational competence. The CCT was the next most useful test identified. Therapists tended to use non-standardized top-down methods, such as observation, interviews and home visits, to inform their judgments, and rated such methods as very useful more frequently than standardized measures. In fact these findings demonstrate that occupational therapists use their observation skills considerably to inform their evaluation of cognitive competence, and that they highly value information gathered during interviews with clients, family and caregivers. Considering

the rise of evidence-based practice, such non-standardized process-focused assessment methods should be supplemented with well-validated measures.

4.8 Strengths and Limitations

The number and representativeness of the participants can affect data generation, as well as external validity of the study (Bowling et al., 2006). However, the Delphi methodology focuses on expertise rather than representativeness. The inclusion criteria ensured respondents were individuals knowledgeable and current in the practice of dementia care and assessing cognitive competence in people with dementia. As well, participants from all provinces and one territory were included in the study, which addresses the issue of inclusion of occupational therapists across the country. Thus, assessment methods and approaches reported in this study are reflective of occupational therapy practice in Canada, as this research is grounded in the opinions of clinicians.

The Delphi methodology proved to be a useful strategy for gathering a consensus of opinion from experienced clinicians on the topic of cognitive competence using their knowledge developed through clinical experience. It also created an avenue for knowledge creation and exchange among participants. The development of a consensus statement about the components of cognitive competence essential to predict occupational competence contributes to the occupational therapy and occupational science literature in order to can enhance the understanding of how to assist persons with dementia to achieve their goal of aging in place.

4.9 Conclusions

This study presents a preliminary framework of the cognitive components required to assess cognitive competence as a predictor of occupational competence. These findings are particularly salient to a consideration of how occupational therapists evaluate competence for these components, especially those components that fall within the behavioural self-regulation grouping (Stuss, 2007), or as the French-speaking therapists in this study so aptly termed it, *auto-critique*. Considering the need to be evidence-based in practice, which includes the assessment phase, it is essential to capture the construct of

cognitive competence, and to address these identified components in a formal way. The ideal would be to include these cognitive components in standardized tools to measure cognitive competence. The lack of such standardized tools (Kuther, 1999; Molloy, Darzins, & Strang, 1999) could be a reason why so many occupational therapists use their observation skills to determine safety and risk (Baum & Katz, 2010; Bullock & Voss, 2006).

This consensus statement could be used to develop standardized measurement tools to enhance practice, could inform clinicians within their practice and curriculum for the education of future occupational therapists. The findings also provide data on the methods that occupational therapists are currently using in practice.

Future research could build on this work to deconstruct daily living occupations into the cognitive components identified in this consensus statement. This deconstruction could then inform top-down assessments that are predictive of occupational competence in persons with dementia, leading to the development of more standardized top-down methods of assessing cognitive competence in everyday living. However, the challenge remains how to best capture the components of cognitive competence in a way that is ecologically valid and reliable.

Another potential way forward could be to examine the extent to which standardized measures commonly used by occupational therapists adequately address the ten components identified in the consensus statement. The purpose of the retrospective chart study presented in the following chapter is to review and gather empirical evidence on a commonly used measure, the Cognitive Competency Test.

Chapter 5

5 Informing Assessment of Cognitive Competence in Dementia: Examination of the Construct Validity of the Cognitive Competency Test

Validity is an ongoing process of building evidence (Cronbach, 1971; Kelly, O'Malley, Kallen, & Ford, 2005; Messick, 1989b). This dissertation is focused on examining evidence regarding the validity of the Cognitive Competency Test (CCT) as a measure of cognitive competence, particularly with regards to its usefulness as an indicator of occupational competence among individuals with dementia. The CCT was designed to be a test that “incorporates the concept of multidimensionality of cognitive skill and adopts a practical approach by simulating daily living skills” (Wang, Ennis, & Copland, 1987, p. 1). As discussed in Chapter 2, despite minimal published psychometric evidence to support its use since its initial publication over 25 years ago, occupational therapists continue to draw on the results of the CCT in clinical practice. Previous research suggests that occupational therapists believe the CCT measures cognitive competence in ways that can be linked to aspects of occupational competence (Aronson, Barr, Kyle, & O'Keeffe, 2002; Douglas, Liu, Warren, & Hopper, 2007).

Best practice can be considered to be an art requiring the knowledge, skills, clinical experience, and clinical reasoning of the practitioner together with the best available empirical evidence on which to base practice (Sackett, Rosenberg, Gray, Haynes, & Richardson, 1996). Coster (2008) argues that in order to enhance occupational therapy practice, a critical examination is required of the assumptions underlying the current use of measures, and the conclusions being drawn from their use. Considering the lack of evidence in the literature to support the construct validity of the CCT, it is thus important to examine whether assumptions being made regarding the CCT and its relationship to occupational competence can be substantiated.

The Delphi study in Chapter 3 addressed a knowledge gap by determining the opinions of Canadian occupational therapists regarding the components of cognitive competence that are essential when informing their decisions about occupational competence in dementia. In an effort to enhance practice in occupational therapy in the field of dementia care, this

retrospective chart review study gathered and examined empirical evidence on which to examine the structure and construct validity of the CCT. This study involved analyzing the structure of the CCT and comparing the CCT score to other measures available within the charts which were hypothesized theoretically to relate to cognitive competence. Methods and results of this study are presented within this chapter.

5.1 Methods

This study was conducted as a retrospective chart review. This design enabled the collection of data in a cost-effective, time efficient manner, and the acquisition of a sufficient amount of data for required statistical analysis (Hesse, 2004; Kelsey, Thompson, & Evans, 1986). Moreover, as data were drawn from existing hospital records from a rehabilitation facility in South Western Ontario, in which the CCT was used as a routine part of the occupational therapy assessment, the design enabled collection of data reflective of everyday occupational therapy practice. This design was also chosen because a prospective study was not feasible, as the CCT is no longer in use in this facility. The decision to stop using the CCT as a routine part of assessment at the facility resulted from an unpublished review by an expert panel that deemed some parts of the measure to have unacceptably low content validity (DeForge & Gutmanis, 2006).

Formal ethics approval was received by the Health Sciences Research Ethics Board at The University of Western Ontario (Appendix G) and by the institution's Clinical Research Impact Committee (See Appendix H).

5.2 Sample

The sampling frame included 450 charts, representing all admissions to the inpatient Geriatric Rehabilitation Unit, and the outpatient Geriatric Day Hospital in the years 2005, 2006, and 2007. This time frame was determined to be a range of time in which occupational therapists in this facility commonly used the CCT, and was thus considered to be a valid time sample for the evaluation of the CCT in practice. Inclusion criterion was all charts where a CCT had been administered, regardless of diagnosis. Presumably, the CCT was administered in situations where cognitive impairment was queried and

required further investigation. Within the time frame of 2005-2007, 107 charts contained a CCT administered by an occupational therapist to a client who was admitted to the Geriatric Rehabilitation Unit or the Geriatric Day Hospital. The sample included 43 men and 64 women, whose ages ranged from 67-92 years (Men: $M=78.1$, $SD=13.95$; Women: $M=81.3$, $SD=5.62$). Ninety seven charts (91%) were reviewed from the inpatient Geriatric Rehabilitation Unit and ten (9%) were reviewed from the outpatient Geriatric Day Hospital. Six had a diagnosis of dementia and twenty four had a diagnosis of Mild Cognitive Impairment.

5.3 Key Variables Selected to Examine the Construct Validity of the CCT

The ideal objective within health measurement is to use statistically correct procedures to refine an instrument whose content is based on tacit knowledge, common sense, and theory (Streiner & Norman, 2003). Given the considerable, and justifiable, concern that may exist as to whether a test successfully accomplishes its specific goal in a fair and equitable manner, a substantial proportion of the assessment literature is devoted to studies that evaluate the psychometric validity of published tests (Messick, 1989b). As discussed in Chapter 1, classical measurement theorists believe that test scores and rating scales should reflect the structure of an underlying theoretical construct, since the construct identified is not directly measurable (Michell, 1986). Therefore, indicators, or variables, are used to measure certain attributes of the construct in question. Similarly, measurement within occupational therapy has been described as a process of using indicators to represent constructs (Kielhofner, 2006). Every construct can be measured in different ways by using different indicators. Having a sufficient number of indicators to represent the various facets of the construct being measure implies representativeness and reflects the concept of construct validity as a means of measuring 'how', and 'how well', an instrument represents an underlying construct (Messick, 1998).

Within this retrospective chart review study, the main objective was to examine the construct validity of the CCT as a measure of cognitive competence, particularly in relation to its use as an indicator of occupational competence. Despite the intent to extract variables that would reflect all 10 components of the Delphi study, this was not entirely

possible given the limitations of the information available in the chart. As there were no standardized measures of occupational performance or occupational competence within the hospital charts, it was necessary to consider various variables that could capture the representativeness of the CCT as a measure of the construct of cognitive competence. In this way, various aspects of its construct validity could be examined within the framework provided by Messick (1989b), in order to examine its relation to occupational competence. These variables and their hypothesized relationships are discussed below.

Demographics: It was hypothesized that the CCT scores should not correlate to age, sex, or patient status (inpatient or outpatient), all factors that can be indicative of significant test biases.

Cognition: Since cognitive competence is an important component of cognition, it was hypothesized that the CCT scores should correlate with tests of cognition. In this study, the Mini Mental State Exam (MMSE) was used as a measure of cognition, since it is a well-known test readily available in the chart. A higher score indicated a higher level of cognition; a lower score indicated more impairment. Thus, a positive correlation was expected between MMSE and CCT scores. This test is well documented in the literature, and is used extensively clinically to screen for cognitive impairment, and to measure dementia severity (Folstein & Folstein, 1975; Molloy & Clarnette, 1999). It should be noted that there are limitations to the MMSE, regarding low sensitivity and specificity (Nieuwenhuis-Mark, 2010).

Depression: Depression can affect cognition, especially executive function, that often translates into difficulties in everyday life (Klosses & Alexopoulos, 2005; Moore, Moseley, & Atkinson, 2010). As well, cognitive impairment is seen to be more prevalent among depressed elderly individuals (Jaeger, Berns, & Davis-Conway, 2006; Moore, Moseley, & Atkinson, 2010). For these reasons it is important to rule out depression when assessing cognitive competence. However, a small relationship of impaired cognition and depression can be possible as some symptoms of depression can overlap with cognition, (Jaeger, Berns, & Davis-Conway, 2006; Moore, Moseley, & Atkinson,

2010). It would be important if a relationship were found, that it would be small in order ensure that the CCT is capturing cognitive competence and not depression.

To assess the contribution of an indicator of depression on the CCT, scores on the Geriatric Depression (GDS) scale were recorded. This 30-item self-report instrument has been determined to be successful in the identification of depression in the elderly (Beck, Ward, Mendelson, Mock, & Erbaugh, 1961; Richter, Werner, Heerlein, Kraus, & H., 1998), and was routinely administered to patients within the medical records sampled. A higher score on the GDS indicates a higher likelihood of depression. A relationship between depression and cognitive competence would be expected to be a negative correlation, so that a lower GDS score indicating less depression would correlate with a higher CCT score which indicated a higher level of cognitive competence.

Co-morbid Medical Illnesses: Illnesses or disabilities can affect cognition and compromise cognitive competence, and for this reason it is imperative that these be considered when making a determination of competency (Molloy, Darzins, & Strang, 1999). Ideally there should be no relationship between cognitive competence and co-morbid medical illness, but clinically, multiple chronic illnesses are often associated with physical disabilities and multiple medications, some of which can be associated with cognitive impairment (Linn, Linn, & Gurel, 1968). For this study, it was hypothesized that individuals with co-morbid medical illnesses should not have scores that indicate decreasing cognitive competence. To identify the extent to which the CCT was associated with co-morbid medical illnesses, information was collected from the medical and nursing notes and translated to the Cumulative Illness Rating Score (CIRS). This measure is a reliable and valid instrument that can be completed within a chart review to assess the overall degree of chronic medical illness, and has been shown to be a valid indicator of health status in a geriatric population (Linn, Linn, & Gurel, 1968; Parmalee, Thuras, Katz, & Lawton, 1995). There are 13 items and each item can be scored from 0 (none) to 4 (extremely severe). A higher score on the CIRS indicated a higher degree of medical illness on a range from 0-52.

Judgment, Insight and Safety: Molloy, Darzins, and Strang (1999) describe cognitive competence as the cognitive ability to understand and appreciate context, as a decision-making process, and not the actual outcome of choices made. These authors state that impairments in judgment and insight in people with dementia often result in the reduced ability to understand and appreciate those circumstances that can exacerbate their risk for harm which can lead to a finding of cognitive incompetence. Lehman, Black, Shore, Kasper and Rabins (2010) have recently reported that a lack of awareness of cognitive impairment can heighten risk for adverse outcomes. It was hypothesized that individuals with impairments in judgment and insight would score lower on a test of cognitive competence such as the CCT. For this reason, reports of impaired judgment, insight, and safety concerns from family or staff members were included in the analysis. No concerns were scored as 1 and concerns were reported as 0, so a lower score indicated concern reported. Thus, a positive correlation with the CCT was expected.

Occupational Performance and Competence: In the absence of a standardized measure of occupational performance or occupational competence within the charts reviewed, several variables were used that were interpreted as capturing aspects of occupational competence.

As discussed in Chapter 3, there is a theoretical relationship between cognitive competence and occupational competence. It is common to observe decline in IADLs in dementia (Malloy & McLaughlin, 2010), and this can be considered to be an indicator of occupational competence. Thus, one way to examine occupational competence is to use a measure of instrumental activities of daily living (IADLs). A non-standardized scale was available in the hospital charts, developed by the occupational therapists at this institution for their own use, and included the following components: meal preparation, light and heavy housekeeping, shopping, laundry, medication management, finances, yard work, home maintenance, phone use, and transportation. Scores were rated as independent (0) or requires assistance (1). An IADL composite score was created by summing the scores for each individual. It was hypothesized that individuals who scored lower on the CCT would score higher on the IADL scale. Correlations were conducted on each CCT subtest with the total IADL score, and then each CCT subtest with the subcomponents of the

IADL scale. In the literature, medication management, phone use, meal preparation and financial management have been shown to be good indicators of IADL function (Lawton & Brody, 1969).

Given the limitations of a non-standardized measure of IADL, other variables that were theorized to have some relation to the construct of occupational competence were also considered. Impairment in cognition and cognitive competence eventually leads to the need for increasing assistance and supervision to carry out every day living (Corcoran, 2001). Individuals who require assistance at home are more likely to experience challenges in their ability to be occupationally competent than those living without assistance. Therefore, the living arrangements prior to admission were described as levels of support received, and were considered as an indicator of occupational competence. Levels of supports on admission were recorded as none (0), informal supports living in the home (1), informal supports living outside the home (2), formal supports in the home (3), residing in a retirement home (4), and residing in long term care (5). It was hypothesized that the CCT score would reflect the degree of support received within the individual's living situation prior to admission, so that a lower CCT score would have a negative association with a higher level of support required.

Assessment of functional performance, especially in the context in which the activity is carried out, can be a useful step in determining if functional abilities are changing, especially in areas that are important sources of engagement for individuals (Wilkins, Law, & Letts, 2001). Occupational therapists often perform non-standardized kitchen assessments to inform decisions of occupational competence; for this reason, results of a non-standardized kitchen assessment were also included if completed. A higher score indicated no problems reported during the kitchen assessment (0 if problems were reported, 1 if no problems reported). If the CCT is a valid indicator of occupational competence, it was hypothesized that 'problems identified during a kitchen assessment' would indicate 'declining occupational competence', and would therefore be associated with a lower CCT score and a positive relationship.

Clinician Judgment: The occupational therapist's discharge recommendation (OT discharge plan), specifically the need for increased supports or a change in living situation to a more supervised setting, was another variable that was hypothesized to be an indicator of occupational competence. Thus, occupational therapist's discharge recommendations were coded as follows: home with informal support (0), home with formal support (1), retirement home (2), and long-term care facility (3). It was hypothesized that the CCT score would be reflective of the occupational therapist's clinical judgment regarding discharge recommendations, and so a lower CCT score would be associated with a perceived need for more supports, or the need for a move to a more supervised setting. Mean scores and standard deviations of the key variables within the sample are summarized in Table 5.1.

Table 5.1

Key Variables within the Sample

Key Variables		n	Mean \pm SD
MMSE score	(range 12-30)	106	25.22 \pm 3.54
GDS score	(range 0-12)	101	4.26 \pm 2.49
CIRS score	(range 2-16)	106	8.44 \pm 3.15
Judgment	(range 0-1)	64	.58 \pm .498
Insight	(range 0-1)	64	.58 \pm .498
Safety	(range 0-1)	70	.51 \pm .503
IADL score	(range 1-11)	106	6.12 \pm 3.15
Kitchen Assessment	(range 0-1)	53	.34 \pm .478
			% of sample
Supports at admission	none	21	19.8
	informal living at home	33	31.1
	informal living outside the home	22	20.8
	formal	23	21.7
	retirement home	5	4.7
	long term care	0	0.0
OT Discharge Plan	home with no supports	1	outlier (removed)
	home with informal supports	10	9.5
	home with formal supports	66	62.3
	retirement home	15	13.3
	long term care	14	13.3

5.4 Procedure

For the most part, the CCT was routinely completed as part of the Geriatric Rehabilitation Unit assessment database unless the assessment was constrained by time, but it was also specifically requested under certain conditions by the health care team when cognitive issues had been identified, or as part of an assessment for 'fitness to drive'. In the Geriatric Day Hospital, the CCT was only used when specifically requested by a referral source.

5.4.1 Data Extraction

Ten charts were initially examined to determine the information that was typically recorded, and in consultation with the advisory committee members, relevant variables and data to be extracted were decided upon before commencing the chart review. A specific data extraction form was developed and used in a standardized manner for all charts reviewed (see Appendix I). CCT data were available as part of the occupational therapy assessment in the hospital chart. Physician admission histories and discharge summaries were used to collect data regarding medical profile, and actual discharge information. Social work notes were reviewed for relevant information such as living arrangements, and existing supports in place. Nursing, occupational therapy and physiotherapy notes were also reviewed. It was not possible to seek clarification on the information in the chart if it was unclear. Once the data extraction forms were completed, the data were entered into an Excel spreadsheet.

Accuracy of the data extracted from the hospital charts to the data extraction forms was verified by a research assistant who duplicated data extraction in an identical manner to that used by the principal investigator from a random sample of ten charts. Inter-rater reliability coefficients (Pearson product-moment for continuous variables, Spearman's rho for ordinal variables, phi coefficients for dichotomous variables, and Cramér's V for categorical variables with more than two categories) were computed for each variable. The reliability was almost perfect ($r_{xy} = 0.9997$) for all variables, suggesting that the data extraction methodology produced accurate reporting of chart information.

Data entry from the data extraction forms, into the spreadsheet, was also checked, using an interactive process. All data were re-entered by the research assistant, and discrepancies were checked between the two data files. Any data entry errors were corrected by referring back to the data extraction forms until there was 100% agreement between the raters on all variables.

Not all CCTs were completed in full within the charts and therefore, there were data missing from certain subtests. To ensure that the scores of participants with missing items on the CCT were not artificially depressed, the CCT raw score was expressed as a percentage of the total number of items completed, which created a unit-weighted composite, where each variable is weighted equally in the aggregate (Kline, 2000; Tabachnick & Fidell, 2001). A case processing summary is presented in Table 5.2.

Table 5.2

Case Processing Summary (N=107)

CCT subtest	n
Personal Information	103
Card Arrangement	103
Picture Interpretation	103
Immediate Memory	106
Delayed Memory	105
Practical Reading	100
Finances	96
Verbal Reasoning	103
Routes: list	97
Routes: location	97
Orientation	94
Pathfinding	92

5.5 Statistical Analyses

5.5.1 Correlations with Clinical Measures

Examining the external aspect of validity for a measure, which includes criterion-related validity, is accomplished through an evaluation of the relationship between test scores

and a standardized practical performance criterion (Kielhofner, 2006; Messick, 1989b). Because there is no gold standard assessment to use in establishing criterion validity for the CCT, a number of correlational analyses were completed, involving bivariate correlations (Pearson product-moment correlations for continuous variables, point-biserial correlations for dichotomous variables, and Spearman's rho for ordinal variables) between the CCT and relevant demographic and key clinical standardized and non-standardized measures as mentioned above.

As well, an external or criterion evaluation was conducted to provide a comparison of the CCT and MMSE scores for many of the variables. The MMSE was used because it is a widespread commonly used tool to identify cognitive deficits in order to predict occupational competence (Douglas, Liu, Warren, & Hopper, 2007). For further evaluation, a multivariate analysis of variance (MANOVA) was conducted, in which OT discharge plan and sex were used as independent variables, and CCT score, MMSE score, and IADL score were evaluated as dependent variables. Another MANOVA was conducted using prior living arrangements and sex as independent variables.

Additionally, external validity was evaluated using the known groups method, which is a criterion for validity that considers that test scores should be able to discriminate across groups that are theoretically or known to be different (Hattie & Cooksey, 1984; Messick, 1989b). This analysis was accomplished by first dichotomizing the MMSE using a well-established cut-off point of 24 for individuals with dementia versus without dementia (Iverson, 1998), and then using an independent t-test to examine the extent to which the groups demonstrated significantly different CCT scores. To evaluate the strength of the association between the CCT and the MMSE, a Pearson's product-moment correlation coefficient was computed.

