VALIDATING A MALAY VERSION OF LOEWENSTEINOCCUPATIONAL THERAPY COGNITIVE ASSESSMENT FOR GERIATRICS (M-LOTCA-G)

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THESIS SUBMITTED IN FULLFILLMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE

FACULTY OF EDUCATION AND HUMAN DEVELOPMENT

SULTAN IDRIS EDUCATION UNIVERSITY

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ABSTRACT

The purpose of this study was to translate the LOTCA-G into a Malay language (M-LOTCA-G) for assessing cognitive deficit among institutional elderly who undergo occupational therapy. LOTCA-G battery is being used by Occupational Therapist in Malaysia to identify the underlying cognitive deficits among elderly. The study was based on a single group test-retest design where 52 selected subjects (among elderly) have been tested for reliability and validity. The new version of LOTCA-G called M-LOTCA-G was compared with the original version and another cognitive screening instrument Mini Mental State Examination (MMSE) to examine its consistencies and abnormality interpretation. This study concluded that M-LOTCA-G is reliable as the Cronbach Alpha value is more than 0.9 and the overall reliability of the subtests are very good for 23 sub-tests that have been tested. This study also indicated that LOTCA-G and M-LOTCA-G are consistent in the subject performance. Subject's performances have been compared between M-LOTCA-G and MMSE which showed no relationship in its diagnostic interpretations. The findings pointed out that M-LOTCA-G should be used in identifying the deficits in cognitive components in relation to occupational performance for Malaysian elderly population. This study found that M-LOTCA-G may not replace the function of MMSE as tool for screening of cognitive deficits among the elderly population in Malaysia.

ABSTRAK

Tujuan kajian ini adalah untuk menterjemahkan LOTCA-G ke dalam Bahasa Melayu bagi menilai masalah kognitif di kalangan orang-orang tua yang menerima rawatan pemulihan carakerja. LOTCA-G telah digunakan oleh ahli pemulihan carakerja di Malaysia untuk menentukan akar umbi masalah kognitif di kalangan orang-orang tua. Kajian ini adalah berdasarkan rangka ujian “test-retest” terhadap satu kumpulan 52 subjek yang terpilih di kalangan orang-orang tua dimana data yang diperolehi telah diuji untuk dinilai kebolehpercayaan dan validitinya. LOTCA-G versi Bahasa Melayu (M-LOTCA-G) telah dibandingkan dengan versi asal LOTCA-G untuk menilai kebolehpercayaan dan validasi. Perbandingan dilakukan juga antara M-LOTCA-G dengan satu lagi alat penilaian kognitif iaitu “Mini Mental State Examination” versi Bahasa Melayu (MMMSE) untuk menilai keserasian di antara kedua-dua alat penilaian ini dalam menilai tahap kognitif di kalangan orang-orang tua. Kajian ini mendapati M-LOTCA-G adalah boleh dipercayai di mana nilai Cronbach Alpha melebihi 0.9 dan secara keseluruhannya kebolehpercayaan penilaian ini adalah signifikan untuk 23 sub-ujian yang telah diuji. Kajian ini juga mendapati bahawa tidak terdapat sebarang perkaitan antara M-LOTCA-G dan MMMSE dalam menentukan tahap kognitif di kalangan orang-orang tua. Kajian ini telah merumuskan bahawa M-LOTCA-G tidak signifikan untuk mengambil tempat MMMSE sebagai alat penilaian tapisan bagi maslah kognitif. Namun begitu M-LOTCA-G adalah signifikan dalam mengesan secara mendalam masalah kefungsian seseorang akibat dari masalah kognitif.

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CHAPTER 1

INTRODUCTION

1.1 Study Background

This study is a response to the clinical problem in screening the multicultural populations of elderly people for cognitive impairment associated with aging. As the world's population ages, cognitive deficit is becoming an increasingly important public health issue with an early detection a necessity. Current cognitive screening tests are problematic due to deficiencies in cultural and conceptual relevance and translation into other languages (Storey, 2005). Most investigators agree on the value of cross ethnic and cross cultural findings and on the need to make research culturally sensitive (Canino, Lewis-Fernandez and Bravo, 1997), as it will determine scientific accuracy of the research rather than merely promote multicultural political correctness (Alegria, Vila, Woo & Canino, 2006).

Wallin and Ahlstro (2006) stated that nursing research focusing on ethnic/cultural aspects have been increasing during recent years. These studies have mainly investigated the similarities and differences in nursing perspectives, enhancement of cultural competence through student exchange, or translation of different questionnaires. Participants with language difficulties have traditionally been excluded from research because of the language barrier (Marshall & While, 1994), while at the same time there has been a call for research that gives minority groups a voice (Murray & Wynne, 2001). Researchers who do wish to conduct studies with people from other cultural groups such as immigrants are, however, often constrained by cultural and/or language barriers (Tsai, Choe, Lim, Acorda, Chan, Taylor & Tu 2004).

The development of cross-cultural cognitive test has largely been undertaken using a culture comparative approach. Most cross-cultural tests represent modifications or translations of existing tests or part thereof which have been tested in populations from other cultural background (Storey, 2005). There are innumerable ways of splitting people into groups for the purposes of cultural comparison, but unless there is a clear theoretical reason for doing so, any differences cannot be interpreted meaningfully.

Many of the cognitive evaluation instruments have been developed for use in an English speaking population. To ensure that all cultural backgrounds receive optimal healthcare, primary health care workers need a quick, reliable, and non-exhaustion

cognitive screening that is valid across culture and easy to administer in a wide range of settings (Storey, 2005).

With the increased globalization of psychology and related fields, it is critical to have reliable and valid measures that can be used for a number of languages and cultures (Storey, 2005). Few guidelines or standards have been established in psychology for the translation and cultural adaptation of instruments. Very little is reported in research publications about translations and adaptation processes thus making it difficult for journal readers and reviewers to adequately evaluate the equivalency and quality of an instrument.

In this study, issues related to the translation and adaptation of assessment instruments for use in other cultures and/or languages are addressed. Existing literature on translation is reviewed and examples from the clinical child and family psychology field are taken to illustrate relevant issues. Research on ethnic minorities requires instrumentation that is sensitive to cultural and contextual variations (Canino & Bravo, 1994). Psychological research on minorities usually involves comparisons among different ethnic groups living in different locales and exposed to varied social, political and historical forces. These comparisons demand instruments capable of identifying similar psychological phenomena in dissimilar groups. A challenge to the researcher is to ensure that the assessment tools are equivalent across groups, that the questions capture the same constructs, and that the underlying explanations for the phenomena are included.

Attaining cultural sensitivity in instrumentation requires translations and adaptations into languages other than English, as well as confirming that the complexity of language matches the literacy levels of the population.

For occupational therapy perspectives, cognitive impairments may be seen as a result of developmental or learning problems, brain injury or disease, psychiatric dysfunction, or sociocultural conditions (American Occupational Therapy Association, 1999). Cognitive impairments can result in significant activity limitations and participation restrictions in all aspects of the client's life, potentially compromising safety, health, and well-being. For example, decreased abilities to recognize potential hazards, anticipate consequences of actions and behaviors, follow safety precautions, and respond to emergencies are often major factors that interfere with independence. Cognitive limitations can also diminish one's sense of competence, self-efficacy, and self-esteem, further compounding difficulties in adapting to the demands of everyday living. The influence of cognitive symptoms can be observed across all aspects of the domain of occupational therapy practice. The aim of occupational therapy intervention for people with cognitive-perceptual impairments is to decrease activity limitations, enhance participation in everyday activities, and assist individuals to gain the abilities they need to take control over their lives and develop healthy and satisfying ways of living. Although the ultimate goal of intervention with this population is clear, there are different perspectives and rehabilitation approaches to accomplish the goal.

Comprehensive cognitive evaluations are needed for two primary reasons. First, evaluations provide evidence and information about the presence of impairments and competencies. Such information can be used to establish baselines, to plan discharge, and to measure intervention effectiveness (e.g., rehabilitation outcomes) (Toglia, 2003). Second, evaluations are needed to gather information for intervention planning. Models for cognitive intervention in occupational therapy often guide the focus of evaluation. For example, the cognitive disability model (Allen, 1985) and the neurofunctional model (Giles, 2005) focus on occupational performance and are not concerned with identifying specific cognitive impairments.