5.5.2 Factor Structure

The Kaiser-Meyer-Olkin (KMO) test and Bartlett's test of sphericity were used to test the data for sampling adequacy. Tabachnick and Fidell (2001) recommend a KMO value of 0.60 to 0.70 to ensure sampling adequacy.

The factor structure of the CCT was then examined, using a principal components analysis. Factor analysis is a statistical method used to describe the variability within a set of observed variables, using a smaller number of 'factors' (Kim & Mueller, 1978). These factors are proposed to predict performance on the observed variables, and are described in terms of 'factor loadings' from each of the variables within the data. Principal axis factoring (so-called 'common factor analysis') estimates how much of the variability is due to common factors ('communality'), while principal component analysis maximizes the rotation of the variable space when creating a more efficient set of variables for use within the data (Kim & Mueller, 1978; Velicer, Eaton, & Fava, 2000). Given that the primary purpose of this study was to create a parsimonious factor structure from the items of the CCT, principal component analysis was chosen as the method of factor extraction (Kim & Mueller, 1978).

Within exploratory factor analysis (regardless of the method used in extracting factors from the data), 'parallel analysis' is a rigorous method that is useful for determining the appropriate number of factors to extract (Costello & Osborne, 2005). Monte Carlo parallel analysis involves generating a set of random correlation matrices with similar numbers of rows and columns to those used within the factor analysis. After a specified number of runs (100, by convention), a series of "random eigenvalues" are generated, that are then compared with the actual eigenvalues from within the factor analysis. Eigenvalues measure the amount of variation in the total sample accounted for by each factor and should be greater than one (Kline, 2000). Factors with actual eigenvalues that are greater than their corresponding random eigenvalues can be considered to be 'interpretable' (or 'stable'), while those with eigenvalues that fall below these cut-off points can be discarded (Velicer, Eaton, & Fava, 2000; Zwick & Velicer, 1986).

Within a factor analysis, it is possible to compute a regression-based factor score that reflects the relative strength (or lack thereof) of individual variables within the analysis, by assigning variables a weight equal to their factor loading (DiStefano, Zhu, & Mîndrilă, 2009). Although creating a factor score can be more sample-specific than a unit-weighted composite, in the present study, a regression-based factor score is a useful contrast with the traditionally unit-weighted CCT composite because it produces a score with maximal

discriminatory power (Kline, 2000). Upon identifying the appropriate number of factors within the extraction, factor scores (on the unrotated factors) were created for each participant, using a regression method. All factor scores derived using this method was subjected to the same comparisons and analyses as the unit-weighted CCT score.

5.6 Results

Results of the correlational analyses with various clinical variables are reported below, with a summary provided in Table 5.3.

5.6.1 Correlations with Clinical Measures

Demographic: As expected, the CCT score did not significantly correlate with age ($r_{xy} = -0.134, n.s.$), patient status as inpatient or outpatient ($r_{xy} = .084, n.s.$) or medical comorbidities ($r_s = -0.042, n.s.$). The CCT scores correlated significantly with sex [$r_{xy} = -0.216, p < 0.05$], with men scoring higher on the CCT (Men: $\underline{M} = 75.09, \underline{SD} = 13.44$, Women: $\underline{M} = 69.14, \underline{SD} = 13.19$). Interestingly, although men did score slightly higher than women on the MMSE [Men: $\underline{M} = 25.69, \underline{SD} = 3.317$, Women: $\underline{M} = 24.91, \underline{SD} = 3.676$], the correlation between MMSE and sex was not statistically significant [$r_{xy} = -0.109, n.s.$]. MMSE score was not significantly related to age or patient status.

Cognition: A significant correlation in the expected direction was found between the MMSE and the CCT ($r_{xy} = 0.365, p < 0.05$). When evaluating the CCT against the MMSE using the known groups method, a significant mean difference in CCT scores was demonstrated between the group above the cut-off MMSE score of 24 which is indicative of dementia (Iverson, 1998; Shulman & Feinstein, 2004), and the group below the cut-off, $t(104) = 3.995, p < 0.05$. Those scoring greater than 24 on the MMSE ($n = 79$) had a mean CCT score of 74.37, $SD \pm 12.11$, while those scoring less than 24 on the MMSE had a mean CCT score of 63.09, $SD \pm 14.22$, suggesting that the CCT is able to discriminate between groups of demented and non-demented individuals.

Depression: Although the correlation was small, the CCT score correlated significantly with an indicator of depression ($r_{xy} = -0.213, p < 0.05$), but interestingly, the MMSE did not ($r_{xy} = -0.079, n.s.$).

Co-morbid Medical Illnesses: As expected, no relationship was observed between the CCT and the CIRS ($r_{xy} = -0.042$, *n.s.*) or between the CIRS and the MMSE.

Judgment, Insight and Safety: While correlations were found between CCT scores and judgment ($r_{xy} = 0.516$, $p < .05$), and insight ($r_{xy} = 0.481$, $p < .05$), there was no relationship observed with safety concerns ($r_{xy} = 0.186$, *n.s.*). The MMSE did not have a significant relationship with reports of judgment, insight nor safety concerns.

Occupational Competence: Contrary to expectations, neither the CCT score ($r_{xy} = -0.042$, *n.s.*) nor the MMSE ($r_{xy} = -0.049$, *n.s.*) correlated with the IADL score. In fact, none of the CCT subtests were significantly correlated with this IADL score – although the CCT score and the ‘medication management’ component of the IADL score approached significance ($r_{xy} = -0.182$, $p = .063$). There were no significant relationships demonstrated between the finance component of the CCT, and the finance component of the IADL scale ($r_{xy} = 0.003$, *n.s.*). Furthermore, there were no significant relationships reported between the CCT score, and meal preparation ($r_{xy} = -0.054$, *n.s.*), or phone use components of the IADL score ($r_{xy} = 0.029$, *n.s.*). The CCT score was significantly correlated in the expected direction with problems observed in a kitchen assessment ($r_{xy} = 0.289$, $p < .05$). Given the non-standardized nature of the IADL scale, these findings require cautious interpretation.

‘Living arrangements’, described as levels of supports received while living at home (i.e. living with no supports, with informal supports, or formal supports) was significantly correlated with the CCT (in the expected direction), ($r_s = -0.216$, $p < .05$), suggesting that individuals that live with less support at home have a higher CCT score. All correlations are summarized in Table 5.3

Table 5.3

Correlations of Clinical Measures with CCT and MMSE Scores

Variable		CCT		MMSE
Sex	Pearson Correlation	-0.216	*	-0.109
	N	106		106
Age	Pearson Correlation	-0.134		-0.082
	N	103		103
Patient Status	Pearson Correlation	0.084		0.198
	N	106		106
MMSE	Pearson Correlation	0.365	*	1
	N	106		106
GDS	Pearson Correlation	-0.213	*	-0.079
	N	101		101
CIRS score	Pearson Correlation	-0.042		-0.005
	N	106		106
Judgment concerns	Pearson Correlation	0.516	*	0.058
	N	64		64
Insight concerns	Pearson Correlation	0.481	*	0.059
	N	64		64
Safety concerns	Pearson Correlation	0.186		-0.059
	N	51		70
IADL score	Pearson Correlation	-0.042		-0.049
	N	106		106
Kitchen assessment, problems identified	Pearson Correlation	0.289	*	-0.026
	N	53		102
Living arrangements	Pearson Correlation	-0.216	*	0.893
	N	104		104

*Correlation is significant at the 0.05 level (2-tailed)

5.6.2 Predictors of the Unit-Weighted CCT Composite

Next, the relationship between CCT score and OT discharge plan was examined. Because only one person was discharged home without any formal supports, this discharge category could not be included in subsequent analyses, and this individual was eliminated in all analyses that involved OT discharge plan. The CCT score demonstrated a significant correlation with OT discharge plan, such that a higher CCT score (higher level of cognitive competence) indicated fewer supports required in the home ($r_s = -0.252$,

$p < 0.05$). The results of the MANOVA indicated that the multivariate interaction of OT discharge plan and sex was not statistically significant [$F(9,291) = 1.465, n.s.$], but the multivariate main effect of OT discharge plan was statistically significant [$F(9,292) = 3.647, p < 0.05, \eta^2 = 0.287$], and the multivariate main effect of sex approached significance [$F(3,95) = 2.247, p = 0.088, \eta^2 = 0.066$]. At the univariate level, there was a statistically significant main effect of OT discharge plan for the CCT score [$F(3,97) = 9.295, p < 0.05$], but neither the MMSE [$F(3,97) = 0.38, p = 0.765$] nor the IADL score [$F(3,97) = 2.334, p = 0.079$] showed a significant main effect of OT discharge plan. Thus, overall, these analyses suggest that CCT score predicts OT discharge plan, even after controlling for sex. Descriptive statistics are presented in Table 5.4.

Table 5.4

Clinical Judgment: Descriptive Statistics CCT (dependent variable), OT Discharge Plan and Sex (independent variables)

OT Discharge Plan (rescaled)	Sex	CCT Mean	SD	N
Home, Informal supports	male	74.927	10.309	4
	female	62.888	11.816	6
	Total	67.704	12.311	10
Home, Formal supports	male	79.360	8.982	26
	female	72.914	13.061	40
	Total	75.453	11.978	66
Retirement home	male	81.391	11.159	5
	female	65.028	10.788	10
	Total	70.482	13.196	15
Long term care	male	56.232	13.780	6
	female	60.147	11.571	8
	Total	58.467	12.222	14

Note: rescaled to eliminate outlier

The main effect of OT discharge plan was evaluated further, using Tukey's HSD. The CCT score was found to be significantly different between individuals for whom the OT recommended a return home (with formal support), and individuals that were recommended for admission to long-term care, and was also found to be significantly different between individuals discharged to a retirement home, and individuals

discharged to long-term care. Although the interaction effect was not statistically significant, there is an interesting and consistent trend within the OT discharge data that suggested that men scored higher than woman when discharged to home with supports and when discharged to a retirement home. There were no substantive CCT score differences between men and women among discharged to long-term care.

A MANOVA similar to the one described in relation to OT discharge plan, was conducted for the pre-admission living arrangement variable. There was no multivariate effect of the CCT and the MMSE on prior living arrangements [$F(8, 198)=2.432, p=n.s., \eta^2=0.174$]. Univariate analyses suggested that although the difference between categories was not statistically significant for the MMSE [$F(4.99) = 0.893, n.s.$], the CCT score was statistically significant [$F(4.99) = -0.216, p<.05$], even after adjusting alpha to control for multiple comparison bias, in the wake of the non-significant multivariate effect. There was no significant interaction with sex ($r_s=-0.216, n.s.$).

Using Tukey's HSD, the CCT was demonstrated to be able to predict differences between individuals that were living at home with formal supports, and individuals that were living in a retirement home, and also between individuals that were living at home with formal supports, and individuals living in long term care.

5.6.3 Factor Structure

In this study the KMO was 0.815, and Bartlett's test of sphericity was rejected [$\chi^2(66) = p<.01$], suggesting that the data is 'factorable' (Tabachnick & Fidell, 2001). In the first analysis, addressing the factor structure of the CCT, a principal components analysis was completed with all 12 of the CCT subtests. The first three eigenvalues in this analysis were 4.633, 1.276 and 1.013. Visual inspection of the scree plot of the eigenvalues from this analysis suggested that only the first extracted factor is likely to be meaningful (see Figure 5.1). The percentage of variance accounted for by the unitary factor was 0.386. A parallel analysis, considered to be the most rigorous method for determining the number of factors that should be extracted (Velicer, Eaton, & Fava, 2000; Zwick & Velicer, 1986), was conducted using MacParallel (Watkins, 2000). Only one factor exceeded the

randomly generated eigenvalues for a similar number of variables, thus providing confirmation of the interpretation of the scree plot.

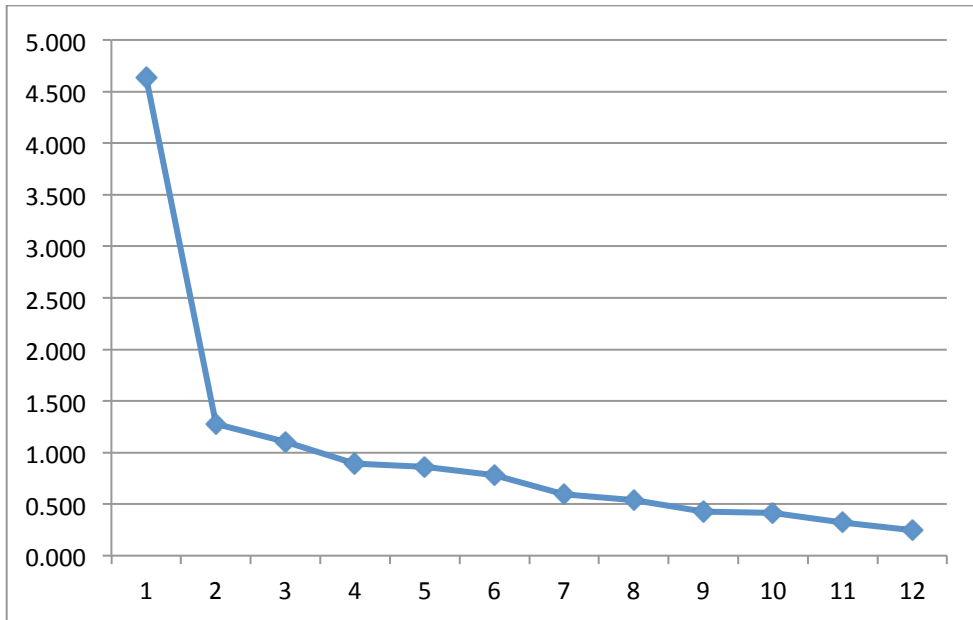
In the second analysis, a principal components analysis was completed with 11 of the 12 CCT subtests, removing the 'personal information' subscale because of insufficient variability within the item. As was the case in the first analysis, visual inspection of the scree plot (see Figure 5.2) suggested a single factor for the CCT, and was confirmed by comparing the actual eigenvalues to the random eigenvalues generated through a parallel analysis. The unidimensionality of the measure is even more evident, with the actual eigenvalues being 4.565, 1.101, and 1.012. Comparing these to the random eigenvalues generated within the parallel analysis (1.5526, 1.3853, and 1.2606), again, the results indicate only one of the factors should be retained.

In this second analysis, the percentage of variance accounted for by the unitary factor solution was 0.415. The factor loadings for the single factor solution from both analysis 1 and analysis 2 are presented in Table 5.5. Although factor loadings are high if they are 0.8 or greater (Velicer & Fava, 1998), more common magnitudes in the social sciences are expected to be between 0.4 to 0.7 (Costello & Osborne, 2005).

Pearson correlations were computed among all CCT items (except personal information). Examination of the correlations within this analysis reveals strong positive correlations among all items, and indeed, reliability analysis using Cronbach's alpha was 0.823 in the first analysis using 12 CCT components, and 0.826 using 11 CCT components. Furthermore, all items have a relatively similar positive item-total correlation, and the removal of any item reduces Cronbach's alpha (see Table 5.6). All of these points provide further evidence to support the CCT as measuring a single factor.

Figure 5.1

Scree Plot Analysis 1

*Figure 5.2*

Scree plot Analysis 2

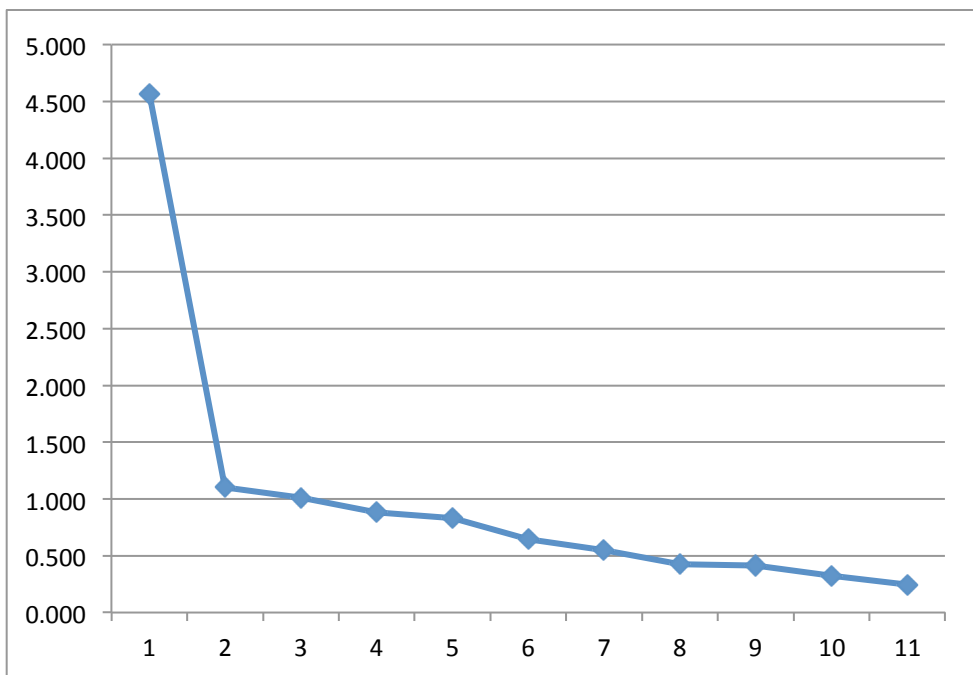


Table 5.5

Factor Loadings

CCT subtest	Analysis 1	Analysis 2
Personal Information	0.290	
Card Arrangement*	0.746	0.749
Picture Interpretation	0.620	0.634
Immediate Memory	0.468	0.472
Delayed Memory	0.490	0.477
Practical Reading	0.631	0.630
Finances*	0.780	0.782
Verbal Reasoning	0.647	0.642
Routes: list*	0.719	0.713
Routes: location	0.592	0.588
Orientation*	0.730	0.731
Pathfinding	0.570	0.575
Eigenvalue	4.633	4.565
Variance accounted for	0.386	0.415

**Factor loadings over 0.7*

5.6.4 Predictors of the CCT g

A general factor score was calculated (CCT g), using a regression-weighted score that takes into account the ‘relative importance’ of each item, in order to evaluate its predictive power. The internal consistency of a scale can be examined by two analyses that examine the correlation between a particular item and the total sum score without the item, or item total correlation, applying a correcting factor (Kline, 2000). Cronbach’s alpha is the most common index of reliability (Tabachnick & Fidell, 2001) and will change if an item is deleted (closer or farther from 1). See Table 5.6.

Table 5.6

Item Total Correlations and Alpha-if-Item-Deleted for CCT g

CCT Subtest	Corrected Item Total Correlation	Cronbach's Alpha if Item Deleted
Card arrangement	0.660	0.795
Picture interpretation	0.544	0.807
Memory: immediate	0.378	0.824
Memory: delayed	0.370	0.823
Practical reading	0.535	0.817
Finances	0.693	0.079
Verbal reasoning	0.548	0.809
Routes: list	0.608	0.815
Routes: locate	0.486	0.812
Orientation	0.065	0.803
Pathfinding	0.488	0.821

Using this factor score as the independent variable, a series of simple linear regressions were conducted, to predict the same variables as analyzed earlier with the CCT score. Similar to the analysis conducted with the unit-weighted composite score, results of this analysis indicated that the CCT factor score correlated strongly with MMSE score ($r_{xy} = 0.438, p < .05$), judgment concerns ($r_{xy} = 0.582, p < .05$), and insight concerns ($r_{xy} = 0.557, p < .05$), and shows an association with problems identified during a kitchen assessment ($r_{xy} = 0.334, p < .05$) and sex ($r_{xy} = -0.225, p < .05$). The factor score did not show a correlation with the IADL score, CIRS score, and the age at admission, but did now show a correlation with reports of safety concerns ($r_{xy} = .343, p < .05$). Contrary to the results using the original CCT score, the factor score did not correlate with depression. See Table 5.7 for more detailed information.

Table 5.7

Comparison of Correlation of CCT, CCT g with Clinical Measures

Variable		CCT score	g of CCT
Sex	Pearson Correlation	-0.216 *	-0.225 *
	N	106	92
Age	Pearson Correlation	-0.134	-0.064
	N	103	90
Patient Status	Pearson Correlation	0.084	0.085
	N	106	92
MMSE	Pearson Correlation	0.365 *	0.438 *
	N	106	92
GDS	Pearson Correlation	-0.213 *	-0.116
	N	101	89
CIRS score	Pearson Correlation	-0.042	0.028
	N	106	92
Judgment concerns	Pearson Correlation	0.516 *	0.582 *
	N	64	56
Insight concerns	Pearson Correlation	0.481 *	0.557 *
	N	64	55
Safety concerns	Pearson Correlation	0.186	0.343 *
	N	51	60
IADL score	Pearson Correlation	-0.042	-0.169
	N	106	103
Kitchen problems Identified	Pearson Correlation	0.289 *	0.334 *
	N	53	50
Living arrangements	Pearson Correlation	-0.216 *	-0.167
	N	104	91

**Correlation is significant at the 0.05 level (2-tailed)*

Note: CCT g created using regression method of factor score creation

5.7 Discussion

Measurement is a process of relating constructs to empirical indicators, and establishing an appropriate range of indicators that gives confidence to the interpretation of measurement outcomes (Kelly, O'Malley, Kallen, & Ford, 2005). According to Messick (1989b) validity is a property of inferences not of the instrument but of its scores. The

interpretation of a high score on the CCT should indicate a higher level of cognitive competence. This study has attempted to gather various sources of evidence regarding the validity of the CCT, particularly in the context of its use in occupational therapy practice as an indicator of occupational competence in individuals with dementia. While it is not possible to confidently identify the construct being measured as cognitive competence, the CCT scores appear to have a relationship with some variables that should theoretically relate to the construct of cognitive competence. The remainder of the discussion will be framed within Messick's framework of validity, highlighting what the current study has contributed to the evidence base regarding the construct validity of the CCT, as well as the research questions it raises for further study.

With regards to *content* aspect that relates to content relevance and representativeness (Messick, 1989b), both the principal components factor analysis and the Monte Carlo parallel analysis suggest a single factor for the CCT. This finding is consistent with other studies (Inman & Kulis, 1993; Wang, Ennis & Copland, 1987). Internal reliability is high, as it is clear from this study, such that the removal of any positive item-total correlations reduces Cronbach's alpha. All of these points provide evidence to support the CCT as measuring a single factor. Given that items such as the MMSE, judgment and insight have significant correlations with high magnitudes, it is possible to interpret that this factor includes variables that could be considered indicators of cognitive competence, as opposed to cognition alone.

The use of subscales implies that the construct being measured has several distinguishable dimensions and evidence should be provided to support this (Coster, 2006). One would expect a complex construct such as cognitive competence to demonstrate dimensionality in the structural aspect of the CCT. However the CCT is well described as a single or unidimensional factor despite having several subtests. Therefore, one cannot interpret differences among subscale scores as describing a profile of strengths and weaknesses. On the other hand, this consideration does ensure that there are multiple means to measure the same construct providing consistency – and potentially, indicators of diverse aspects of the same construct, giving weight to the average total score (ATS) being representative of the construct being measured (Coster, 2006).

The *substantive* aspect of construct validity examines the conceptual basis of a measurement instrument and relates to theoretical rationales for substantive theories that help to enhance understanding of a construct (Messick, 1989b). As expected, the CCT was able to discriminate dementia severity, demonstrating a statistically (and substantively) significant correlation with the MMSE, a measure known to reliably identify the presence of dementia, and to reliably scale dementia severity (Folstein & Folstein, 1975; Iverson, 1998).

Although the relationship with the CCT score and depression was not expected, one could argue that features of depression are often similar to dementia such as impairments in attention and concentration (Wasylenki, 1989). One could expect the CCT score to decrease as the depression score increases, and in fact, the CCT percentage scores do correlate negatively with depression. One would not expect a strong relationship, in that measures of depression should include other indicators that would not be common with the CCT score – as was found to be the case in this study. While statistically significant, the magnitude of the correlation was relatively small. As well, this relation did not hold for the CCT g, perhaps because it is a more robust score of cognitive competence.

It was also expected that with a decreasing score of the CCT, indicating decreasing cognitive competence, there would be increasing evidence of judgment concerns, insight concerns, and increased problems identified in a kitchen assessment. The present results suggest that the CCT score did correlate significantly with these items and with high effect. Surprisingly there was no significant correlation with reports of safety concerns, possibly due to the fact that this variable had a smaller sample size. However, the significant relationship with higher effect between safety concerns and the CCT g provides some initial support for using the CCT as representing components of cognitive competence that could be used as an indicator of occupational competence.

The CCT score was found to be significantly different between individuals for whom the occupational therapist recommended a return home with formal supports, as compared with an admission to long-term care, and was also found to be significantly different between individuals discharged to a retirement home, and individuals discharged to long-

term care. These findings suggest that the CCT score can be helpful when distinguishing between a recommendation for long-term care and a recommendation for retirement home, and between return-to-home with supports and long-term care. Again, the notion of using cognitive competence in general is supported, and the CCT in particular, as an indicator of occupational competence. The same analysis demonstrated that the MMSE was not useful for this purpose.

Although it is mildly disconcerting that neither the CCT score nor any of its subtests showed a significant relationship with IADLs, these results can be a function of the IADL scale used, since the scale was dichotomous resulting in little variability. Clinically, cognitive competence is often explored in part by examining an individual's medication compliance. The correlation between the CCT score and the medication management component of the IADL score did, however, approach significance. It is interesting to mention that there were no significant relationships demonstrated between the finance component of the CCT, and the finance component of the IADL scale. Furthermore, there were no significant relationships reported between the CCT score and the meal preparation or phone use components of the IADL score as might have been expected. In this study, the MMSE also did not correlate with the IADL scale, despite evidence in the literature that it has been previously shown to have such a relationship (De Lepeleire et al., 2004; Farina et al., 2010; Mathuranath, George, Cherian, Mathew, & Sarma, 2005). Given the non-standardized nature of the IADL scale, the findings pertaining to the IADL scale need cautious interpretation.

Living arrangements were described as levels of supports received while living at home prior to admission. This variable was significantly correlated with the CCT score, which indicated that the CCT was able to discriminate between individuals that live with varying degrees of support. These results could support the use of the CCT as an indicator of occupational competence. This analysis was not significant for the MMSE.

The finding that the CCT scores did not correlate with a measure of medical illness could be related to the fact that the mean score indicated that the sample was not very ill, suggesting that the range may be constrained within the sample. The correlation would,

in all likelihood, be larger if the sample were more variable on the CIRS. However, this finding could also support the hypothesis that the CCT should not be related to degree or severity of medical illness.

The *structural* aspect of validity addresses the internal structure of a set of indicators (Messick, 1989b). Despite the expectation that the construct of cognitive competence is multidimensional, the results of the chart review study suggested that the CCT is a unidimensional outcome measure. This finding was particularly unexpected given that the CCT is comprised of several subtests that were originally designed to tap various components of cognitive competence.

The use of a regression score crystallizes the structure of the measure and the relationships between the CCT g score and the variables. Comparing the results of the unit-weighted CCT score and the regression score (CCT g) it is interesting to note that all the significant relationships with the clinical measures (MMSE, sex, judgment, insight, safety concerns, and kitchen assessment) were stronger when using the regression score. Although not significant, the relationship with medical illness was also stronger, and the relationship with depression was no longer significant. Based on this finding, one might conclude that the factor score was a better measure of the construct. The non-significant relationship with IADL scores was relatively unchanged, and correlation with age was stronger but still not significant. The relationship between safety concerns was now significant with a higher magnitude.

There is a question regarding the clinical utility of the test as it was observed that a small percentage of individuals within the sample were assessed over two sessions indicating that the clinical utility can be problematic for both clients (fatigue) and therapists (time constraints).

Messick (1989b) proposed that the *generalizability* aspect of construct validity indicates that a measure should demonstrate consistent scoring that is not affected by descriptive variables, such as age, sex, or location of administration (inpatient or outpatient status), which should theoretically not have an effect on the construct being measured. The CCT scores do not correlate with age or patient status. However, the results do show a

significant sex difference. While it was originally assumed that there should be no significant relation between CCT and sex, such a relation was found leading one to question what is the meaning and consequences of this relationship. This finding raises consideration of whether there should be an assumption that scores across sex should be the same for a measure of cognitive competence. This assumption is certainly not found in the psychology literature that suggests it is not unreasonable to expect that sex differences will occur (Kline, 1986). As mentioned in the limitations in Chapter 4, some of the items such as the card arrangement and the financial section in the CCT could be considered gender-specific, especially for this current generation of seniors.

With regards to sex, although the interaction effect was not statistically significant, there is an interesting and consistent trend within the OT discharge data that suggested that men scored higher than woman when discharged to home with supports and when discharged to a retirement home. There were no substantive CCT score differences between men and women among those discharged to long-term care, suggesting that men are less able to maintain themselves in an independent living situation (being less occupationally competent) especially if this circumstance was something they had not learned throughout their lifetimes. Older women, especially from this generation, could be better able to manage tasks such as cooking, that involves more procedural memory (and hence present as more occupationally competent). This finding could lend support to the use of CCT scores as an indicator of occupational competence.

Criterion-related relevance relates to the *external* aspect of Messick's framework of validity that examines an instrument's correlation with other measurement instruments of the same construct (Messick, 1989b). Unfortunately, no other tests of cognitive competence or occupational competence were available in the charts to examine this aspect of validity, except for a non-standardized kitchen assessment that was not routinely completed. The CCT score demonstrated a relationship with problems that were identified during the kitchen assessment, lending some initial support for such a relationship with occupational competence.

Consequential validity relates to the implications of test values and interpretation of scores (Messick, 1989b). Although there was no direct way to assess consequential validity within this chart review study, some of the findings give initial support for using it for the purpose of predicting occupational competence. Further study is warranted given the correlations that were found with non-standardized, clinically relevant indicators of cognitive competence such as judgment, insight and results of a kitchen assessment. Clinically it is often a demonstration of these types of impairments that are judged as precluding people with dementia to be occupationally competent (Molloy, Darzins, & Strang, 1999). Furthermore, the correlations of the CCT scores with the OT discharge plan, and with prior living arrangements, provide some preliminary support for using the CCT as one valid indicator of occupational competence. These results give some degree of support for using the CCT for the purpose that it was intended, strengthening its consequential validity. In the next chapter, consequential validity is further addressed through a comparison of the results from this study with that of the Delphi study reported in Chapter 4.

This study's findings suggest that the CCT adds information regarding cognitive competence in the realms of insight and judgment that the MMSE does not. Thus, it is proposed that the CCT adds incremental validity to a measure such as the MMSE when evaluating cognitive competence. Sechrest (1963) described incremental validity as the demonstration that the addition of a test produces better predictions than those possible, based on the basis of information that is already available. Haynes and Lench (2003) describe it as "the degree to which a measure explains or predicts some phenomena of interest, relative to other measures" (p. 457). These authors also advocate that incremental validation of clinical assessment measures is "essential for the advancement of methods and theory of clinical science, for strengthening clinical judgments, and for improving services delivered to clients" (p, 465). Occupational therapists make decisions regarding occupational competence based on cognitive competence, and the CCT showed a better relationship with the indicators of occupational competence used in this study than the MMSE. These findings in fact add to the consequential validity of the CCT, in that there is a significant consequence for the actions that are be related to test use.

Overall, given that validity is an on-going process and this study's limitations, as detailed below, further study is required to generate evidence for the construct validity of the CCT in relation to its use as an indicator of occupational competence. The findings of this study support the merit of further research.

5.8 Strengths and Limitations

Using a retrospective study design establishes that predictor variables precede outcomes, since the measurements are collected before the outcomes are known and cannot be biased by knowledge that those items have to do with the outcome of interest (Hulley et al., 2007). On the other hand, the investigator has limited control over the design of the approach to sampling, and existing data can be incomplete, inaccurate or measured in ways that are not ideal for answering the research question. For example, it was not possible to include a correlation with education in this study.

While data were gathered in a way that is reflective of everyday practice in dementia, enhancing its clinical relevance, there are several limitations of this study. Sample size must be large enough to reduce the standard error of the correlations to a small proportion and the target sample size for validation studies is generally regarded to be approximately 200, although a minimum could be 100 (Kline, 2000). In this study, the sample size, while adequate, tends toward the bottom end of this guideline.

Missing data cannot be recovered in a retrospective chart study. The ability to examine the criterion-related aspect of validity was limited by the absence of another measure of cognitive competence and occupational competence. As previously mentioned, the limitations of IADL scale necessitate a more rigorous examination of the relationship between the CCT scores and instrumental activities of daily living.

One further limitation is that degree of supports one receives in the home can be related to who else lives with that person, or if the person lives alone, with or without supports. The results of the correlation to degree of supports received should be interpreted with caution.

5.9 Conclusions

For clinicians, valid measurement approaches provide important information to support effective clinical reasoning and best practices. Occupational therapists are asked to provide critical information that informs key decisions around dementia care, and are known to use the CCT scores to inform decisions regarding occupational competence, and the ability to live safely in the community. Since there is no gold standard of occupational competence to compare to, the findings in this study provide preliminary evidence that the CCT is a discriminative measure of cognitive competence. The CCT is significantly related to the MMSE and is a better theoretical fit for occupational therapists, because it is embedded in everyday tasks. If it is possible that cognition, judgment and insight are some of the indicators for the construct of cognitive competence, the relationship between the CCT scores, and judgment, insight, and the MMSE, provides a basis to consider that the CCT can be a useful tool to measure cognitive competence. The limitation of the IADL instrument used within this study suggests that the lack of correlation between the CCT and the IADL scores needs to be interpreted with caution. Future studies with a larger sample size are warranted to further examine the construct validity of CCT measure and to examine with more power some of the small, albeit statistically significant, correlations found.

Future research could further deconstruct cognitive competence and occupational competence, in order to facilitate the development of better measures of cognitive competence and occupational competence. This development would permit the examination of criterion-related validity of the CCT, providing another stratum of validity and enabling the study of the predictive capacity of the CCT scores to the construct of occupational competence. While it is critical that better measures need to be developed, in the meantime, the CCT does seem to have some merit, and can be used to provide incremental validity to other tests such as the MMSE. Based on these results, future study of this measure could yield more conclusive evidence on its validity, to address whether it should be kept in the occupational therapy toolbox, or not.

Chapter 6

6 Discussion and Conclusions

As outlined in Chapter 1, health care professionals working in dementia care often experience a tension between addressing the goal of supporting a person's desire to age in place, and the goal of minimizing risk for harm to self and others (Iwarrson, Horstmann, & Slaus, 2007; Iwarrson et al., 2007 ; Oswald et al., 2007). Aspects of cognition that are frequently impaired among individuals with dementia, such as insight and judgment, can often result in compromised cognitive competence (Molloy, Darzins, & Strang, 1999). This reduced ability to understand and appreciate the circumstances that put their safety at risk is, therefore, essential to assess within dementia care.

Occupational therapists often contribute to decision-making in dementia care, in areas related to appropriate living situations and community supports. The unique contribution of occupational therapists is the consideration of occupational competence, defined as the ability to address all the requirements of occupation within everyday life and to derive meaning and identity from occupation (Polatajko, 1992). As cognitive competence is likely a key factor influencing the occupational competence of persons with dementia, it is proposed that occupational therapists often use their tacit knowledge to guide their assessment of components of cognitive competence in order to predict occupational competence. This proposal is supported by the results of the Delphi study that demonstrated that occupational therapists use a variety of non-standardized content- and process-focused methods to assess cognitive competence and occupational competence.

As the personal implications of a finding of cognitive incompetence are very significant to an individual, it is critical that occupational therapists use validated tools to inform their judgments regarding occupational competence and the decisions associated with such judgments (Law & Baum, 1998; Law, Baum, & Dunn, 2005). For clinicians, valid measurement approaches provide important information to support effective and judicious clinical reasoning and best practices. In order to enhance the evidence on which to base occupational therapy practice regarding the use of cognitive competence as an indicator of occupational competence in individuals with dementia, this dissertation

sought to enhance understanding of those dimensions of cognitive competence that link with occupational competence, and examined the construct validity of a commonly used measure of cognitive competence, the Cognitive Competency Test.

This dissertation drew upon Messick's (1989b) framework of construct validity due in large part to its emphasis on the examination of validity of test scores within a framework of social consequences and ethics, in order to enhance empirical evidence and consequential validity. Messick (1989a) emphasized the need to establish clarity of what is being assessed, and for what purposes. In agreement, Fiske (2002) states "it is important to settle the question of what we are trying to understand, at least to some degree, in order that the issue of validity can have some meaning" (p.169). Using Messick's framework led to designing the present studies in a way that had implications for how the construct of cognitive competence as a predictor of occupational competence was addressed, as well as how the construct validity of the CCT was considered and examined. Thus, the first study in this dissertation endeavoured to enhance knowledge regarding the cognitive components that link with occupational competence in individuals with dementia, drawing on the practice-based knowledge of occupational therapists with experience in dementia care. The findings from this first study developed a consensus opinion of Canadian occupational therapists regarding the cognitive components that are essential for predicting occupational competence in individuals with dementia and were used to further consider the consequential validity of the CCT. In order to explore Messick's dimensions of construct validity for the CCT, the second study compared its relationships with clinical measures typically used in dementia care, and examined its dimensional structure.

In this chapter, following a summary of the key results of the two studies conducted, the consequential validity of the CCT is further considered by addressing the relationship between the empirical data gathered on the CCT and the results of the Delphi. In addition, clinical implications of the studies are addressed and future research directions are proposed. The chapter ends by returning to my personal reflections as a clinician who returned to graduate school.

6.1 Summary of Results

Table 6.1 presents the salient findings from both studies within Messick's framework of construct validity. To summarize the results of the Delphi study, occupational therapists identified ten cognitive components that they judged to be essential to assess when making judgments regarding occupational competence among individuals with dementia: attention, awareness, comprehension, initiation, insight into abilities, judgment, problem-solving, sequencing, safety awareness, and working memory. These findings were interpreted in relation to Stuss' (2002) framework of executive functions. The findings from this study also suggested that occupational therapists tend to rely on bottom-up standardized cognitive measures to assess cognitive competence as a predictor of occupational competence, and that they use non-standardized top-down methods and approaches, such as observation, interviews and home visits to further inform their judgments of occupational competence.

A summary of the results of the chart study are framed in Messick's framework of construct validity:

Content aspect: The CCT score demonstrated representativeness of the construct being measured since it correlated with all subtests. The average total score appeared to be a unitary construct, as all subtests were highly inter-correlated.

Substantive aspect: The CCT score was able to discriminate between demented and non-demented groups. It was significantly correlated with the MMSE, which is known to discriminate dementia severity and is a well known measure of cognition. The CCT score was also related to occupational therapists' recommendations for levels of supports needed on discharge, and discriminated among the levels of home support required by individuals on admission. CCT scores showed relationships with reports of judgment and insight concerns, as well as with problems identified on a kitchen assessment.

Structural aspect: The unidimensional nature of the CCT was particularly unexpected given that the CCT is comprised of several subtests that were originally designed to tap various components of cognitive competence.

External aspect: The CCT scores could not be compared to other measures of cognitive competence to establish criterion validity as no other measures were found within the sample of data used for the data analysis employed within this study. A non-standardized kitchen assessment was completed as an assessment of occupational competence and was found to have a significant relation with the CCT, but was not completed on all individuals.

Generalizability aspect: The CCT scores did not correlate with age or patient status. Sex differences were found that raise questions regarding the need to consider the relationship between sex and cognitive competence, as well as test construction.

Consequential aspect: Highlighting the sex difference in scores has consequential implications for test use and interpretation, raising awareness of the need for future research and consideration. This aspect of validity is further considered within this chapter by comparing the relationship between the consensus statement generated in the Delphi study with the factor structure of the CCT. The results of the significant relationships with components such as judgment, insight and problems identified in a task of everyday living, as well as correlations with the occupational therapist's discharge plan and with prior living arrangements, give some degree of support for using the CCT for the purpose that it was intended.

6.2 Integrating findings of Delphi and Chart review studies

The primary objective of the Delphi study was to identify a set of components of cognitive competence that are predictive of occupational competence. A second objective was to utilize these cognitive components as a means to address consequential validity of the CCT by comparing them with the dimensions of the CCT. This comparison also assisted in assigning meaning to the factor structure of the CCT. Specifically, if the CCT is to be used as an assessment of cognitive competence in order to predict occupational competence in dementia, then its consequential validity would be stronger if it addressed those components seen as essential by experienced occupational therapists.

Table 6.1

Study Results Framed by Messick's Aspects of Construct Validity

Aspect	Delphi	Chart review
Content	<ul style="list-style-type: none"> identified components of cognitive competence most essential to predict occupational competence 	<ul style="list-style-type: none"> high internal reliability: CCT ATS correlated with subtests; CCT subtests were highly intercorrelated
Substantive	<ul style="list-style-type: none"> developed theoretical model of cognitive competence 	<ul style="list-style-type: none"> discriminated dementia severity correlated with MMSE, judgment, insight, kitchen assessment, supports at home distinguished between levels of support needed (RH, LTC) did not correlate with medical comorbidities minimal correlation with depression
Structural	<ul style="list-style-type: none"> multidimensional 	<ul style="list-style-type: none"> unidimensional
Generalizability	<ul style="list-style-type: none"> consensus developed for people with dementia 	<ul style="list-style-type: none"> no correlation with age or patient status significant correlation with sex
External	<ul style="list-style-type: none"> fit with Stuss' model of executive function 	<ul style="list-style-type: none"> no comparison with other measures of cognitive competence relationship with task of occupational competence (kitchen assessment) did not correlate with IADL scale or safety concerns
Consequential	<ul style="list-style-type: none"> based on practice knowledge enhanced conclusions of chart review findings 	<ul style="list-style-type: none"> highlighted issue of sex relationship with judgment, insight, kitchen assessment may be missing elements identified in Delphi, such as attention, awareness, comprehension, initiation, sequencing, problem-solving, working memory adds incremental validity to measures such as the MMSE

A key question then is: does the CCT capture the components of cognitive competence identified in the Delphi essential to inform predictions of occupational competence? This comparison is limited by the results pertaining to the factor structure of the CCT, and by the data that was available to be extracted from the charts. Considering the complexity of the construct of cognitive competence, it was expected that findings would demonstrate dimensionality in the structural aspect of the CCT. However, this expectation was not fulfilled, as the CCT was found to have a unitary structure. The original plan to do a confirmatory factor analysis of the CCT subtests and the cognitive components identified in the Delphi could not be carried out with only one factor. In the absence of the ability to do this analysis, in this section, the findings that provide some preliminary support linking the CCT to the components identified in the Delphi survey are descriptively discussed, as are the needs for further investigation.