The cognitive disability approach (Allen, 1985) describes hierarchical levels of cognitive function. Evaluation focuses on identifying the cognitive level at which the person is functioning. The neurofunctional approach (Giles, 2005) emphasizes training functional skills and habits within naturalistic settings; therefore, evaluation emphasizes observation of real-life functioning. The quadrophonic approach (Abreu & Peloquin, 2005) and the cognitive retraining model (Averbuch & Katz, 2005) are concerned with identifying and understanding the cognitive impairments that are influencing occupational performance. Measures of cognitive impairment are examined in combination with broader measures of occupation to guide intervention. The multicontext approach (Toglia, 2005) is concerned with facilitating transfer of learning, so evaluation emphasizes evaluation of learning potential or dynamic assessment.

Cognitive-screening assessments are a type of standardized assessment designed to identify problems that need special or further attention. They typically comprise subtests that are divided into specific cognitive subskills such as attention, visual processing, memory, and executive functions. These assessments are either general in nature, addressing all cognitive subskills, such as the Lowenstein Occupational Therapy Cognitive Assessment, (Kat , 1990), or more focused evaluations of a particular subskill, such as the Motor Free Visual Perception Test (Colarusso & Hammill, 2002). Impaired performance on a specific task or subtest is typically used to define the impairment. For example, difficulty differentiating foreground objects or figures from background objects (e.g., picking up a white sock off a white sheet) would be identified as a figure-ground impairment (Zoltan, 1996).

The Loewenstein Occupational Therapy Cognitive Assessment (LOTCA) was developed in 1974 at Loewenstein Rehabilitation Hospital, Israel. This assessment battery is used in evaluating comprehensive cognitive ability of perceptual and motor skills which involves both motor-free and constructional functions (Pedretti, 2006). The LOTCA battery is divided into four areas: orientation; perception; visuomotor organization; and thinking operation. It contains 20 sub-tests including the Riska Object Classification (Williams, Riska & Allen, 1985) which was added to enhance the evaluation of the categorization operation. The main purpose of this battery is to indicate the client's remaining cognitive abilities and disabilities in the areas of orientation, perception, visuomotor organization and thinking operations. These indications are the source for

base-line data collection for occupational rehabilitation program and also as a screening procedure for further assessment (Askenasy & Rahmani, 1988). The cognitive declines associated with normal ageing are well known and well described in the cognitive literature. These declines include reductions of working memory (Salthouse, 1991), attentional difficulties in inhibiting irrelevant stimuli (Stolzfus, Hasher & Zacks, 1996) and slowing in many perceptual and cognitive operations (Fisher & Glaser, 1996; Salthouse, 1996). All of these factors contribute to a common complaint of cognitive deficit among the elderly (Kausler, 1994).

The number of people growing old is increasing year by year due to the development of health services and better quality of living among Malaysians. Sim (2001) noted that even though the Malaysian population has not yet reached the aging proportion, the aging phenomena will eventually occur. According to a study by (Sherina, et al, 2004), The Elderly Cognitive Assessment Questionnaires (ECAQ) they used indicated that 8.3 percent of the elderly population in Malaysia was having cognitive deficits. These cognitive deficits might be a major contributor to the decline of the elderly's quality of life (Sarvimaki & Hult, 2000).

Dynamic assessment investigates a person's ability to learn certain tasks and identifies the conditions that facilitate such learning. The objective is to discover what the person is capable of doing with assistance, or under favorable conditions to determine the full range of performance potential. This is because dynamic assessment is interested in

how performance can be facilitated, thus it is naturally linked to intervention. During an evaluation, the therapist intervenes to change, guide, or improve the person's performance by demonstrating strategies, providing cues, or modifying the activity (Tzuriel, 2000). This information directly relates to intervention planning. For example, if performance cannot be modified through dynamic procedures, then an intervention approach that seeks to change the environment or train caregivers might be more appropriate than an approach that focuses on changing a person's abilities or behaviors.

Dynamic assessment methods have been applied to a wide range of ages and people with cognitive disabilities, including those with developmental disabilities (Hessels-Schlatter, 2002), schizophrenia (Rempfer, Hamera, Brown & Bothwell, 2006; Wiedl, 2003), stroke, brain injury (Toglia, 2005), and Alzheimer's disease (Fernandez-Ballesteros et. al, 2005). However, research applications and specific tools are limited. Toglia (2005) described the use of a dynamic assessment approach for people with brain injury within the framework of a dynamic model of cognition. Dynamic assessment and intervention within this model involve investigating self-perceptions of abilities before and after activity experiences, facilitating change in performance if a person has difficulty, and investigation and analysis of strategy use. The Contextual Memory Test (Toglia, 1993) and Toglia Category Assessment (Toglia, 1994) are two examples of dynamic assessments.