Messick's framework of construct validity addresses the need for an evidential basis and a consequential basis of validity to inform the use and interpretation of test scores (Messick, 1975, 1989a, 1989b). Regarding test interpretation, the findings of the retrospective chart review do provide some initial support for the construct validity of the CCT with regards to cognitive competence as described in the results of the Delphi study. This is demonstrated by the relationship with judgment concerns and insight concerns, as well as with problems identified in a kitchen assessment, a task that requires sequencing abilities.

The CCT can be presumed to capture attention and working memory, by virtue of the fact that it requires individuals to attend to and complete the tasks in the test – but investigation in future studies is required, using known measures of attention, working memory, and initiation. Also, assessment of comprehension might be inferred, as the test items of the CCT require that individuals are able to follow directions from the examiner, requiring further comparison with standardized measures of comprehension. While safety concerns did not correlate with the CCT in this study, comparisons with measures of self-awareness and awareness of the environment should be explored further, as these components are cited in the literature as being one of the major limitations and consequences of dementia (Molloy, Darzins, & Strang, 1999; Tierney et al., 2004;

Tierney, Snow, Charles, Moineddin, & Kiss, 2007). Finally, the results of the Delphi survey suggest that the CCT should also be compared with standardized measures of problem-solving, to identify the extent to which the measure taps this important construct.

6.3 Clinical Implications

Considering the aging population, the issue of determining occupational competence among individuals with dementia has immediate and future relevance. Therefore, the ability to use a measure such as the CCT to inform judgments and decisions that are based on cognitive competence as a predictor of occupational competence is critical. With regards to its clinical utility, the Delphi study supports the findings of Douglas et al. (2007) as the CCT continues to be used within occupational therapy practices across Canada. Presumably, occupational therapists consider that the CCT fits with their tacit knowledge, or perhaps they are acquiring information during their observation of how individuals complete CCT tasks, otherwise they would likely have discontinued its use. At the same time, as reported in Chapter 5, The CCT can be a long test to complete for some individuals, creating a potential problem in the clinic setting for both clients and therapists.

Typically, occupational therapists rely on their clinical reasoning and skills when observing occupational performance, to assess cognitive competence and to come to conclusions regarding occupational competence. Findings in the Delphi study show that occupational therapists find observation very useful when reporting non-standardized approaches to measuring cognitive competence. Should future research contribute to increasing its validity and reliability, it should be unproblematic to convince occupational therapists to use the CCT since there is evidence to suggest that it is already taken up by clinicians and is already shown to have a good theoretical fit with occupational therapy practice.

Since the CCT has been shown to be a comparable measure of cognition to the MMSE, it is proposed that the CCT should be used as an adjunct to the MMSE, because of its correlation with judgment and insight, and a relationship with a task of everyday living.

Considering the results of the Delphi study, which stress a broadening of the construct of cognition when considering cognitive competence, the inclusion of components such as judgment and insight within the CCT adds incremental validity to measures of cognition such as the MMSE.

The Delphi study provides a novel way to consider the consequential validity of the CCT as it captures and articulates implicit practice-based knowledge derived from experienced clinicians. Findings from the Delphi study challenge occupational therapists to incorporate standardized measures of components such as judgment, insight into abilities, and awareness into the assessment of cognitive competence in order to inform decisions regarding occupational competence of individuals with dementia. In addition, these results can contribute to advancing clinical practice guidelines for the assessment of occupational competence in individuals with dementia by pointing to the essential components of cognitive competence to be addressed within assessment processes. Moreover, the knowledge generated from the Delphi on the basis of the expertise of experienced clinicians has implications for mentoring and training clinicians as well as for the education of occupational therapy students, with the goal of the inclusion of the construct of cognitive competence and the components outlined in the Delphi in assessments of occupational competence in individuals with dementia.

6.4 Future directions

Given the unitary structure of the CCT, future studies could focus on creating a shorter version of the CCT that compares scores based on the highest factor loadings, and comparing how the briefer version compares with the full version. If the results from this shorter version of the CCT were comparable, the clinical utility of the test could be enhanced by increasing the likelihood that clinicians would complete the entire test with each client, thereby increasing the measurement consistency between clients. Along similar lines, studies that examine the inter-rater and intra-rater reliability of the CCT are also required. The results of the Delphi highlight the need to develop measures of insight, particularly in relation to awareness of the environment, safety awareness, and insight into one's abilities. Further studies are required to compare the CCT to other, well

established measures of the components addressed in the Delphi consensus statement, such as problem-solving, sequencing, initiation and attention, as outlined above.

Inclusion of these components would lead to the development of better measures of cognitive competence and occupational competence that would enhance the practice of occupational therapy in dementia care. These study results also point to the need to consider and develop different norms based on sex in test construction of cognitive competence.

The findings of the chart review study in particular raise the issue of the need for further development of standardized and meaningful measures of ADLs and IADLs that reflect the construct of cognitive competence that occupational therapists are likely to use in practice. There is a need to develop better measures of cognitive competence using the components identified in the Delphi, but in the meantime, the results of these studies provide a rationale for its use until better measures are developed.

Ecological validity, defined by Sbordone (1996) as “the functional and predictive relationship between performance on tests and behaviour in a real-world setting” (p. 16), enhances the ethics of using test scores as the basis for decision-making pertaining to functioning in real-world settings. There is also a growing body of literature that recognizes the need for assessment tools to be ecologically valid, stressing behavioural performance within the context of real-life situations (Cripe, 1996; Farias, Harrell, Neumann, & Houtz, 2003; Manchester, Priestley, & Jackson, 2004; Sbordone, 1996). It is very likely that these “real-life” measures necessitate the involvement of multiple functional systems, consistent with Stuss’ model of the frontal lobes (Stuss et al., 2002; Stuss & Levine, 2002). It is proposed that top-down measures of cognitive competence should have greater ecological validity, in concert with Stuss (2007) who argued that “real-world measures bring a functional usefulness, and combined with the relative value of the more ‘process pure’ laboratory tasks and naturalistic tasks are a very promising area of future research and application” (p. 297). A focus on engagement in meaningful occupation then is ensured in the evaluation of occupational competence. Thus, future studies could compare the CCT with previously mentioned top-down measures such as the Multiple Errands Test (Burgess et al., 2006), or The Kettle Test (Hartman-Maeir,

Harel, & Katz, 2009) which are based in occupational performance tasks. However, while it would be ideal to use standardized top-down tests to measure occupational performance and occupational competence, it is not always possible due to time restraints. And so, in the context of a clinic or hospital, it would be helpful to have brief bottom-up measures of cognitive competence that could predict occupational competence. It would be useful to address whether the CCT is a mix of bottom-up and top-down approaches as it could be viewed as determining basic components of cognitive competence, yet performed in tasks that are embedded in everyday living situations.

Further research could also explore how assessments not performed in the real world, such as in the clinical settings in which occupational therapists work, can be generalized to predict occupational competence in the home. Further standardized methods of assessing cognitive competence in everyday living could be developed in a way that is ecologically valid, ensuring that standardized measures of cognitive competence could be used as valid indicators of occupational competence in dementia.

6.5 Conclusions

The use of cognitive competence as an indicator for occupational competence in persons with dementia requires a broader consideration of dimensions of cognition. There has been a paradigm shift within occupational therapy in which attention has moved from a biomedical model and function to holistic models, and engagement in meaningful occupations, which are increasingly complex. Coster (2008) addresses this tension:

In order for assessment to serve our goal of supporting health and participation through engagement in occupation we must accept the uncertainty and be vigilant about the biases in thinking that are inherent in our measures. We also must examine and challenge some of the assumptions underlying the current use of measures and the conclusions being drawn from this use (p. 743).

It is difficult to resist the apparent legitimacy of using numbers in practice, particularly as increasing calls for evidence-based practice and economic accountability have resulted in increased pressure to simplify very complex decisions, through the objectivity of numbers derived from test scores (Coster, 2008). This tension creates a conundrum as occupational therapists are being asked to evaluate dynamic processes in a static way – as

a snap shot in time. It is a challenge for clinicians to capture the complexity of a construct like occupational competence, which underscores the need for a thorough consideration of the validity of measures used. It is critical to define what we are measuring, how we derive and interpret data from instruments, and how the social nature of the assessment process influences our results.

Because of the steadily increasing size of the aging population, the issue of determining occupational competence among individuals with dementia has immediate and future relevance. Therefore, the ability to use a test such as the CCT to inform judgments and decisions that are based on cognitive competence as a predictor of occupational competence is critical. With this thought in mind, this dissertation has challenged assumptions of the results and interpretation of the CCT. It has provided some initial empirical evidence to support its use in clinical practice, but it has also raised more questions about how to define and measure the construct of cognitive competence. The findings within the Delphi study challenge occupational therapists to incorporate standardized measures of components such as judgment, insight into abilities, and awareness in the assessment of cognitive competence in order to inform decisions regarding the occupational competence of individuals with dementia. The findings of the Delphi study have generated new knowledge regarding occupational competence for people with dementia.

These studies provide practice-based evidence to enhance evidenced -based OT practice and to guide future research and education of students and practitioners. Overall, results support further investigation of the construct validity of the CCT, and also point to the need to consider what other measures need to be incorporated into occupational therapy practice or developed in order to address the full range of components identified in the Delphi. While results pertaining to the CCT provide some initial empirical evidence to support its use in clinical practice, particularly in relation to incremental validity, there is a need for several future investigations to further examine the validity and reliability of the CCT. The results of the Delphi help to inform directions forward in examining the validity of the CCT as a measure of cognitive competence that can be used to inform predictions of occupational competence. However, considering the unitary factor

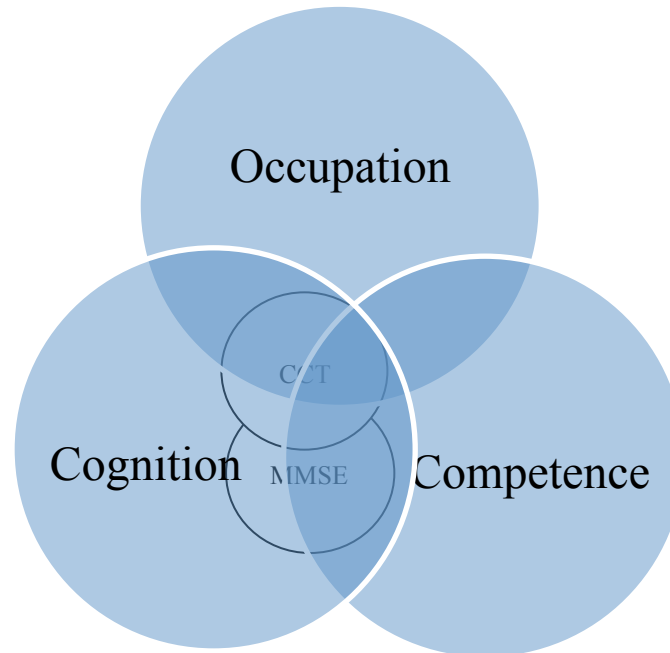
structure of the CCT, it is very unlikely that it addresses all of the components deemed as essential in the consensus statement generated in the Delphi. Thus, while there is evidence to suggest the CCT can be a useful part of an assessment of occupational competence, the findings also suggest that it is likely insufficient to solely use the CCT when measuring cognitive competence as a predictor of occupational competence. It is also simultaneously important to develop and incorporate valid measures of the cognitive components identified in the Delphi to enhance occupational therapy practice and ensure assessments are used in ways that fit with the decisions being made and provide better care for our clients. In this way occupational therapists can successfully address Messick's concerns regarding the ethics inherent in the interpretation and use of measures.

6.6 Personal Reflections

In concert with Messick's (1989a) emphasis on the importance of reflexivity regarding the individual and collective values underlining the construction and use of measurement instruments, I address how my thoughts, as an occupational therapy clinician with extensive experience in dementia care and now a scholarly practitioner committed to evidence-based practice, regarding the assessment of cognitive competence and the potential utility of the CCT that have been altered through engagement within these studies. My quest began as a search for evidence and answers, but along the way I raised more questions than answers gleaned. I learned multiple ways of searching for evidence, both in the literature and within my program of research. Through my journey I have changed the ways that I think about practice and assessment, and I have developed a more critical approach to both. I now see the visual model presented in Chapter 3 with the added contributions made by the MMSE and CCT as presented in Figure 6.1. In this model, the MMSE contributes to cognitive competence, but the contribution of the CCT overlaps with the areas of cognition, and occupation and competence, at the nexus of the Venn diagram. Conceptually and theoretically, this relationship endorses the use of cognitive competence use as an indicator of occupational competence.

Figure 6.1

Visual Model with Contributions of CCT and MMSE



Occupational therapists should use the CCT with caution, and should use the measure specifically for the purpose that it was designed; to assess cognitive competence, and not to use sub-parts separate from the whole test for assessments of constructs such as fitness to drive, until such time that there is empirical evidence for its support. Considering ethics and consequential validity, it is imperative that I now devote my efforts to the translation of the knowledge that I have gained to my peers.

According to the wisdom of my advisory committee members, the true value of work can be found not in what questions are answered, but in what questions are raised. My Ph.D. journey has raised more questions than have been answered. For example, is sex a significant confounder to using cognitive competence as an indicator for occupational competence? What is the relationship between socially constructed gender differences, such as the ability to prepare a meal, and cognitive competence? What are the sources of variability in a kitchen assessment? How is independence considered; for example does

the occupational therapist consider making tea and toast independence or is the preparation of a full meal required?

I now ask myself what would happen if there were better measures of cognitive competence. What are the limitations to these analyses that could inform other ways of looking at this issue? What would the ethical implications be, in relation to Messick's notion of consequential validity? How would more reliable and valid ways to determine cognitive competence enhance decisions made regarding the occupational competence for the individual, their families, and their communities in relation to issues of human rights and social economics?

Thus, ideas regarding potential relations between the components identified in the Delphi study and aspects of cognitive competence captured by the CCT have been proposed, acknowledging the need for further examination of these relationships in future research. The inclusion of the components identified in the Delphi would add incrementally to the consequential validity of the CCT, by ensuring a more thorough representation of these components in the measurement of cognitive competence. This inclusion not only provides evidence on which to base occupational therapy practice, but highlights future needs for development of better measures of cognitive competence and occupational competence. This direction can only enhance the profession of occupational therapy and the contribution of the provision of competent and ethical occupational therapy services to the clients we serve.

References

- Alderman, N., Burgess, P. W., Knight, C., & Henmen, C. (2003). Ecological validity of a simplified version of the multiple errands shopping test *Journal of the International Neuropsychological Society*, 9(1), 31-41.
- Allaire, J., & Marsiske, M. (1999). Everyday cognition: age and intellectual ability correlates. *Psychology and Aging*, 14(4), 627-644.
- Allaire, J., & Willis, S. (2006). Competence in everyday activities as a predictor of cognitive risk and mortality. *Aging, Neuropsychology and Cognition*, 13(2), 207-224.
- Alvarez, J., & Emory, E. (2006). Executive function and the frontal lobes: A meta-analytic review. *Neuropsychology Review*, 16(1), 17-42.
- Alzheimer's Disease International. (2010). World Alzheimer Report 2010: The global international impact of dementia. Retrieved January 30, 2011, from <http://www.alz.co.uk/research/worldreport/>
- Alzheimer Society of Canada. (2009). *Rising tide: The impact of dementia on Canadian society*.
- Aron, A. R. (2008). Progress in executive-function research. *Association for Psychological Science*, 17(2), 124-129.
- Aronson, R., Barr, T., Kyle, T., & O'Keeffe, J. (2002, May). *The use of cognitive assessments in occupational therapy for dementia*. Paper presented at the Ontario Gerontological Association Annual Meeting Toronto.
- Atwal, A., & Caldwell, K. (2003). Profiting from consensus methods in occupational therapy: Using a Delphi study to achieve consensus on multiprofessional discharge planning. *British Journal of Occupational Therapy*, 66(2), 65-70.
- Barberger-Gateau, P., Commenges, D., Gagnon, M., Letenneur, L., Sauvel, C., & Dartigues, J. (1992). Instrumental activities of daily living as a screening tool for cognitive impairment and dementia in elderly community dwellers. *Journal of the American Geriatrics Society*, 40(11), 1129-1134.
- Baum, C., & Katz, N. (2010). Occupational therapy approach to assessing the relationship between cognition and function. In T. Marcotte & I. Grant (Eds.), *Neuropsychology of everyday functioning* (pp. 62-90). New York: The Guilford Press.
- Beck, A., Ward, C., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry*, 4, 561-571.

- Bell-McGuinty, S., Podell, K., Franzen, M., Baird, A., & Williams, M. (2003). Standard measures of executive function in predicting instrumental activities of daily living in older adults. *International Journal of Geriatric Psychiatry, 18*(5), 459-460.
- Benson, J., & Schell, B. (1997). Measurement theory: application to occupational and physical therapy. In J. Van Deusen & D. Brunt (Eds.), *Assessment in occupational therapy and physical therapy* (pp. 3-24). Philadelphia: W. B. Saunders Company.
- Bertrand, R., Willis, S., & Sayer, A. (2001). An evaluation of change over time in everyday cognitive competence among Alzheimer's patients. *Aging, Neuropsychology and Cognition 8*(3), 192-212.
- Blanchford-Fields, F., & Hertzog, C. (1999). Introduction to the special section on cognition in everyday life: Adult developmental aspects. *International Journal of Behavioral Development, 23*(3), 545-552.
- Bonder, B. (2001). Growing old in the United States. In B. Bonder & M. Wagner (Eds.), *Functional performance in older adults*. Philadelphia, P.A.: F.A. Davis Company.
- Bowling, M., Rimer, B., Lyons, E., Colin, C., Frydman, G., & Ribisl, K. (2006). Methodological challenges of e-health research. *Evaluation and Program Planning, 29*, 390-396.
- Brown, T., & Chien, C. (2009). Top-down or bottom-up occupational therapy assessment: which way do we go? *British Journal of Occupational Therapy, 73*(3), 94-95.
- Bullock, R., & Voss, S. (2006). Executive dysfunction in dementia. In K. Rockwood & S. Gauthier (Eds.), *Trial designs and outcomes in dementia therapeutic research* (pp. 259-266). London: Taylor & Francis.
- Burgess, P. W., Alderman, N., Emslie, H., Evans, J., & Wilson, B. A. (1998). The ecological validity of tests of executive function. *Journal of the International Neuropsychological Society, 4*, 547-558.
- Burgess, P. W., Alderman, N., Forbes, C., Costello, A., Coates, L. M.-A., Dawson, D., et al. (2006). The case for the development and use of "ecologically valid" measures of executive function in experimental and clinical neuropsychology. *Journal of the International Neuropsychological Society, 12*(2), 194-209.
- Burton, C., Strauss, E., & Hultsch, D. H., M. (2006). Cognitive functioning and everyday problem solving in older adults. *The Clinical Neuropsychologist, 20*(3), 432-452.
- Cahn-Weiner, D. A., Malloy, P. F., Boyle, P. A., Marran, M., & Salloway, S. (2000). Prediction of functional status from neuropsychological tests on community-dwelling elderly individuals. *The Clinical Neuropsychologist, 14*(2), 187-195.
- Callahan, J. (1992). Aging in place. *Generations, 16*(2), 5-6.

- Canadian Association of Occupational Therapists. (1997). *Enabling occupation: An occupational therapy perspective*. Ottawa: CAOT Publications ACE.
- Canadian Association of Occupational Therapists. (2007-2008). Canadian Association of Occupational Therapists membership statistics. Retrieved from <http://www.caot.ca/pdfs/Stats2007-08.pdf>
- Canadian Association of Occupational Therapists. (2008-2009). Canadian Association of Occupational Therapists membership statistics. Retrieved from <http://www.caot.ca/default.asp?pageid=68>
- Canadian Association of Occupational Therapists. (2009-2010). Canadian Association of Occupational Therapists membership statistics. Retrieved from <http://www.pdfdownload.org/pdf2html/pdf2html.php?url=http%3A%2F%2Fwww%2Ecaot%2Eca%2Fpdfs%2Fmembership%2FFinal%2520Compiled%2520Stats%2D2009%2Epdf&images=no>
- Canadian Institute for Health Information. (2009). Occupational therapists in Canada. *Human Health Resource*. Retrieved from http://www.cihi.ca/CIHI-external/pdf/internet/INFO_09NOV10_PDF_EN
- Canadian Study of Health and Aging Working Group. (1994). Canadian study of health and aging: Study methods and prevalence of dementia. *Canadian Medical Association Journal*, 150(6), 899-913.
- Carstairs, S., & Keon, W. (2009). *Special senate committee on aging final report Canada's aging population: Seizing the opportunity*. Retrieved from http://www.parl.gc.ca/information/about/process/Senate/AnnualRep/0708/chapter_5-e.htm
- Carswell, A., Dulberg, C., Carson, I., & Zgola, J. (1995). The functional performance measure of persons with Alzheimer disease: Reliability and validity. *Canadian Journal of Occupational Therapy*, 62(2), 62-69.
- Channon, S. (2004). Frontal lobe dysfunction and everyday problem-solving: Social and non-social contributions. *Acta Psychologica*, 115, 235-254.
- Chapparo, C., & Ranka, J. (1997). The Occupational Performance Model (Australia): A description of constructs and structure [Electronic Version]. Retrieved from <http://www.occupationalperformance.com/>.
- Christensen, K., & Mateer, C. (2005). Neuropsychological deficits, syndromes, and cognitive competency in schizophrenia. *Cognitive Neuropsychology*, 10(5), 361-378.

- Christiansen, C. (2004). Occupation and identity: Becoming who we are through what we do. In C. Christiansen & E. Townsend (Eds.), *Introduction to occupation: The art and science of living* (pp. 121-139). Upper Saddle River, New Jersey: Pearson Education Inc.
- Christiansen, C., & Townsend, E. (2004). *Introduction to occupational science: The art and science of living*. Upper Saddle River, New Jersey: Prentice Hall.
- Clark, F., Azen, S., Zemke, R., Jackson, J., Carlson, M., & Mandel, D. (1997). Occupational therapy for independent-living older adults: A randomized controlled trial. *Journal of the American Medical Association*, 278(16), 1321-1326.
- Clarke, C. L., & Heyman, B. (1998). Risk management for people with dementia. In B. Heyman (Ed.), *Risk, health and health care: A qualitative approach*. London: Arnold.
- College of Occupational Therapists of Ontario. (1996). *A guide to the Health Care and Consent and Substitute Decision legislation for occupational therapists*.
- Collins Dictionary and Thesaurus. (2002). *Collins dictionary and thesaurus* (2nd ed.). Glasgow: Harper Collins.
- Cook, C., Brismée, J., Fleming, R., & Sizer, P. (2005). Identifiers suggestive of clinical cervical spine instability: A Delphi study of physical therapists. *Physical Therapy*, 85(9), 895-906.
- Cooke, K., Fisher, A., Mayberry, W., & Oakley, F. (2000). Differences in daily living process skills of persons with and without Alzheimer's disease. *American Journal of Occupational Therapy*, 52(7), 87-105.
- Cooney, L. M., Kennedy, G. J., Hawkins, K. A., & Hurme, S. B. (2004). Who can stay at home? Assessing the capacity to choose to live in the community. *Archives of Internal Medicine*, 164(February), 357-360.
- Corcoran, M. (2001). Dementia. In B. Bonder & M. Wagner (Eds.), *Functional performance in older adults* (pp. 287-304). Philadelphia: F.A. Davis Company.
- Cornelius, S., & Caspi, A. (1987). Everyday problem solving in adulthood and old age. *Psychology and Aging*, 2, 144-153.
- Costello, A., & Osborne, J. (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10(7), 1-9.
- Coster, W. (2006). Evaluating the use of assessments in practice and research. In G. Kielhofner (Ed.), *Research in occupational therapy: Methods of inquiry for enhancing practice*. Philadelphia: F.A. Davis Company.

- Coster, W. (2008). Embracing ambiguity: Facing the challenge of measurement. *American Journal of Occupational Therapy*, 62(6), 743-751.
- Couper, M. R. (1984). The Delphi Technique: characteristics and sequence model. *Advances in Nursing Science*, October, 72-77.
- Cripe, L. (1996). The ecological validity of executive function testing. In R. Sbordone & C. Long (Eds.), *Ecological validity of neuropsychological testing* (pp. 171-202). Delray Beach, Florida: GR Press/St. Lucie Press.
- Cronbach, L. (1971). Test validation. In R. Thorndike (Ed.), *Educational measurement*. Washington, DC: American Council on Education.
- Cullum, C., Saine, K., Chan, L., Martin-Cook, K., Gray, K., & Weiner, M. (2001). Performance-based instrument to assess functional capacity in dementia: The Texas Functional Living Scale. *Neuropsychiatry, Neuropsychology and Behavioral Neurology*, 14(2), 103-108.
- Cutchin, M. (2003). The process of mediated aging-in-place: a theoretically and empirically based model. *Social Science and Medicine*, 57, 1077-1090.
- Cutchin, M. (2005). Spaces for inquiry into the role of place for older people's care. *Journal of Clinical Nursing*, 14(8b), 121-129.
- De Lepeleire, J., Aertgeerts, B., Umbach, I., Pattyn, P., Tamsin, F., Nestor, L., et al. (2004). The diagnostic value of IADL evaluation in the detection of dementia in general practice. *Aging Mental Health*, 8(1), 52-57.
- Deane, K., Ellis-Hill, C., Dekker, K., Davies, P., & Clarke, C. (2003). A Delphi survey of best practice in occupational therapy for Parkinson's disease in the United Kingdom. *British Journal of Occupational Therapy* 66(6), 247-254.
- DeForge, R., & Gutmanis, I. (2006). *Cognitive Competency Test: Assessing content validity*. Paper presented at the Ontario Gerontology Association Annual conference, Toronto.
- Denney, N., & Pearce, K. (1989). A developmental study of practical problem solving. *Psychology and Aging*, 4, 438-442.
- Denning, L., Shackleton, T., & McCallum, M. A. (2001). *A pilot study of the relationship between cognitive competency and the performance of instrumental activities of daily living*. Paper presented at the Proceedings of The University of Western Ontario occupational therapy conference on evidence based practice, London, Ontario.

- Diehl, M., Marsiske, M., Horgas, A., Rosenberg, A., Saczynski, J. S., & Willis, S. L. (2005). The Revised Observed Tasks of Daily Living: A performance-based assessment of everyday problem solving. *The Journal of Applied Gerontology, 24*(3), 211-230.
- Diehl, M., Willis, S., & Schaie, K. (1995). Everyday problem solving in older adults: Observational assessment and cognitive correlates. *Psychology and Aging, 10*(3), 478-491.
- Dillman, D. (2007). *Mail and internet surveys: The tailored design method* (2nd ed.). Hoboken, N.J.: John Wiley & Sons.
- DiStefano, C., Zhu, M., & Mîndrilă, D. (2009). Understanding and using factor scores: Considerations for the applied researcher. *Practical Research, Assessment and Evaluation, 14*(20), 1-11.
- Douglas, A., Liu, L., Warren, S., & Hopper, T. (2007). Cognitive assessments for older adults: Which ones are used by Canadian occupational therapists and why. *Canadian Journal of Occupational Therapy, 74*(5), 370-371.
- Dunn, W., Brown, C., & McGuigan, A. (1994). The ecology of human performance: A framework for considering the effect of context. *American Journal of Occupational Therapy, 48*(7), 595-607.
- Farias, S. T., Harrell, E., Neumann, C., & Houtz, A. (2003). The relationship between neuropsychological performance and daily functioning in individuals with Alzheimer's disease: ecological validity of neuropsychological tests *Archives of Clinical Neuropsychology 18*(6), 655-672
- Farias, S. T., Mungas, D., Reed, B. R., Cahn-Weiner, D., Jagust, W., Baynes, K., et al. (2008). The measurement of everyday cognition (ECog): Scale development and psychometric properties *Neuropsychology 22*(4), 531-544.
- Farina, E., Fioravanti, R., Pignatti, R., Alberoni, M., Mantovani, F., Manzoni, G., et al. (2010). Functional living skills assessment: a standardized measure of high-order activities of daily living in patients with dementia. *European Journal of Physical and Rehabilitation Medicine, 46*(1), 73-80.
- Fiske, D. (2002). Cognition and construct validity: Evidence for the nature of cognitive performance in assessment situations. In H. Braun, Jackson, D, Wiley, D (Ed.), *The role of constructs in psychological and educational measurement* (pp. 179-191). Mahwah, New Jersey: Lawrence Erlbaum Associates.
- Folstein, N., & Folstein, S. (1975). Mini-Mental State: A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research, 12*(3), 189-198.

- Gitlin, L. (2003). Conducting research on home environments: Lessons learned and new directions. *The Gerontologist*, 43(5), 628-637.
- Glass, T., Mendes de Leon, C., Marottoli, R., & Berkman, L. (1999). Population based study of social and productive activities as predictors of survival among elderly Americans. *British Journal of Medicine*, 319(7208), 478-483.
- Godefroy, O. (2003). Frontal syndrome and disorders of executive functions. *Journal of Neurology*, 25, 1-6.
- Government of Ontario. (2007 August 28, February 22, 2008). McGuinty government transforming community living to help seniors live independently at home. Retrieved from <http://www.waterloowellingtonhin.on.ca/WorkArea/showcontent.aspx?id=1066>
- Grieve, J. (2000). *Neuropsychology for occupational therapists*. Oxford, U.K.: Blackwell Science Ltd.
- Hammell, K. W. (2004a). Dimensions of meaning in the occupations of daily life. *Canadian Journal of Occupational Therapy*, 71(5), 296-305.
- Hammell, K. W. (2004b). Using qualitative evidence as a basis for evidence-based practice. In K. W. Hammell (Ed.), *Qualitative research in evidence-based rehabilitation* (pp. 129-143). New York: Churchill Livingstone.
- Hartley, A. (1993). *The Cognitive ecology of problem-solving*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Hartman-Maeir, A., Harel, H., & Katz, N. (2009). Kettle Test - a brief measure of cognitive functional performance: Reliability and validity in stroke rehabilitation. *American Journal of Occupational Therapy*, 63(5), 592-599.
- Hartman, M., Fisher, A., & Duran, L. (1999). Assessment of functional ability of people with Alzheimer's disease. *Scandinavian Journal of Occupational Therapy*, 6(3), 111-118.
- Hasson, F., Keeney, S., & McKenna, H. P. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing*(32), 4.
- Hattie, J., & Cooksey, R. W. (1984). Procedures for assessing the validities of tests using the "Known-Groups" method. *Applied Psychological Measurement*, 8.
- Haynes, S. N., & Lench, H. C. (2003). Incremental validity of new clinical assessment measures. *Psychological Assessment*, 15(4), 456-466.
- Hesse, D. (2004). Retrospective studies and chart reviews. *Respiratory Care*, 49(10), 1171-1174.

- Hoening, H., Landerman, L., Shipp, K., Pieper, C., Richardson, M., Pahel, N., et al. (2005). A clinical trial of a rehabilitation expert clinician versus usual care for providing manual wheelchairs. *Journal of the American Geriatrics Society*, *53*, 1712-1720.
- Hsu, C. (2007). The Delphi technique: Making sense of consensus. *Practical Assessment, Research & Evaluation*, *12*(10), 1-7.
- Hulley, S. B., Cummings, S. R., Browner, W. S., Grady, D., Hearst, N., & Newman, T. B. (2007). *Designing clinical research* (3rd ed.). Philadelphia, PA: Lippincott, Williams & Wilkins.
- Inman, M., & Kulis, I. (1993, August 1993). *Concurrent validity and clinical utility of the Cognitive Competency Test*. Paper presented at the American Psychological Association Convention, Toronto.
- Iverson, G. L. (1998). Interpretation of Mini-Mental State Examination scores in community-dwelling elderly and geriatric neuropsychology patients. *International Journal of Geriatric Psychiatry*, *13*, 661-666.
- Iwarrson, S., Horstmann, V., & Slaug, B. (2007). Housing matters in very old age-yet differently due to ADL dependence level differences. *Scandinavian Journal of Occupational Therapy*, *14*(1), 3-15.
- Iwarrson, S., Wahl, H., Nygren, C., Oswald, F., Sixsmith, A., Sixsmith, J., et al. (2007). Importance of the home environment for healthy aging: Conceptual and methodological background of the European ENABLE-AGE project. *The Gerontologist*, *47*(1), 79-84.
- Jaeger, J., Berns, S., & Davis-Conway, S. (2006). Neurocognitive deficits and disability in major depressive disorder. *Psychiatry Research*, *145*(1), 39-48.
- Jenkins, D., & Smith, T. (1994). Applying Delphi methodology in family therapy research. *Contemporary Family Therapy*, *16*(5), 411-430.
- Jones, J., & Hunter, D. (2000). Consensus methods for medical and health services research. In C. Pope & N. Mays (Eds.), *Qualitative Research in Health Care* (pp. 40-49). London: BMJ books.
- Juva, K., Makela, M., Erkinjuntti, T., & Sulkava, R. (1997). Functional assessment scales in detecting dementia. *Age and Aging*, *26*(5), 392-201.
- Kane, R. A., & Levin, C. A. (1998). Who's safe? Who's sorry? The duty to protect the safety of clients on home- and community-based care. *Generations*, *22*(3), 76-81.
- Kelly, P. A., O'Malley, K. J., Kallen, M. A., & Ford, M., E. (2005). Integrating validity theory with use of measurement instruments in clinical settings. *Health Research and Educational Trust*, *40*(5), 1605-1619.

- Kelsey, J. L., Thompson, W. D., & Evans, A. S. (1986). *Methods in observational epidemiology*. New York: Oxford University Press.
- Kielhofner, G. (2002). *A model of human occupation: theory and application* (3rd ed.). Baltimore, MD: Lippincott, Williams & Wilkins.
- Kielhofner, G. (2004). *Conceptual foundations of occupational therapy* (3rd ed.). Philadelphia, PA: F.A. Davis Co.
- Kielhofner, G. (2006). *Research in occupational therapy: methods of inquiry for enhancing practice*. Philadelphia: F.A. Davis Company.
- Kim, J., & Mueller, C. (1978). *Introduction to factor analysis: What it is and how to do it*. Newbury Park, California: Sage Publications Inc.
- Kline, P. (1986). *A handbook on test construction: introduction to psychometric design*. London; New York: Methuen.
- Kline, P. (2000). *Test Construction: factor analytic and item analysis methods* (2nd ed.). London; New York: Routledge.
- Klosses, D. N., & Alexopoulos, G. S. (2005). IADL functions, cognitive deficits, and severity of depression: a preliminary study. *American Journal of Geriatric Psychiatry, 13*(3), 244-249.
- Kurz, X., Scuvee-Moreau, J., Rive, B., & Dresse, A. (2003). A new approach to the qualitative evaluation of functional disability in dementia. *International Journal of Geriatric Psychiatry, 18*, 1050-1055.
- Kuther, T. L. (1999). Competency to provide informed consent in older adulthood. *Gerontology and Geriatrics Education, 20*(1), 15-30.
- Laks, J., Batista, E. M. R., Guiherme, E. R. L., Contino, A. L. B., Faria, M. E. V., Rodrigues, C. S., et al. (2005). Prevalence of cognitive and functional impairment in community-dwelling elderly: Importance of evaluating activities of daily living. *Arquivos Neuro-Psiquiatria, 63*(2a).
- Law, M. (1987). Measurement in occupational therapy: Scientific criteria for evaluation. *Canadian Journal of Occupational Therapy, 54*(3), 133-138.
- Law, M., & Baum, C. (1998). Evidence-based occupational therapy. *Canadian Journal of Occupational Therapy, 65*(3), 131-135.
- Law, M., Baum, C., & Dunn, W. (2005). *Measuring occupational therapy performance: Supporting best practice*. Thorofare, New Jersey: Slack.

- Law, M., Cooper, B., Strong, S., Stewart, D., Rigby, P., & Letts, L. (1996). The Person-Environment-Occupational model: A transactive approach to occupational performance. *Canadian Journal of Occupational Therapy, 63*(1), 9-23.
- Lawton, M., & Brody, E. (1969). Assessment of older people: Self-maintaining and instrumental activities of daily living. *Gerontologist, 9*, 179-186.
- Lehmann, S. W., Black, B. S., Shore, A., Kasper, J., & Rabins, P. V. (2010). Living alone with dementia: Lack of awareness adds to functional and cognitive vulnerabilities. *International Psychogeriatrics, 22*(5), 778-784.
- Linn, B., Linn, M., & Gurel, L. (1968). Cumulative Illness Rating Scale. *Journal of the American Geriatrics Society, 16*(5), 622-626.
- Linstone, H. A., & Turoff, M. (1975). *The Delphi method: Techniques and applications*. Reading, Mass.: Addison-Wesley.
- Malloy, P. F., & McLaughlin, N. C. (2010). Everyday functioning in dementia and mild cognitive impairment. In T. Marcotte & I. Grant (Eds.), *Neuropsychology of everyday functioning* (pp. 264-279). New York: The Guilford Press.
- Manchester, D., Priestley, N., & Jackson, H. (2004). The assessment of executive functions: Coming out of the office. *Brain Injury, 18*(11), 1067-1081.
- Manthorpe, J. (2003). *Community mental health nursing and dementia care: Practice perspectives*. Maidenhead, England: Philadelphia Open University.
- Marcotte, T., Scott, J., Kamat, R., & Heaton, R. (2010). Neuropsychology and the prediction of everyday functioning. In T. Marcotte & I. Grant (Eds.), *Neuropsychology of everyday functioning* (pp. 5-38). London: The Guilford Press.
- Marshall, Z., & Luffingham, N. (1998). Specialist nursing: Does the specialist nurse enhance or deskill the general nurse? *British Journal of Nursing, 7*(11), 658-662.
- Marsiske, M., & Willis, S. (1995). Dimensionality of everyday problem solving in older adults. *Psychology and Aging, 10*(2), 269-283.
- Mathuranath, P. S., George, A., Cherian, P. J., Mathew, R., & Sarma, P. S. (2005). Instrumental activities of daily living scale for dementia screening in elderly people. *International Psychogeriatrics, 17*(3), 461-474.
- Mehta, K. M., Yaffe, K., & Kovinsky, K. (2002). Cognitive impairment, depressive symptoms, and functional decline in older people. *Journal of the American Geriatrics Society, 50*(6), 1045-1050.
- Messick, S. (1960). Dimensions of social desirability. *Journal of Consulting Psychology, 24*(4), 279-287.

- Messick, S. (1975). The standard problem: Meaning and values in measurement and evaluation. *American Psychologist*, 30, 955-966.
- Messick, S. (1989a). Meaning and values in test validation: The science and ethics of assessment. *Educational Researcher*, 18(2), 5-11.
- Messick, S. (1989b). Validity. In R. L. Linn (Ed.), *Educational measurement (3rd ed.)* (pp. 13-103). New York: MacMillan.
- Messick, S. (1998). Test validity: A matter of consequence. *Social Indicators Research*, 45, 35-44.
- Michell, J. (1986). Measurement scales and statistics: A clash of paradigms. *Psychological Bulletin*, 100(3), 398-407.
- Michell, J. (2001). Measurement theory: History and philosophy. *International encyclopedia of the social & behavioural sciences*, 9451-9454.
- Michell, J. (2007). Measurement. In S. Turner & M. Risjord (Eds.), *Philosophy of anthropology and sociology* (1 ed., pp. 71-120). Amsterdam: Elsevier.
- Miller Polgar, J. (2009). Critiquing assessments. In E. Blesedell Crepeau, E. S. Cohn & B. A. Boty Schell (Eds.), *Willard and Spackman's Occupational Therapy* (pp. 519-536). Philadelphia: Lippencott Williams & Wilkins.
- Molineux, M. (2004). Occupation in occupational therapy: A labour in vain? In M. Molineux (Ed.), *Occupation for occupational therapists* (pp. 1-14). Oxford: Blackwell Publishing.
- Molloy, D. W., & Clarnette, R. (1999). *Standardized Mini Mental State Examination*. Troy, Ontario: New Grange Press.
- Molloy, D. W., Darzins, P., & Strang, D. (1999). *Capacity to decide*. Troy, Ontario: New Grange Press (Canada).
- Moore, D. J., Moseley, S., & Atkinson, J. H. (2010). The influence of depression on cognition and daily functioning. In T. Marcotte & I. Grant (Eds.), *Neuropsychology and everyday functioning* (pp. 419-440). New York: The Guilford Press.
- Nieuwenhuis-Mark, R. (2010). The death knoll for the MMSE: Has it outlived its purpose? *Journal of Geriatric Psychiatry and Neurology*, 23(3), 151-157.
- Nunally, J., & Bernstein, I. (1994). *Psychometric theory (3rd ed.)*. New York: McGraw-Hill.

- Ontario Society of Occupational Therapists. (2006-2007). Ontario Society of Occupational Therapists membership profile. Retrieved from <http://www.osot.on.ca/eng/membersOnly/practiceResources/PDFs/membershipProfile.pdf>
- Oswald, F., Wahl, H., Schilling, O., Nygren, C., Fange, A., Sixsmith, A., et al. (2007). Relationships between housing and healthy aging in very old age. *The Gerontologist*, 47(1), 96-107.
- Parmalee, P., Thuras, P., Katz, I., & Lawton, M. P. (1995). Validation of the Cumulative Illness Rating Scale in a geriatric residential population. *Journal of the American Geriatrics Society*, 43(2), 130-137.
- Patrick, L., Perugini, M., & Leclerc, C. (2002). Neurological assessment and competency for independent living among geriatric patients. *Topics in Geriatric Rehabilitation*, 17(4), 65-77.
- Polatajko, H. (1992). Naming and framing occupational therapy: A lecture dedicated to the life of Nancy B. *Canadian Journal of Occupational Therapy*, 59(4), 189-199.
- Polatajko, H., Davis, J., Cantin, N., Dubouloz-Wilner, C., & Trenthan, B. (2007). Occupation-based practice: The essential elements. In E. Townsend & H. J. Polatajko (Eds.), *Enabling Occupation II: Advancing an occupational therapy vision for health, well-being and justice through occupation* (pp. 203-227). Ottawa: Canadian Association of Occupational Therapists.
- Polatajko, H., Townsend, E., & Craik, J. (2007). Canadian Model of Occupational Performance and Engagement. In E. Townsend & H. Polatajko (Eds.), *Enabling Occupation II* (pp. 23). Ottawa: CAOT Publications ACE.
- Poon, L., Welke, D., & Dudley, W. (1993). What is everyday cognition. In J. Puckett & H. Reese (Eds.), *Mechanisms of everyday cognition* (pp. 19-32). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Regional Geriatric Programs of Ontario. (2005). Assessment tools used by RGP's of Ontario Staff April 2005. Retrieved from <http://www.pdfdownload.org/pdf2html/pdf2html.php?url=http%3A%2F%2Frgps%2Eon%2Eca%2Fsystem%2Ffiles%2FTools%5Fin%5Fuse%2Epdf&images=no>
- Richardson, E., Nadler, J., & Malloy, P. F. (1995). Neuropsychological prediction of performance measures of daily living skills in geriatric patients. *Neuropsychology*, 9(4), 565-572.
- Richter, P., Werner, J., Heerlein, A., Kraus, A., & H., S. (1998). On the validity of the Beck Depression Inventory: A review. *Psychopathology*, 31(3), 160-168.
- Rossi, G. (2007). Measurability. *Measurement*, 40, 545-562.