Occupational therapist as the health professional, who works with elderly patients, helps in maintaining or regaining their daily functional performance to meet the basic quality of life. These therapists help the elderly lead a more productive, active, and independent life through a variety of methods. Cognitive competence is an essential component for independent functioning in daily life (Allen, 1985, 1992; Katz, 1994). General slowness in performance of various life activities is frequently related to decline in speed of information processing, which is one of the major changes in the older adults (Katz & Elazar, 1995, Denney, 1992; Kemp, 1991; Riley Perez, 1994). The old person may be unable to perform roles or role behaviors because of inability to recognize and respond correctly in the normal psychosocial context.

1.2 Statement of the problem

Currently, the LOTCA-G battery is widely used by Occupational Therapist in Malaysia to identify the underlying cognitive deficits that leads to deterioration of their daily functioning and quality of life (Allen, 1984). It is gathered from informal discussions with the therapists that the intricate process of administering this battery in English towards Malay-spoken patients is often time consumption due to the difficulties in the aspect of understanding the instructions. In fact, due to the nature of LOTCA-G battery, which contains multiple instructions, spontaneous translation during its administration in other languages may affect the reliability of this battery (Chan, Cecillia, Li-Tsang & Chan,

2006). There were some difficulties in administering the battery to the elderly population because of the different level of capability among therapists in translating the instrument spontaneously. Another way to assess the elderly is through a cross-cultural research process involving an interpreter, since it has been shown that when respondents speak in a second language they perceive themselves as less confident, happy and intelligent (Murray & Wynne 2001). However, working with an interpreter requires knowledge of the methodological aspects of the interpreter role. It is probable that the verbal style of interpreting was used in many of the reviewed studies, and this is the style recommended by a number of researchers (Glasser 1983, Freed 1988, Phelan & Parkman 1995, Patton, 2002). To translate 'word-for-word', or as closely as possible, and stay close to the form of the source language does not always correspond the meaning of the source language. According to Larson (1998) each language has its own distinctive forms, lexicon and grammar for representing meaning or semantics. In order to translate the same meaning in a statement, an interpreter may have to express it in different form in the other language. Translating the form and meaning of a statement in one language into the corresponding form of the other language may often change the meaning (Wallin & Ahlstro, 2006).

This may also lead to clients having difficulties in accomplishing many test items that were either inconsistency in receiving instructions and also it would take longer time to acomplish all the items. The need for adaptation and compensation in administering the assessment for the elderly in the context of Malaysian population is crucial due to the number of elderly population were increased by the time. The LOTCA-G battery has been adapted to meet the requirements of geriatric population. 2004).

The actual time taken in administering the complete LOTCA-G battery for individual patient is between 25 – 30 minutes. Due to the intricacy of the evaluation process, slowness in thinking processing and hardly understanding the instructions might lead to a prolongation of the evaluation process. Increasing time in the evaluation session will require a higher level of concentration and interest which is lacking in the elderly. General slowness in performance of various life activities is frequently related to decline in speed of information processing, which is one of the major changes in older adults (Denney, 1992; Kemp, Bmmmel-Smith & Ramsdell, 1991; Levy, 1986, 1989, 1992; Riley Perez, 1994; Wilson, Allen & McCormack, 1989). Several studies have indicated that LOTCA-G when matched up to Mini Mental State Examination Assessment (MMSE), is sensitive in determining cognitive problems among the elderly.

1.3 The objectives of the study

The general objective of this study is to translate the LOTCA-G into a Malay language (M-LOTCA-G) for the purpose of assessing cognitive deficits among the institutional elderly undergoing Occupational Therapy in Malaysia.

The specific objectives are:

1.3.1 To determine the reliability of M-LOTCA-G.

1.3.2 To determine the performance of the subjects in M-LOTCA-G compared to LOTCA-G.

1.3.3 To examine the differences in administering M-LOTCA-G and LOTCA-G in terms of time consumption.

1.3.4 To examine the interpretation of M-LOTCA-G in determining cognitive problems compared to Mini Mental State Examination (MMSE).