- Rowles, G. (1993). Evolving images of place in aging and 'aging in place'. *Generations*, 17, 65-70.
- Rowles, G. (2008). Place in occupational science: A life course perspective on the role of environmental context in the quest for meaning. *Journal of Occupational Science*, 15(3), 127-135.
- Royall, D. R. (2000). Executive cognitive impairment: A novel perspective on dementia. *Neuroepidemiology*, 19(6), 293-299.
- Rutman, D., & Silberfeld, M. (1992). A preliminary report on the discrepancy between clinical and test evaluations of competence. *Canadian Journal of Psychiatry*, 37(9), 634-639.
- Sackett, D., Rosenberg, W., Gray, J., Haynes, R., & Richardson, D. (1996). Evidence based medicine: What it is and what it isn't. *British Medical Journal*, 312, 71-72.
- Salthouse, T. (2005). Relations between cognitive abilities and measures of executive function. *Neuropsychology*, 19(4), 532-545.
- Sbordone, R. (1996). Ecological validity: Some critical issues for the neuropsychologist. In R. Sbordone & C. Long (Eds.), *Ecological validity of neuropsychological testing* (pp. 15-42). Delray Beach, Florida: GR Press/St. Lucie Press.
- Schwamm, L. H., Van Dyke, C., Kiernan, R. J., Merrin, E., & Mueller, J. (1987). The Neurobehavioural Cognitive Status Examination: Comparison with the Cognitive Capacity Screening Examination and the Mini-Mental State Exam in a neurosurgical population. *Annals of Internal Medicine*, 107(4), 486-491.
- Schwammle, D. (1996). Occupational competence explored. *Canadian Journal of Occupational Therapy*, 63(5), 323-330.
- Schwartz, M. F. (2006). The cognitive neuropsychology of everyday action and planning. *Cognitive Neuropsychology*, 23(1), 202-221.
- Sechrest, L. (1963). Incremental validity: A recommendation. *Educational and Psychological Measurement*, 23(1), 153.
- Sechrest, L. (2005). Validity of measures is no simple matter. *Health Research and Educational Trust*, 40(5), 1584-1604.
- Shulman, K., & Feinstein, A. (2004). Mini Mental State Examination. In *Cognitive screening for clinicians*. London: Taylor & Francis.
- Siebert, C. (2007). Aging in place and occupational therapy. *Gerontology Special Interest Section Quarterly/American Occupational Therapy Association*, 30(4), 2-3.

- Silberfeld, M., & Fish, A. (1994). *When the mind fails: A guide to dealing with incompetency*. Toronto: University of Toronto Press.
- Streiner, D. L., & Norman, G. R. (2003). *Health measurement scales: A practical guide to their development and use* (Third Edition ed.). New York: Oxford University Press.
- Stuss, D. T. (2006). Frontal lobes and attention: Processes and networks, fractionation and integration. *Journal of the International Neuropsychological Society*, 12, 261-271.
- Stuss, D. T. (2007). New Approaches to Prefrontal Lobe Testing. In B. Miller & J. Cummings (Eds.), *The human frontal lobes: Functions and disorders* (2nd ed., pp. 292-305). New York: Guilford Press.
- Stuss, D. T., & Alexander, M. P. (2000). Executive functions and the frontal lobes: A conceptual view. *Psychological Research* 63, 289-298.
- Stuss, D. T., & Alexander, M. P. (2007). Is there a dysexecutive syndrome? *Philosophical Transactions of the Royal Society B Biological Sciences*, 362, 901-915.
- Stuss, D. T., Alexander, M. P., Floden, D., Binns, M. A., Levine, B., McIntosh, A. R., et al. (2002). Fractionation and localization of distinct frontal lobe processes: Evidence from focal lesions in humans. In D. T. Stuss & R. T. Knight (Eds.), *Principles of frontal lobe function* (pp. 392-407). New York: Oxford University Press.
- Stuss, D. T., & Benson, D. F. (1986). *The frontal lobes*. New York: Raven Press.
- Stuss, D. T., & Levine, B. (2002). Adult clinical neuropsychology: Lessons from studies of frontal lobes. *Annual Review of Clinical Psychology*, 53, 401-433.
- Sumsion, T. (1998). The Delphi technique: An adaptive research tool. *British Journal of Occupational Therapy*, 61(4), 153-156.
- Sumsion, T. (2002). *Defining client-centred occupational therapy practice*. Brunel University, Uxbridge, UK.
- Tabachnick, B., & Fidell, L. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education, Inc.
- Thom, K. M., & Blair, S. E. E. (1998). Risk in dementia-assessment and management: A literature review. *British Journal of Occupational Therapy*, 61(10), 441-447.
- Thornton, T. (2006). Tacit knowledge as the unifying factor in evidence based medicine and clinical judgment. *Philosophy, Ethics, and Humanities in Medicine*, 1(2).

- Thornton, W. L., Deria, S., Gelb, S., Shapiro, R. J., & Hill, A. (2007). Neuropsychological mediators of the links among age, chronic illness, and everyday problem solving. *Psychology and Aging* 22(3), 470-481
- Tierney, M., Charles, J., Naglie, G., Jaglal, S., Kiss, A., & Fisher, R. (2004). Risk factors for harm in cognitively impaired seniors who live alone: A prospective study. *Journal of the American Geriatrics Society*, 52, 1435-1441.
- Tierney, M., Snow, W., Charles, J., Moineddin, R., & Kiss, A. (2007). Neuropsychological predictors of self-neglect in cognitively impaired older people who live alone. *American Journal of Geriatric Psychiatry*, 15(2), 140-148.
- Townsend, E., & Polatajko, H. J. (2007). *Enabling Occupation II: Advancing an occupational therapy vision for health, well-being & justice through occupation*. Ottawa: CAOT Publications ACE.
- Townsend, E., Stanton, S., Law, M., Polatajko, H., Baptiste, S., Thompson-Franson, T., et al. (2002). *Enabling occupation, An occupational therapy perspective Revised edition*. Ottawa: CAOT Publications ACE.
- Van Selm, M., & Jankowski, N. (2006). Conducting online surveys. *Quality & Quantity*, 40, 435-456.
- Velicer, W. F., Eaton, C., & Fava, J. L. (2000). Construct explication through factor or component analysis: A review and evaluation of alternative procedures for determining the number of factors or components. In R. D. G. E. Helme (Ed.), *Problems and solutions in human assessment: Honoring Douglas N. Jackson at seventy* (pp. 41-71). Boston: Kluwer Academic Publishers.
- Velicer, W. F., & Fava, J. L. (1998). Effects of variable and subject sampling on factor pattern recovery. *Psychological Methods*, 3(2), 231-251.
- Wahl, J. (1996). A practical guide to mental health, capacity, and consent law of Ontario In H. Bloom & M. Bay (Eds.), *Thomson Canada Limited: Carswell Professional Publishing*.
- Wang, P. (1990). Assessment of cognitive competence. In D. Tupper & K. Cicerone (Eds.), *The neuropsychology of everyday life: Assessment and basic competencies*. Norwell, MA: Kluwer Academic Publishers.
- Wang, P., & Ennis, K. (1986). Competency assessment in clinical populations: An introduction to the Cognitive Competency Test. In B. Uzzell & Y. Gross (Eds.), *Clinical neuropsychology of intervention*. Boston: Martinus Nijhoff.
- Wang, P., Ennis, K., & Copland, S. (1987). *Cognitive Competency Test Manual*: Mount Sinai Hospital, Toronto, Ontario.

- Wasylenki, D. A. (1989). Depression. In D. A. Wasylenki, B. A. Martin, D. M. Clark, E. A. Lennox, L. A. Perry & M. K. Harrison (Eds.), *Psychogeriatrics: A practical handbook* (pp. 41-58). London: Jessica Kingsley Publishers.
- Watkins, M. W. (2000). MacParallel analysis [Computer software]. Retrieved from <http://www.public.asu.edu/~mwwatkin/Watkins3.html>
- Weinstock-Zlotnick, G., & Hinojosa, J. (2004). Bottom-up or top-down evaluation: Is one better than the other? *American Journal of Occupational Therapy*, 58(5), 594-599.
- Whiteford, G., Townsend, E., & Hocking, C. (2000). Reflections on a renaissance of occupation. *Canadian Journal of Occupational Therapy*, 67(1), 61-69.
- Wilcock, A. (1993). A theory of the human need for occupation. *Occupational Science: Australia*, 1(1), 17-24.
- Wilcock, A. (2003). Occupational science: The study of humans as occupational beings. In P. Kramer, J. Hinojosa & C. Royeen (Eds.), *Perspectives on human occupation: participation in life*. Philadelphia: Lippincott Williams & Wilkins.
- Wilkins, S., Law, M., & Letts, L. (2001). Assessment of functional performance. In B. Bonder & M. Wagner (Eds.), *Functional performance in older adults* (2nd ed., Vol. F.A. Davis Company, pp. 236-255). Philadelphia.
- Williams, J., Drinka, T., Greenberg, J., Farrell-Holtan, J., Euhardy, R., & Schram, M. (1991). Development and testing of the Assessment of Living skills and Resources (ALSAR) in elderly community-dwelling veterans. *The Gerontologist*, 31(1), 84-91.
- Willis, S. (1996). Everyday cognitive competence in elderly persons: Conceptual issues and empirical findings. *The Gerontologist*, 36(5), 595-601.
- Willis, S., Allen-Burge, R., Dolan, M., Bertrand, R., Yesavage, J., & Taylor, J. (1998). Everyday problem solving among individuals with Alzheimer's disease. *The Gerontologist*, 38(5), 569-577.
- Winograd, E. (1993). Memory in the laboratory and everyday memory: The case for both. In J. Puckett & H. Reese (Eds.), *Mechanisms of everyday cognition* (Vol. 55-70). Hillsdale, New Jersey: Lawrence Erlbaum Associates
- World Health Organization. (2008). Ageing. Retrieved from <http://www.who.int/topics/ageing/en/>
- Yerxa, E., Clark, F., Frank, G., Jackson, J., Parham, D., Pierce, D., et al. (1990). An introduction to occupational science: A foundation for occupational therapy in the 21st century. *Occupational Therapy in Health Care*, 6(4), 1-17.

- Yousef, M. I. (2007). Using experts' opinions through Delphi. *Practical Assessment, Research & Evaluation, 12*(4), 1-7.
- Zanetti, O., Frisoni, G., Rozzini, L., Bianchetti, A., & Trabucchi, M. (1998). Validity of direct assessment of functional status as a tool for measuring Alzheimer's disease severity. *Age and Aging, 27*(5), 615-622.
- Zumbo, B. (1998). Opening remarks to the special issue on validity theory and the methods used in validation: perspectives from the social and behavioral sciences. *Social Indicators Research, 45*, 1-3.
- Zwick, W. L., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin, 99*, 432-442.

Appendix A: CCT Score Sheet
(Reproduced with the permission of the author)

THE COGNITIVE COMPETENCY TEST ©

Name:		Date of Test:	Diagnosis:
Date of Birth:	Age/Sex:	Onset:	
Source of Referral:		Education:	Occupation:
Present Living Arrangements:		Diagnostic Information:	

Competency Profile	PERSONAL INFORMATION	CARD ARRANGEMENT	PICTURE INTERPRETATION	MEMORY IMMEDIATE	MEMORY DELAY	PRACTICAL READING SKILLS	MANAGEMENT OF FINANCES	VERBAL REASONING	ROUTES: List	Locate	Orientation	Pathfinding
	I	II	III	IVa	IVb	V	VI	VII	VIIIi	ii	iii	iv
	INF	CA	PI	MIM	MDE	PRS	FIN	VR	R:L	R:LO	R:O	R:P
	Raw Score											
(Max.)	10	10	10	5	5	10	10	20	5	10	15	5
(%)												

Average Total Score (ATS)

Summary:	
CCT Classification	

I. PERSONAL INFORMATION:

LAST	W 0	STREET	W 0
	S 1		S 1
FIRST	W 0	CITY	W 0
	S 1		S 1
MONTH and DAY	W 0	TELEPHONE	W 0
	S 1		S 1
YEAR	W 0	INITIALS	W 0
	S 1		S 1
COUNTRY	W 0	MONTH and YEAR	W 0
	S 1		S 1

II. CARD ARRANGEMENT:

	0	1	2	2,1,0
1. PIE			BAKE	INF
2. MEAL		HOPS	SHOP	max 10
3. PHONE			DIAL	
4. SWEEP			SEPT.	C.A.
5. LAUNDRY			WASH	max 10

VII. VERBAL REASONING

2,1,0

131

1. SMOKING (personal danger) <input type="checkbox"/>	6. NEIGHBOUR (alert; notify) <input type="checkbox"/>
2. SNOWSTORM (warmth) <input type="checkbox"/>	7. OPEN DOOR (avoid; notify) <input type="checkbox"/>
3. GAS (personal safety; responsible action) <input type="checkbox"/>	8. APPOINTMENT (before 11:00) <input type="checkbox"/>
4. FOOD (smell, look, taste, texture) <input type="checkbox"/>	9. SLIPPERY (alternative strategy) <input type="checkbox"/>
5. CUT (cleanse; protect) <input type="checkbox"/>	10. BAD DAY (refrigerator-bulb-cup) <input type="checkbox"/>

V.R.

VIII. ROUTES:

i. LIST (RL1) R:L		ii. LOCATE (RL2) R:LO	
max 5 <input type="text"/>	O,1/2	max 10 <input type="text"/>	O,1
<input type="checkbox"/>	<input type="checkbox"/>	1. SHOPS <input type="checkbox"/>	6. PARK <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	2. HOUSE (2nd) <input type="checkbox"/>	7. CHURCH <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	3. RESTAURANT <input type="checkbox"/>	8. HOSPITAL <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	4. BANK <input type="checkbox"/>	9. RAILWAY <input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	5. BUS <input type="checkbox"/>	10. HOUSE (own) <input type="checkbox"/>

iii. ORIENTATION	RL3	RL4	RL5	RL6	RL7	R:O
	HOUSE TO BANK	MACS TO HOUSE	HOUSE TO HOSP.	MACS TO PARK	PARK TO HOUSE	
REHEARSE FIRST/SECOND	I II	I II	I II	I II	I II	max 5
IMM. RECALL PASS/FAIL	(P) 1 (F) 0	(P) 1 (F) 0	(P) 1 (F) 0	(P) 1 (F) 0	(P) 1 (F) 0	
DIGIT SPAN	542 378 961	821 594 673	481 326 759	958 627 143	281 764 539	
DELAY RECALL PASS/FAIL	(P) 2 (F) 0	(P) 2 (F) 0	(P) 2 (F) 0	(P) 2 (F) 0	(P) 2 (F) 0	max 10
scoring notes:						

iv. PATHFINDING ...	RL8	RL9	RL10	RL11	RL12	R:P
	DIRECT (0, 1)					
ALTER. (0, 1/2)						max. 5.

PERSONAL INFORMATION

1. NAME

Grid for name entry

(LAST NAME)

(FIRST NAME)

2. DATE OF BIRTH

Grid for date of birth entry

(YR.)

(MO.)

(DAY)

3. BIRTHPLACE

Grid for birthplace entry

(COUNTRY)

4. HOME ADDRESS

Grid for home address entry

(NUMBER)

(STREET)

(APT.)

Grid for home address entry (continued)

(CITY/TOWN)

(PROV.)

5. TELEPHONE

Grid for telephone entry

SIGNATURE

DATE

P. Smith
234 TEMPER RD.
TORONTO, ONTARIO
3T4 Z8K

030

19

PAY TO THE
ORDER OF

\$

DOLLARS

100

BANK OF TORONTO
SPRINGFIELD & KOLB
TORONTO, ONTARIO

:0531..001.10..395..97:

Appendix B: Delphi Study Ethics Certificate



Office of Research Ethics

The University of Western Ontario
Room 4180 Support Services Building, London, ON, Canada N6A 5C1

Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. D. Laliberte Rudman

Review Number: 15943E

Revision Number: 1

Review Date: April 27, 2009

Review Level: Expedited

Protocol Title: Determining consensus of Canadian occupational therapists on the cognitive components essential to predict occupational competence in people with dementia

Department and Institution: Occupational Therapy, University of Western Ontario

Sponsor: CIHR-CANADIAN INSTITUTE OF HEALTH RESEARCH

Ethics Approval Date: April 27, 2009

Expiry Date: June 30, 2010

Documents Reviewed and Approved: Revised Recruitment

Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced revision(s) or amendment(s) on the approval date noted above. The membership of this REB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the HSREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the HSREB:

- a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) all adverse and unexpected experiences or events that are both serious and unexpected;
- c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

Chair of HSREB: Dr. Joseph Gilbert

Ethics Officer to Contact for Further Information			
<input type="checkbox"/> Janice Sutherland	<input type="checkbox"/> Elizabeth Wambolt	<input type="checkbox"/> Grace Kelly	<input checked="" type="checkbox"/> Denise Grafton

This is an official document. Please retain the original in your files.

cc: ORE File

Appendix C: Delphi Study Letter of Information - English

Letter of Information

Study Title: Determining consensus of Canadian occupational therapists on the cognitive components essential to predict occupational competence in people with dementia.

Study Investigators from The University of Western Ontario:

Briana Zur, BScOT, OT Reg (Ont)

Dr. Debbie Laliberte Rudman, PhD, OT Reg (Ont)

You are invited:

If you are an occupational therapist practicing in Canada who has worked with people with dementia for at least two years within the past ten years you are invited to take part in a research study that aims to develop a consensus of opinions regarding the essential cognitive components needed to predict occupational competence in people with dementia. Occupational therapists are frequently asked to predict the capacity of a person with dementia to competently complete the range of everyday activities necessary for safe and independent living, often referred to as occupational competence. A secondary question addresses opinions on current methods to assess these essential components.

This invitation is being sent to occupational therapists across Canada. Developing a consensus opinion through this survey has the potential to enhance evidence-based practice in dementia care.

What are you being asked to do?

This study is part of my PhD thesis and involves participation in a Delphi survey, which will require your commitment to complete three successive web-based surveys. Each survey should take no more than 20-30 minutes of your time. If you agree to participate please contact me by email, and then you will be sent a link to a unique survey in SurveyMonkey. Your response will be anonymous in SurveyMonkey. If you wish to participate in the study but do not wish to use SurveyMonkey, please contact me to discuss alternative ways to complete the surveys. The surveys will be sent directly to you via

email or can be printed, sent, and returned by mail. Reminders to complete the surveys and links to subsequent surveys will be sent to your email address.

What will the study entail?

The first survey will consist of open-ended questions designed to elicit your opinions on the essential cognitive components needed to predict occupational competence in people with dementia and the methods to assess these components. You will also be asked to provide some demographic information such as where you received your training, how many years you have worked with people with dementia, and what setting you work in.

The second survey will consist of a compilation of the opinions provided by all participants. You will be asked your opinion on the importance of the components of cognitive competence that are essential to predict occupational competence in persons with dementia. You will also be asked if current methods used to assess cognitive competence are useful to predict occupational competence.

In the third survey you will be asked to indicate your level of agreement with those components and current methods used that achieved at least 60% agreement among participants.

Each person who participates in a round will be entered into a random draw for a \$50 cash prize, and there will be a grand prize of \$250 randomly drawn from the participants who completed all three rounds. The researcher will notify the winners by email.

Risks or Benefits:

You are under no obligation to complete these surveys. Your participation is voluntary and you can withdraw at any time. Confidentiality will be maintained at all stages of the research. Your consent to participate will be explicit when you complete the surveys.

There are no known risks associated with this study. You will not directly benefit from this study; however you may benefit from the opportunity to exchange knowledge with other occupational therapists that have expertise in working with people with dementia,

and you will have the opportunity to contribute to evidence on which to base practice.

What will happen to the survey data?

As indicated on their website, SurveyMonkey uses multiple layers of security to make sure the account and the data remains private and secure. They have the latest in firewall and intrusion prevention technology and the data will be collected in a totally encrypted environment using SSL, or Secure Sockets Layer.

Data downloaded from SurveyMonkey will be protected by password that will be accessible to the research team only. Only de-identified data will be used for the data analysis processes. Your email address will not be linked with your responses in SurveyMonkey.

Hard copy records of de-identified data will be kept in locked filing cabinets and will be destroyed after ten years. The master list linking identifiers with email addresses will be kept in a separate locked filing cabinet. Electronic databases will be kept for ten years and then deleted.

Survey results, which have no personal identifying information, will be included in a database that can be used for future research purposes. It is anticipated that the results of this study will be published and presented. In all dissemination activities, data will be presented in aggregate form only. You may receive a report on the final results if you wish by contacting me.

What if I have questions?

If you have any questions about this study or require any additional information please contact Briana Zur.

If you have any questions about the conduct of this study or your rights as a research participant you may contact the Office of Research Ethics at The University of Western Ontario.

By completing the surveys, you are giving your consent to participate in this study. Just [click here](#) and I will send you your unique anonymous link to the first survey.

Appendix D: Delphi Study Letter of Information – French

Lettre d'Information

Titre de l'étude : Détermination d'un consensus parmi les ergothérapeutes canadiens concernant les composantes cognitives essentielles pour prédire la compétence occupationnelle des personnes atteintes de démence.

Les investigatrices de l'étude à l'Université de Western Ontario :

Briana Zur, BScOT, OT Reg (Ont)

Dr. Debbie Laliberte Rudman, Ph.D., OT Reg (Ont)

Vous êtes invités:

Si vous êtes un ergothérapeute pratiquant au Canada qui a travaillé avec des personnes atteintes de démence pendant au moins deux ans au cours des dix dernières années, vous êtes invités à prendre part à une étude qui vise à développer un consensus d'opinions sur les composantes cognitives essentielles nécessaires pour prédire la performance occupationnelle des personnes atteintes de démence. Les ergothérapeutes se font fréquemment demander de prédire la capacité d'une personne atteinte de démence à accomplir avec compétence la gamme des activités quotidiennes nécessaires pour assurer sa sécurité et son autonomie, souvent appelée la compétence occupationnelle. Il est important de comprendre quelles composantes cognitives sont impliquées et contribuent à la compétence occupationnelle. Une question secondaire concerne les opinions quant aux méthodes actuelles d'évaluation de ces composantes essentielles.

Cette invitation est envoyée à tous les ergothérapeutes à travers le Canada. Le développement d'un consensus par le biais de cette étude a le potentiel d'améliorer les pratiques fondées sur les évidences scientifiques relativement aux soins de la démence.

Que devez-vous faire?

L'étude s'inscrit dans le cadre de ma thèse de doctorat et implique la participation à une enquête Delphi, qui nécessitera votre engagement à remplir trois questionnaires sur le Web. Chaque questionnaire devrait vous prendre 20-30 minutes à remplir. Si vous acceptez de participer, veuillez me contacter par courrier électronique, puis le lien vers un

questionnaire dans SurveyMonkey vous sera envoyé. Vos réponses dans SurveyMonkey resteront anonymes. Si vous désirez participer à l'étude, mais ne souhaitez pas utiliser SurveyMonkey, veuillez me contacter moi pour discuter des alternatives possibles pour compléter les questionnaires. Les questionnaires vous seront envoyés directement par courrier électronique ou peuvent être imprimés, envoyés et retournés par courrier. Des rappels pour compléter les questionnaires et les liens pour les questionnaires ultérieurs vous seront acheminés à votre adresse électronique.

Que comporte l'enquête?

Le premier questionnaire sera composé de questions ouvertes destinées à recueillir votre opinion sur les principales composantes cognitives nécessaires pour prédire la performance occupationnelle des personnes atteintes de démence et sur les méthodes d'évaluation de ces composantes. Il vous sera également demandé de fournir des informations démographiques telles que l'endroit où vous avez reçu votre formation, le nombre d'années où vous avez travaillé avec des personnes atteintes de démence, et dans quel milieu vous travaillez.

Le deuxième questionnaire consistera en une synthèse des opinions exprimées par tous les participants. Il vous sera demandé de donner votre opinion sur l'importance de chaque composante de la compétence cognitive qui est essentielle pour prédire la compétence occupationnelle des personnes atteintes de démence. Il vous sera également demandé si chaque méthode d'évaluation actuellement utilisée pour évaluer la compétence cognitive est utile pour prédire la compétence occupationnelle.

Dans le troisième questionnaire il vous sera demandé d'indiquer votre niveau d'accord avec ces composantes et les méthodes actuelles utilisées qui auront obtenu au moins 60% d'accord entre les participants.

Chaque personne qui participe à un tour sera inscrite à un tirage au sort d'un prix en argent de 50 \$, et il y aura un grand prix de 250 \$ tiré au hasard parmi les participants qui auront complété les trois tours. La chercheuse avertira les gagnants par courrier électronique.

Risques ou Avantages:

Vous n'êtes sous aucune obligation de compléter ces questionnaires. Votre participation est volontaire et vous pouvez vous retirer de l'étude à tout moment. La confidentialité sera assurée à toutes les étapes de la recherche. Votre consentement à participer à cette enquête sera considéré explicite lorsque vous remplirez les questionnaires.

Il n'y a aucun risque connu associé à cette étude. Vous ne bénéficierez pas d'avantage direct en participant à cette étude, mais vous pouvez bénéficier de la possibilité d'échanger des connaissances avec d'autres ergothérapeutes qui possèdent de l'expertise auprès des personnes atteintes de démence, et de la possibilité de contribuer à l'évidence sur laquelle fonder la pratique.

Qu'advient-il des données de l'enquête?

Tel qu'indiqué sur leur site Web, SurveyMonkey utilise de multiples niveaux de sécurité pour s'assurer que le compte et les données restent privés et sécurisés. Ils possèdent les plus récents pare-feu et la plus récente technologie pour prévenir l'intrusion et les données seront collectées dans un environnement totalement crypté en utilisant le SSL ou « Secure Sockets Layer ».

Les données téléchargées à partir de SurveyMonkey seront protégées par un mot de passe qui sera uniquement accessible à l'équipe de recherche. Seules les données désidentifiées seront utilisées pour le processus d'analyse des données. Votre adresse électronique ne sera pas reliée à vos réponses dans SurveyMonkey.

Des copies papier des données désidentifiées seront conservées dans des classeurs verrouillés et seront détruites après dix ans. La liste maîtresse reliant les identifiants et les adresses électroniques sera conservée dans un classeur verrouillé distinct. Les bases de données électroniques seront conservées pendant dix ans et ensuite supprimées.

Les résultats de l'enquête, sans information d'identification personnelle, seront inclus

dans une base de données qui pourrait être utilisée pour de futures recherches. Il est prévu que les résultats seront publiés et présentés. Pour toutes les activités de diffusion, les données seront présentées sous forme de synthèse seulement. Vous pouvez recevoir un rapport final avec les résultats de l'enquête si vous le souhaitez en contactant Briana Zur.

Que faire si j'ai des questions?

Si vous avez des questions à propos de cette étude ou désirez tout complément d'information, veuillez contacter Briana Zur.

Si vous avez des questions au sujet de la conduite de cette étude ou à propos de vos droits en tant que participant à la recherche, vous pouvez contacter le Bureau de l'éthique de la recherche à l'Université de Western Ontario.

En complétant les questionnaires, vous donnez votre consentement à participer à cette étude. Il suffit de cliquer ici et je vous enverrai votre lien anonyme unique au premier questionnaire. Envoyez-moi un courrier électronique.

Appendix E: Delphi Study Survey Rounds 1-3 English

Determining consensus of Canadian occupational therapists on the cognitive components essential to predict occupational competence in people with dementia.

Round 1

This survey is designed to transform your opinions into group consensus among occupational therapists regarding the components of cognitive competence that are essential to predict occupational competence in persons with dementia. A secondary question will address your opinions on current methods used to assess these essential components

Please respond only once to each round of the survey

Part A: Screening questions

1. Over the past ten years, have you had at least two years of experience working with persons with dementia? (Yes/No)
2. Are you currently certified licensed to practice as an occupational therapy clinician in Canada? (Yes/No)

If your answer was NO to either question please exit this survey.

Thank you for your time.

Part A: Descriptive Information

1. Where did you receive your occupational therapy training?

Canada

Outside Canada

2. Which province or territory do you work in?

- Alberta
- British Columbia
- Manitoba
- New Brunswick
- Newfoundland and Labrador
- Northwest Territories
- Nova Scotia
- Nunavut
- Ontario
- Prince Edward Island
- Québec
- Saskatchewan
- Yukon

3. How many years of occupational therapy experience do you have working with persons with dementia?

4. When have you worked with persons with dementia?

- Currently
- In the last 5 years
- In the last 6 to 10 years

5. Where have you worked with persons with dementia in your role as an occupational therapist? Check all that apply.

- Hospital
- Community setting
- Both hospital and community setting
- Other: Please specify

Part B: Consensus Questions

Occupational therapists are frequently asked to assess the abilities of people with dementia to determine their competence to perform occupations necessary for everyday living. We use various assessment tools to help make these decisions. Recently, the occupational therapy literature has expanded the construct of everyday living to include the notion of occupational competence, or the person's ability to perform those necessary occupations within a meaningful context. Cognitive competence has also been referred to as everyday cognition, with both terms encompassing aspects or components of cognition required to carry out day to day living. We often use a measure of a person's cognitive competence to predict their occupational competence. Please list all the components of cognitive competence that you think are essential to predict occupational competence in persons with dementia.

1. Please list all the components of cognitive competence that you think are essential to predict occupational competence in persons with dementia.
2. What current methods do you use in your practice to assess cognitive competence?

Determining consensus of Canadian occupational therapists on the cognitive components essential to predict occupational competence in people with dementia.

Round 2

Thank you for your participation in this study. The response to Round 1 has been fantastic! You have contributed to the compilation of a very large number of components of cognitive competence that you think are essential to predict occupational competence in people with dementia. Within this study, occupational competence is defined as the ability to competently perform those occupations that are necessary for everyday life. Cognitive competence is also referred to as everyday cognition, or those components of cognition that are required to carry out day to day living. We often use a measure of cognitive competence to predict occupational competence in people with dementia.

The data have been compiled and analyzed by a working group comprised of a senior OT clinician, an OT with extensive research experience, and me. In order to present a reasonable number of cognitive components for Round 2, only those that were identified by at least 5% of the participants are being presented.

In this second round, I would like you to rate each of the components generated in relation to the following question.

1. How important is each of the following components of cognitive competence to predict occupational competence in persons with dementia?

Very important Important Not important Not at all important

Abstract thinking

Attention

Attention:
divided

Awareness

Calculation

Communication:
comprehension

Communication:
expression

Concentration

Decision-making

Executive

Function

Initiation

Insight

Insight into
abilities

Judgment

Very important Important Not important Not at all important

Memory: long
term

Memory: recall

Memory:
recognition

Memory: short
term

Memory:
working

Mental
flexibility

Motor Planning

Object
identification

Orientation:
person

Orientation:
place

Orientation: time

Perception

Planning

Very important Important Not important Not at all important

Problem solving

Processing speed

Reasoning

Safety awareness

Sequencing

Social awareness

Understanding

consequences

Visuo-spatial

skills

2. Similarly, a large number of methods were identified as being used currently to assess the cognitive components listed above. Only those responses that at least 5% of you identified are being presented.

Again, please rate each of the components generated in relation to how useful each one is to assess cognitive competence. Please indicate if you are not familiar with any of the methods listed below.

Standardized Assessment Tools:

	Not familiar	Very useful	Useful	Not useful	Not useful at all
Assessment of Motor and Process Skills					
Clock Test					
Cognistat					
Cognitive Assessment Scale for the Elderly					
Cognitive Competency Test					
Executive Interview					
Independent Living Scales					
Middlesex Elderly Assessment of Mental State					
Mini Mental State Exam					
Montreal Cognitive Assessment					
Protocole d'Examen Cognitif de la Personne Âgée					
Trailmaking					

3. Non Standardized assessments: areas of occupational performance and components

Not familiar Very useful Useful Not useful Not useful at all

Activities of Daily
Living (ADL): self
care

Activities of Daily
Living (ADL): other

Collateral
information (staff
and/or family)

Community access

Instrumental
Activities of Daily
Living (IADL):
kitchen

Instrumental
Activities of Daily
Living (IADL):
medication
management

Instrumental
Activities of Daily
Living (IADL): other

Wheelchair/Transfers

4. Non Standardized assessment approaches

	Not familiar	Very useful	Useful	Not useful	Not useful at all
ADL assessment					
CCT subcomponents					
Gathering collateral information					
Home visit					
Interview: with client					
Interview: with family/caregiver					
Observation: ADLs					
Observation: cognitive tasks					
Observation: IADLs					
Observation: in client's environment					

Determining consensus of Canadian occupational therapists on the cognitive components essential to predict occupational competence in people with dementia.

Round 3

This is the final survey! Thank you once again for your willingness to participate in this study. The results of this final round will determine your consensus on the components of cognitive competence that are important to predict occupational competence in persons with dementia.

Within this study, occupational competence is defined as the ability to competently perform those occupations that are necessary for everyday life. Cognitive competence is also referred to as everyday cognition, or those components of cognition that are required to carry out day to day living. We often use a measure of cognitive competence to predict occupational competence in people with dementia.

In this round you are being shown the cognitive components that were presented during Round 2 with a summary of the group's responses. You are being asked once again to please indicate how important YOU THINK each of the following components of cognitive competence is to predict occupational competence in persons with dementia, considering the groups' responses.

SCALE: Very important Important Not important Not at all important

1. ABSTRACT THINKING

13.8% of participants thought it 'very important'
 62.9% of participants thought it 'important'
 23.3% of participants thought it 'not important'
 0.0% of participants thought it 'not at all important'

2. ATTENTION

86.3% of participants thought it 'very important'
 13.7% of participants thought it 'important'
 0.0% of participants thought it 'not important'
 0.0% of participants thought it 'not at all important'

3. ATTENTION: DIVIDED

53.0% of participants thought it 'very important'
 41.7% of participants thought it 'important'
 5.2% of participants thought it 'not important'
 0.0% of participants thought it 'not at all important'

4. AWARENESS

52.6% of participants thought it 'very important'
 45.7% of participants thought it 'important'
 1.7% of participants thought it 'not important'
 0.0% of participants thought it 'not at all important'

5. CALCULATION

0.9% of participants thought it 'very important'
 47.8% of participants thought it 'important'
 48.7% of participants thought it 'not important'
 2.6% of participants thought it 'not at all important'

6. COMMUNICATION: COMPREHENSION

63.8% of participants thought it 'very important'
 36.2% of participants thought it 'important'
 0.0% of participants thought it 'not important'
 0.0% of participants thought it 'not at all important'

7. COMMUNICATION: EXPRESSION

24.1% of participants thought it 'very important'
 64.7% of participants thought it 'important'
 10.3% of participants thought it 'not important'
 0.9% of participants thought it 'not at all important'

8. CONCENTRATION

36.8% of participants thought it 'very important'
61.5% of participants thought it 'important'
1.7% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

9. DECISION-MAKING

48.7% of participants thought it 'very important'
47.9% of participants thought it 'important'
3.4% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

10. EXECUTIVE FUNCTION

61.5% of participants thought it 'very important'
35.9% of participants thought it 'important'
2.6% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

11. INITIATION

58.1% of participants thought it 'very important'
37.6% of participants thought it 'important'
4.3% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

12. INSIGHT

35.0% of participants thought it 'very important'
54.7% of participants thought it 'important'
10.3% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

13. INSIGHT INTO ABILITIES

54.3% of participants thought it 'very important'
43.1% of participants thought it 'important'
2.6% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

14. JUDGMENT

69.2% of participants thought it 'very important'
29.9% of participants thought it 'important'
0.9% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

15. MEMORY: LONG TERM

12.1% of participants thought it 'very important'
56.0% of participants thought it 'important'
31.0% of participants thought it 'not important'
0.9% of participants thought it 'not at all important'

16. MEMORY: RECALL

45.3% of participants thought it 'very important'
52.1% of participants thought it 'important'
2.6% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

17. MEMORY: RECOGNITION

40.9% of participants thought it 'very important'
56.5% of participants thought it 'important'
2.6% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

18. MEMORY: SHORT TERM

53.8% of participants thought it 'very important'
44.4% of participants thought it 'important'
1.7% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

19. MEMORY: WORKING

70.9% of participants thought it 'very important'
26.5% of participants thought it 'important'
2.6% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

20. MENTAL FLEXIBILITY

18.8% of participants thought it 'very important'
65.0% of participants thought it 'important'
15.4% of participants thought it 'not important'
0.9% of participants thought it 'not at all important'

21. MOTOR PLANNING

41.9% of participants thought it 'very important'
52.1% of participants thought it 'important'
6.0% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

22. OBJECT IDENTIFICATION

42.1% of participants thought it 'very important'
50.0% of participants thought it 'important'
7.9% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

23. ORIENTATION:PERSON

49.6% of participants thought it 'very important'
42.7% of participants thought it 'important'
7.7% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

24. ORIENTATION: PLACE

39.3% of participants thought it 'very important'
49.6% of participants thought it 'important'
10.3% of participants thought it 'not important'
0.9% of participants thought it 'not at all important'

25. ORIENTATION: TIME

27.8% of participants thought it 'very important'
55.7% of participants thought it 'important'
15.7% of participants thought it 'not important'
0.9% of participants thought it 'not at all important'

26. PERCEPTION

29.1% of participants thought it 'very important'
64.1% of participants thought it 'important'
6.0% of participants thought it 'not important'
0.9% of participants thought it 'not at all important'

27. PLANNING

47.0% of participants thought it 'very important'
48.7% of participants thought it 'important'
4.3% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

28. PROBLEM SOLVING

54.7% of participants thought it 'very important'
44.4% of participants thought it 'important'
0.9% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

29. PROCESSING SPEED

13.7% of participants thought it 'very important'
59.0% of participants thought it 'important'
25.6% of participants thought it 'not important'
1.7% of participants thought it 'not at all important'

30. REASONING

39.7% of participants thought it 'very important'
55.2% of participants thought it 'important'
5.2% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

31. SAFETY AWARENESS

70.9% of participants thought it 'very important'
27.4% of participants thought it 'important'
1.7% of participants thought it 'not important'
0.0% of participants thought it 'not at all important'

32. SEQUENCING

67.5% of participants thought it 'very important'

29.1% of participants thought it 'important'

3.4% of participants thought it 'not important'

0.0% of participants thought it 'not at all important'

33. SOCIAL AWARENESS

6.9% of participants thought it 'very important'

69.0% of participants thought it 'important'

24.1% of participants thought it 'not important'

0.0% of participants thought it 'not at all important'

34. UNDERSTANDING CONSEQUENCES

51.3% of participants thought it 'very important'

42.7% of participants thought it 'important'

6.0% of participants thought it 'not important'

0.0% of participants thought it 'not at all important'

35. VISUO-SPATIAL SKILLS

23.3% of participants thought it 'very important'

70.7% of participants thought it 'important'

6.0% of participants thought it 'not important'

0.0% of participants thought it 'not at all important'

Appendix F: Delphi Study Survey Rounds 1-2 French

Détermination d'un consensus parmi les ergothérapeutes canadiens concernant les composantes cognitives essentielles pour prédire la compétence occupationnelle des personnes atteintes de démence.

Tour 1

Cette enquête est conçue pour transformer vos opinions en un consensus de groupe parmi les ergothérapeutes quant aux composantes de la compétence cognitive qui sont essentielles pour prédire la compétence occupationnelle des personnes atteintes de démence. Une question secondaire portera sur vos opinions concernant les méthodes actuelles utilisées pour évaluer ces composantes essentielles.

Veillez ne répondre qu'une seule fois à chaque tour de l'enquête.

1. Partie A: Questions de sélection

Au cours des dix dernières années, avez-vous eu au moins deux ans d'expérience de travail avec des personnes atteintes de démence?

Oui

Non

2. Êtes-vous actuellement certifié ou autorisé à exercer l'ergothérapie en tant que clinicien au Canada?

Oui

Non

Partie A: Information descriptive

1. Où avez-vous reçu votre formation en ergothérapie?

2. Où avez-vous reçu votre formation en ergothérapie?

Au Canada

À l'extérieur du Canada

3. Dans quelle province ou territoire travaillez-vous?

Alberta

Colombie Britannique

Manitoba

Nouveau-Brunswick

Terre-Neuve et Labrador

Territoires du Nord-Ouest

Nouvelle-Écosse

Nunavut

Ontario

Ile-du-Prince-Édouard

Québec

Saskatchewan

Yukon

4. Combien d'années d'expérience en ergothérapie possédez-vous à travailler avec des personnes atteintes de démence?

5. Quand avez-vous travaillé avec des personnes atteintes de démence?

Actuellement

Au cours des 5 dernières années

Au cours des 6 à 10 dernières années

6. Où avez-vous travaillé avec des personnes atteintes de démence dans votre rôle d'ergothérapeute?

Hôpital

Centre communautaire

Les deux: hôpital et centre communautaire

Autres (Veuillez spécifier):

Partie B: Questions de consensus:

Les ergothérapeutes se font fréquemment demander d'évaluer les aptitudes des personnes atteintes de démence afin de déterminer leur compétence à exécuter les occupations nécessaires à leur vie quotidienne. Nous utilisons différents outils d'évaluation pour nous aider à prendre ces décisions.

Récemment, la littérature en ergothérapie a élargi le concept de la vie quotidienne pour inclure la notion de compétence occupationnelle, ou la capacité de la personne à exécuter ses occupations nécessaires dans un contexte significatif.

La compétence cognitive est aussi désignée comme la cognition de tous les jours, et les deux termes comprennent des aspects ou des composantes cognitives requises pour accomplir les activités de la vie quotidienne. Nous utilisons souvent une mesure de la compétence cognitive d'une personne pour prédire leur compétence occupationnelle.

1. Veuillez énumérer toutes les composantes de la compétence cognitive qui, selon vous, sont essentielles pour prédire les compétences occupationnelles des personnes atteintes de démence.

2. Quelles méthodes utilisez-vous actuellement dans votre pratique pour évaluer la compétence cognitive?

Détermination d'un consensus parmi les ergothérapeutes canadiens concernant les composantes cognitives essentielles pour prédire la compétence occupationnelle des personnes atteintes de démence.

Tour 2

Merci pour votre participation à cette étude. La réponse au tour 1 a été fantastique! Vous avez contribué à la compilation d'un très grand nombre d'éléments de la compétence cognitive qui, selon vous, sont essentiels pour prévoir les compétences occupationnelles des personnes atteintes de démence. Dans le cadre de cette étude, la compétence occupationnelle est définie comme la capacité à exercer de manière compétente les occupations qui sont nécessaires à la vie quotidienne. La compétence cognitive est aussi mentionnée comme la cognition de tous les jours, ou les composantes de la cognition qui sont nécessaires pour mener à bien la vie quotidienne. Nous avons souvent recours à une mesure de compétences cognitives pour prévoir la compétence occupationnelle des personnes atteintes de démence.

Les données ont été compilées et analysées par un groupe de travail composé d'une ergothérapeute possédant une longue expérience clinique, d'une ergothérapeute ayant une vaste expérience de recherche, et moi-même. Afin de présenter un nombre raisonnable de composantes cognitives pour le Tour 2, seules celles qui ont été identifiées par au moins 5% des participants sont présentées.

Dans ce second tour, il est souhaité que chacune des composantes identifiées soit évaluée en rapport avec la question suivante.

1. Comment important est chacune des composantes suivantes de la compétence cognitive relativement à la prédiction de la compétence occupationnelle des personnes atteintes de démence?

	Très important	Important	Sans importance	Pas du tout d'importance
Pensée abstraite				
Attention				
Attention: divisée				
Conscience				
Capacités de calcul				
Communication: compréhension				
Communication: expressive				

Très important Important Sans importance Pas du tout
d'importance

Concentration

Prise de décision

Les fonctions
exécutives

Intiation

Réflexion

Autocritique

Jugement

Memoire: long terme

Memoire: rappe

Memoire:
reconnaissance

Memoire: court terme

Memoire: travail

Flexibilité mentale

Praxies/Planification
motrice

Gnosies/Identification
d'objets

Orientation: personne

Orientation: place

Orientation: temps

Habilités perceptuelle

Planification

Résolution de

	Très important	Important	Sans importance	Pas du tout d'importance
problèmes				
La vitesse de traitement de l'information				
Analyse/Raisonnement				
Conscience de la sécurité				
Séquencage				
Conscience sociale				
Comprendre les conséquences				
Habiletés visuospatiales				

2. Un grand nombre de méthodes ont également été identifiées comme étant actuellement utilisées pour évaluer les capacités cognitives des composantes énumérées ci-dessus. Seules les réponses que 5% au moins de vous avez identifiées sont présentées.

Veillez à nouveau évaluer les composantes identifiées en rapport avec l'utilité que chacune possède pour évaluer la compétence cognitive. Veuillez indiquer si vous n'êtes pas familier avec l'une des méthodes énumérées ci-dessous.

Évaluations non standardisées: domaines et composantes du rendement occupationnel

	Pas familier	Très utile	Utile	Sans utilisé	Pas du tout d'utilité
Assessment of Motor Process and Skills					
Test de l'horloge					
Cognistat					
The Cognitive Competency Test					
Executive Interview					

Pas familier Très utile Utile Sans utilisé Pas du tout d'utilité

Échelle des habiletés de vie autonome

Middlesex Elderly Assessment of Mental State

Mini examen de l'état mental de Folstein

Le Montreal Cognitive Assessment

Protocole d'Examen Cognitif de la Personne Âgée

Test du tracé

3. Évaluations non standardisées: approches

Pas familier Très utile Utile Sans utilisé Pas du tout d'utilité

Activités de la vie quotidienne (AVQ): soins personnels

Activités de la vie quotidienne (AVQ): autres

Discussion avec autres professionnels et familles

Pas familier Très utile Utile Sans utilisé Pas du tout d'utilité

Accès à la communauté

Activités de la vie domestique: cuisine

Activités de la vie domestique: gestion des médicaments

Activités de la vie domestique: autres

fauteuil roulant/transferts

4. Évaluations non normalisées (approaches)

Pas familier Très utile Utile Sans utilisé Pas du tout d'utilité

Évaluation des activités de la vie quotidienne

Évaluation maison

CCT sous composantes

Recueillir de l'information complémentaire

Entrevue: avec client

Entrevue: avec

	Pas familier	Très utile	Utile	Sans utilé	Pas du tout d'utilé
famille/aidant					
Observation: activités de la vie quotidienne					
Observation: tâches/activités cognitives					
Observation: activités de la vie domestique					
Observation: dans l'environnement du client					

Détermination d'un consensus parmi les ergothérapeutes canadiens concernant les composantes cognitives essentielles pour prédire la compétence occupationnelle des personnes atteintes de démence.

Tour 3

Ceci est le sondage final! Nous vous remercions de participer à cette étude. Les résultats de ce tour final permettront de déterminer un consensus afin de déterminer les composantes de la compétence cognitive qui sont importantes pour prédire la compétence occupationnelle des personnes atteintes de démence.

Dans le cadre de cette étude, la compétence occupationnelle est définie comme étant la capacité à exercer de manière compétente les occupations nécessaires à la vie quotidienne. La compétence cognitive réfère à la cognition de tous les jours ou aux composantes de la cognition qui sont requises pour mener à bien la vie quotidienne. Nous avons souvent recours à une mesure de la compétence cognitive pour prédire la compétence occupationnelle chez les personnes atteintes de démence.

Pour ce tour, un résumé des réponses de groupe vous est présenté. Considérant les réponses du groupe, nous vous demandons à nouveau d'indiquer l'importance accordée à chacune des composantes de la compétence cognitive pour prédire la compétence occupationnelle des personnes atteintes de démence.

Le Scale: Très important Important Sans importance Pas du tout d'importance

1. PENSÉE ABSTRAITE

13,8% des participants ont cru qu'il « très important »
 62,9% des participants ont cru qu'il « important »
 23,3% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

2. ATTENTION

86,3% des participants ont cru qu'il « très important »
 13,7% des participants ont cru qu'il « important »
 0,0% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

3. ATTENTION: DIVISEE

53,0% des participants ont cru qu'il « très important »
 41,7% des participants ont cru qu'il « important »
 5,2% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

4. CONSCIENCE

52,6% des participants ont cru qu'il « très important »
 45,7% des participants ont cru qu'il « important »
 1,7% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

5. CAPACITIES DE CALCUL

0,9% des participants ont cru qu'il « très important »
 47,8% des participants ont cru qu'il « important »
 48,7% des participants ont cru qu'il « sans importance »
 2,6% des participants ont cru qu'il « pas du tout d'importance »

6. COMMUNICATION: COMPRÉHENSION

63,8% des participants ont cru qu'il « très important »
 36,2% des participants ont cru qu'il « important »
 0,0% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

7. COMMUNICATION: EXPRESSIVE

24,1% des participants ont cru qu'il « très important »
 64,7% des participants ont cru qu'il « important »
 10,3% des participants ont cru qu'il « sans importance »
 0,9% des participants ont cru qu'il « pas du tout d'importance »

8. CONCENTRATION

36,8% des participants ont cru qu'il « très important »
 61,5% des participants ont cru qu'il « important »
 1,7% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

9. PRISE DE DÉCISION

48,7% des participants ont cru qu'il « très important »
 47,9% des participants ont cru qu'il « important »
 3,4% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

10. LES FONCTIONS EXÉCUTIVES

61,5% des participants ont cru qu'il « très important »
 35,9% des participants ont cru qu'il « important »
 2,6% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

11. INITIATION

58,1% des participants ont cru qu'il « très important »
 37,6% des participants ont cru qu'il « important »
 4,3% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

12. RÉFLEXION

35,0% des participants ont cru qu'il « très important »
 54,7% des participants ont cru qu'il « important »
 10,3% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

13. AUTOCRITIQUE

54,3% des participants ont cru qu'il « très important »
 43,1% des participants ont cru qu'il « important »
 2,6% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

14. JUGEMENT

69,2% des participants ont cru qu'il « très important »
 29,9% des participants ont cru qu'il « important »
 0,9% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

15. MEMOIRE: LONG TERME

12,1% des participants ont cru qu'il « très important »
 56,0% des participants ont cru qu'il « important »
 31,0% des participants ont cru qu'il « sans importance »
 0,9% des participants ont cru qu'il « pas du tout d'importance »

17. MEMOIRE: RAPPE

45,3% des participants ont cru qu'il « très important »
 52,1% des participants ont cru qu'il « important »
 2,6% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

18. MEMOIRE: RECONNAISSANCE

40,9% des participants ont cru qu'il « très important »
 56,5% des participants ont cru qu'il « important »
 2,6% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

19. MEMOIRE: COURT TERME

53,8% des participants ont cru qu'il « très important »
 44,4% des participants ont cru qu'il « important »
 1,7% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

20. MEMOIRE: TRAVAIL

70,9% des participants ont cru qu'il « très important »
 26,5% des participants ont cru qu'il « important »
 2,6% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

21. FLEXIBILITÉ MENTALE

18,8% des participants ont cru qu'il « très important »
 65,0% des participants ont cru qu'il « important »
 15,4% des participants ont cru qu'il « sans importance »
 0,9% des participants ont cru qu'il « pas du tout d'importance »

22. PRAXIES/PLANIFICATION MOTRICE

41,9% des participants ont cru qu'il « très important »
 52,1% des participants ont cru qu'il « important »
 6,0% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

23. GNOSIES/IDENTIFICATION D'OBJETS

42,1% des participants ont cru qu'il « très important »
 50,0% des participants ont cru qu'il « important »
 7,9% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

24. ORIENTATION: PERSONNE

49,6% des participants ont cru qu'il « très important »
 42,7% des participants ont cru qu'il « important »
 7,7% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

25. ORIENTATION: PLACE

39,3% des participants ont cru qu'il « très important »
 49,6% des participants ont cru qu'il « important »
 10,3% des participants ont cru qu'il « sans importance »
 0,9% des participants ont cru qu'il « pas du tout d'importance »

26. ORIENTATION: TEMPS

27,8% des participants ont cru qu'il « très important »
 55,7% des participants ont cru qu'il « important »
 15,7% des participants ont cru qu'il « sans importance »
 0,9% des participants ont cru qu'il « pas du tout d'importance »

27. HABILITÉS PERCEPTUELLE

29,1% des participants ont cru qu'il « très important »
 64,1% des participants ont cru qu'il « important »
 6,0% des participants ont cru qu'il « sans importance »
 0,9% des participants ont cru qu'il « pas du tout d'importance »

28. PLANIFICATION

47,0% des participants ont cru qu'il « très important »
 48,7% des participants ont cru qu'il « important »
 4,3% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

29. RÉSOLUTION DE PROBLEMES

54,7% des participants ont cru qu'il « très important »
 44,4% des participants ont cru qu'il « important »
 0,9% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

30. LA VITESSES DE TRAITEMENT DE L'INFORMATION

13,7% des participants ont cru qu'il « très important »
 59,0% des participants ont cru qu'il « important »
 25,6% des participants ont cru qu'il « sans importance »
 1,7% des participants ont cru qu'il « pas du tout d'importance »

31. ANALYSE/RAISONNEMENT

39,7% des participants ont cru qu'il « très important »
 55,2% des participants ont cru qu'il « important »
 5,2% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

32. CONSCIENCE DE LA SÉCURITÉ

70,9% des participants ont cru qu'il « très important »
 27,4% des participants ont cru qu'il « important »
 1,7% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance»

33. SÉQUENCAGE

67,5% des participants ont cru qu'il « très important »
 29,1% des participants ont cru qu'il « important »
 3,4% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

34. CONSCIENCE SOCIALE

6,9% des participants ont cru qu'il « très important »
 69,0% des participants ont cru qu'il « important »
 24,1% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

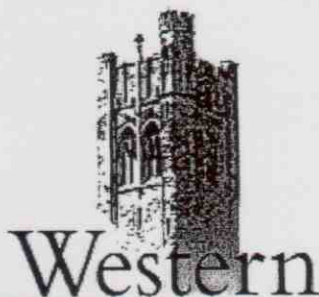
35. COMPRENDRE LES CONSÉQUENCES

51,3% des participants ont cru qu'il « très important »
 42,7% des participants ont cru qu'il « important »
 6,0% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

36. HABILITÉS VISUOSPATIALES

23,3% des participants ont cru qu'il « très important »
 70,7% des participants ont cru qu'il « important »
 6,0% des participants ont cru qu'il « sans importance »
 0,0% des participants ont cru qu'il « pas du tout d'importance »

Appendix G: Chart Review Study Ethics Certificate



Office of Research Ethics

The University of Western Ontario
Room 4180 Support Services Building, London, ON, Canada N6A 5C1

Website: www.uwo.ca/research/ethics

Use of Human Subjects - Ethics Approval Notice

Principal Investigator: Dr. D. Laliberte Rudman

Review Number: 16205E

Review Level: Expedited

Review Date: June 02, 2009

Protocol Title: Enhancing assessment of occupational competence in dementia care: A retrospective chart study to examine the validity of The Cognitive Competency Test

Department and Institution: Occupational Therapy, University of Western Ontario

Sponsor: CIHR-CANADIAN INSTITUTE OF HEALTH RESEARCH

Ethics Approval Date: June 23, 2009

Expiry Date: March 31, 2011

Documents Reviewed and Approved: UWO Protocol

Documents Received for Information:

This is to notify you that The University of Western Ontario Research Ethics Board for Health Sciences Research Involving Human Subjects (HSREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the Health Canada/ICH Good Clinical Practice Practices: Consolidated Guidelines; and the applicable laws and regulations of Ontario has reviewed and granted approval to the above referenced study on the approval date noted above. The membership of this REB also complies with the membership requirements for REB's as defined in Division 5 of the Food and Drug Regulations.

The ethics approval for this study shall remain valid until the expiry date noted above assuming timely and acceptable responses to the HSREB's periodic requests for surveillance and monitoring information. If you require an updated approval notice prior to that time you must request it using the UWO Updated Approval Request Form.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the HSREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of monitor, telephone number). Expedited review of minor change(s) in ongoing studies will be considered. Subjects must receive a copy of the signed information/consent documentation.

Investigators must promptly also report to the HSREB:

- a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) all adverse and unexpected experiences or events that are both serious and unexpected;
- c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to this office for approval.

Members of the HSREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the HSREB.

Chair of HSREB: Dr. Joseph Gilbert

Ethics Officer to Contact for Further Information

Janice Sutherland

Elizabeth Wambolt

Grace Kelly

Denise Grafton

This is an official document. Please retain the original in your files.

Appendix H: Clinical Research Impact Committee Approval

LAWSON HEALTH RESEARCH INSTITUTE
CLINICAL RESEARCH IMPACT COMMITTEE

RESEARCH OFFICE REVIEW NO.: R-09-305

PROJECT TITLE: Enhancing assessment of occupational competence in dementia care: A retrospective chart study to examine the validity of the Cognitive Competency Test

PRINCIPAL INVESTIGATOR: Dr. D Laliberte Rudman

DATE OF REVIEW BY CRIC: July 17, 2009

Health Sciences REB#: 16205E

Please be advised that the above project was reviewed by the Clinical Research Impact Committee and the project:

Was Approved

PLEASE INFORM THE APPROPRIATE NURSING UNITS, LABORATORIES, ETC. BEFORE STARTING THIS PROTOCOL. THE RESEARCH OFFICE NUMBER MUST BE USED WHEN COMMUNICATING WITH THESE AREAS.

Dr. David Hill
V.P. Research
Lawson Health Research Institute

All future correspondence concerning this study should include the Research Office Review

cc: Administration

Appendix I: Chart Review Study Data Extraction Form

Enhancing Assessment of Occupational Competence in Dementia Care:
Examination of the Cognitive Competency Test

pg 1

DATA EXTRACTION FORM

Identifier # _____

Age at time of admission _____ years _____
 in patient _____ out patient _____
 male _____ female _____
 Geriatric Rehabilitation Unit _____ Parkwood Day Hospital _____

Preadmission living arrangements:

type of dwelling: _____
 marital status: married single divorced widow
 living at home with no supports yes no
 living at home with formal support:s yes no CCAC MOW
 at home with informal supports who reside in home: yes no
 at home with informal supports not residing in home: yes no

Medical comorbidities: Heart disease Pulmonary Hypertension
 Diabetes Stroke MSK
 Other: _____

Cumulative Illness Rating Scale Score:

Mini Mental State Exam score /30
 Geriatric Depression Scale score /15
 diagnosis of dementia yes no unclear
 diagnosis of MCI yes no unclear
 problem identified with cognition yes no
 indicator of safety concern: yes no
 insight concerns: yes no
 judgement concerns: yes no
 Kitchen assessment completed yes no
 problems identified: yes no
 safety concerns identified: yes no
 planning concerns: yes no
 sequencing concerns: yes no
 memory concerns: yes no

ADL Assessment:

Other cognitive assessments:

Enhancing Assessment of Occupational Competence in Dementia Care:
Examination of the Cognitive Competency Test

pg 2

Other disciplines identified issues:	physio	nursing	SW	
remembering exercises	yes/no	yes/no	yes/no	
remembering rationale, reason, purpose	yes/no	yes/no	yes/no	
no carryover from day to day	yes/no	yes/no	yes/no	
OT discharge plan recommendation:				
home	yes	no		
home with formal supports	yes	no	CCAC	MOW
home with informal supports in home	yes	no		
home with informal supports not living in home supervised setting recommended	yes	no	RH	LTC
Actual discharge plan:				
home	yes	no		
home with formal supports	yes	no	CCAC	MOW
home with informal supports in home	yes	no		
home with informal supports not living in home supervised setting	yes	no	RH	LTC

Cognitive Competency Test

Actual Total Score:	/115	Sub Score:
personal information	/10	
card arrangement	/10	
picture interpretation	/10	
memory: immediate	/5	
memory: delayed	/5	
practical reading skills	/10	
management of finances	/10	
verbal reasoning	/20	
routes: list	/5	
routes: locate	/10	
orientation	/15	
pathfinding	/5	

Cumulative Illness Rating Scale

- 0 None
- 1 Mild
- 2 Moderate
- 3 Severe
- 4 Extremely Severe

Cardiovascular system

score

- 1 Cardiac (heart only)
- 2 Vascular (blood, blood vessels and cells, marrow, spleen, lymphatics)
- 3 Respiratory (lungs, bronchi, trachea below larynx)
- 4 EENT (eye, ear, nose, larynx)

Gastrointestinal system

- 5 Upper GI (esophagus, stomach, duodenum, biliary and pancreatic trees)
- 6 Lower GI (intestines, hernias)
- 7 Hepatic (liver only)

Genitourinary system

- 8 Renal (kidney only)
- 9 Other GU (ureters, bladder, urethra, prostate, genitals)

Musculo-Skeletal-Integumentary system

- 10 MSI (muscles, bone, skin)

Neuropsychiatric system

- 11 Neurologic (brain, spinal cord, nerves)
- 12 Psychiatric (mental)

General system

- 13 Endocrine-Metabolic (includes diffuse infections, poisonings)

Total Score:

Enhancing Assessment of Occupational Competence in Dementia Care:
Examination of the Cognitive Competency Test

pg.4

MMSE /30

year	/1	country	/1
season	/1	province	/1
month	/1	city	/1
date	/1	place	/1
day	/1	floor	/1

repetition	/3
world/7s	/5
recall	/3
watch	/1
pencil	/1
ifs/buts	/1
eyes	/1
command	/3
sentence	/1
pentagon	/1

IADLs

	Indep	Assist
--	-------	--------

meal prep		
light housekeeping		
heavy housekeeping		
shopping		
laundry		
medication management		
finances		
yard work		
home maintenance		
phone use		
transportation		

Curriculum Vitae

Name: Briana Zur

Post-secondary Education and Degrees: University of Toronto
Toronto, Ontario, Canada
1971-1975 B.Sc. (O.T.)

The University of Western Ontario
London, Ontario, Canada
2007-2011 Ph.D.

Honours and Awards: Summer Program in Aging
Canadian Institutes of Health Research - Institute of Aging
2007

Graduate Research Award
London and Middlesex Alzheimer Society
2008-2009

Aging, Rehabilitation and Geriatric Care Fellowship in the Care of the Elderly
Lawson Research Institute and Parkwood Hospital Endowment
2008

Fellowship in Aging, Veterans and Dementia
Canadian Institutes of Health Research-St. Joseph's Health Care
London
2008-2011

Early Researcher Award
Ontario Research Coalition
2009

Student Mentorship Program: Dementia theme
National Initiative for the Care of the Elderly
2009

Related Work Experience Teaching Assistant
The University of Western Ontario
2007

Instructor: Transition to Professional Practice
The University of Western Ontario
2008

Publications:

Zur, B. (2007) Beyond the test manual of the Cognitive Competency Test. *OT Now* 9, (3), 17-19

Laliberte Rudman, D, Dennhardt, S, Fok, D, Huot, S, Molke, D, Park, A, **Zur, B.** (2008) A vision for occupational science: reflecting on our disciplinary culture. *Journal of Occupational Science* 15 (4),136-146.

Zur, B. Engaging community partners in addressing at risk drivers with dementia. (2010) *OT Now* 12 (5), 27-29