1.3.5 To examine the differences in performance in M-LOTCA-G between gender and age.

1.3.6 To examine the relationship between subject's performance in M-LOTCA-G with the level of concentration.

The results of this study would provide the basis for using the Malay version of M-LOTCA-G in the occupational therapy intervention programs and further allow researchers to explore the relevance of using this state-of-change model to describe the rehabilitation program for the elderly with cognitive deficits.

1.4 Research questions

This study has been carried out to answer the specific questions regarding administration of M-LOTCA-G as the following:

1.4.1 Is the M-LOTCA-G battery reliable in determining cognitive deficits among elderly population in Malaysia?

1.4.2 Is the M-LOTCA-G sub-test consistent in terms of scores compared with the LOTCA-G?

1.4.3 Is there any significant differences in time consumption when administering M-LOTCA-G and LOTCA-G?

1.4.4 Is the M-LOTCA-G battery valid as well as Mini Mental State Examination (MMSE) assessment in screening cognitive problems among elderly population?

1.4.5 Is there any significant difference of performance in M-LOTCA-G among gender and age?

1.4.5 Is there any significant relationship between the performances of the subjects in M-LOTCA-G with their concentration level?

1.5 Research Hypothesis

The hypotheses of this study were set as the following:

1.5.1 There is no significant difference between M-LOTCA-G's and LOTCA-G's constructs and sub-tests in determining cognitive deficit among elderly in Malaysia.

1.5.2 There is no significant difference in time consumed in administration of M-LOTCA-G and LOTCA-G.

1.5.3 There is no significant difference between M-LOTCA-G and M-MMSE battery and its related-domain in term of convergent validity to screen cognitive problems among elderly in Malaysia.

1.5.4 There is no significant difference in M-LOTCA-G performance in gender and age level.

1.5.4 There is no significant difference between the level of concentration and cognitive performance in M-LOTCA-G.

1.6 Conceptual Framework

Considerable evidence exists today to suggest that the need for Multilanguage versions of achievement, aptitude and personality tests and survey is growing (Hambleton & de Jong, 2003). Prominent examples of new test adaptation projects in the United States include studies to prepare Spanish versions of College Board's Scholastic Assessment Test (SAT), American Council on Education's General Education Development (GED) and achievement tests for several state departments of education. Substantially more test adaptations can be expected in the future as international exchanges of test become more common and interest in cross-cultural research grows (Hambleton, Merenda & Spielberger, 2005).

In recent years, the term test adaptation frequently has replaced test translation. This shift in terminology documents the adaptations in references to culture, in content, and in wording that are needed in addition to simple translation in revising a test. These changes are needed to meet the requirements of a circumstance that differs qualitatively from the original use of an assessment device. Few guidelines regarding test adaptation have been developed, and those that do exist have not been widely circulated. The international Test Commision, working in conjunction with the European association of Psychological Assessment, the International of Applied Psychology, the International Association of Cross-Cultural Psychology, the International Association for the Evaluation of Educational Achievement, the International Language Testing Association, and the International union of Psychological Science, have begun systematizing the procedures that are recommended in test adaptation.

The 2003 edition of the Standard for Educational and Psychological Testing (American Educational Research Association and National Council on Measurement in Education) addresses four questions in identifying problems involved in cross-cultural measurement:

> “First, how should a measurement from one language and one culture be adapted to another’s language and culture? Second, how does one know whether the adaption to a new language and/or culture measures the same construct that it did in the first? A third question relates closely to the second: Is the newly adapted measure useful once it has been “fitted” to a

new culture and language? Fourth, do scores from the new instrument mean the same thing that they do in the initial culture and language?"

The validation and adaptation of assessment instruments for specific target population differs appreciably from the original population with which the assessment device is used in terms of culture or cultural background, country and language. Kurt F. & Geisinger (1994) stated several issues in considering cross-cultural adaptation of assessment for its both validity and clinical usefulness:

1.6.1 The adaptation of assessment instruments for new target populations is generally required when the new target population differs appreciably from the original population with which the assessment device is used in terms of culture or cultural background, country and language.

1.6.2 Most cross-cultural adaptations of assessment instruments involves the translation of an instrument from one language into another.

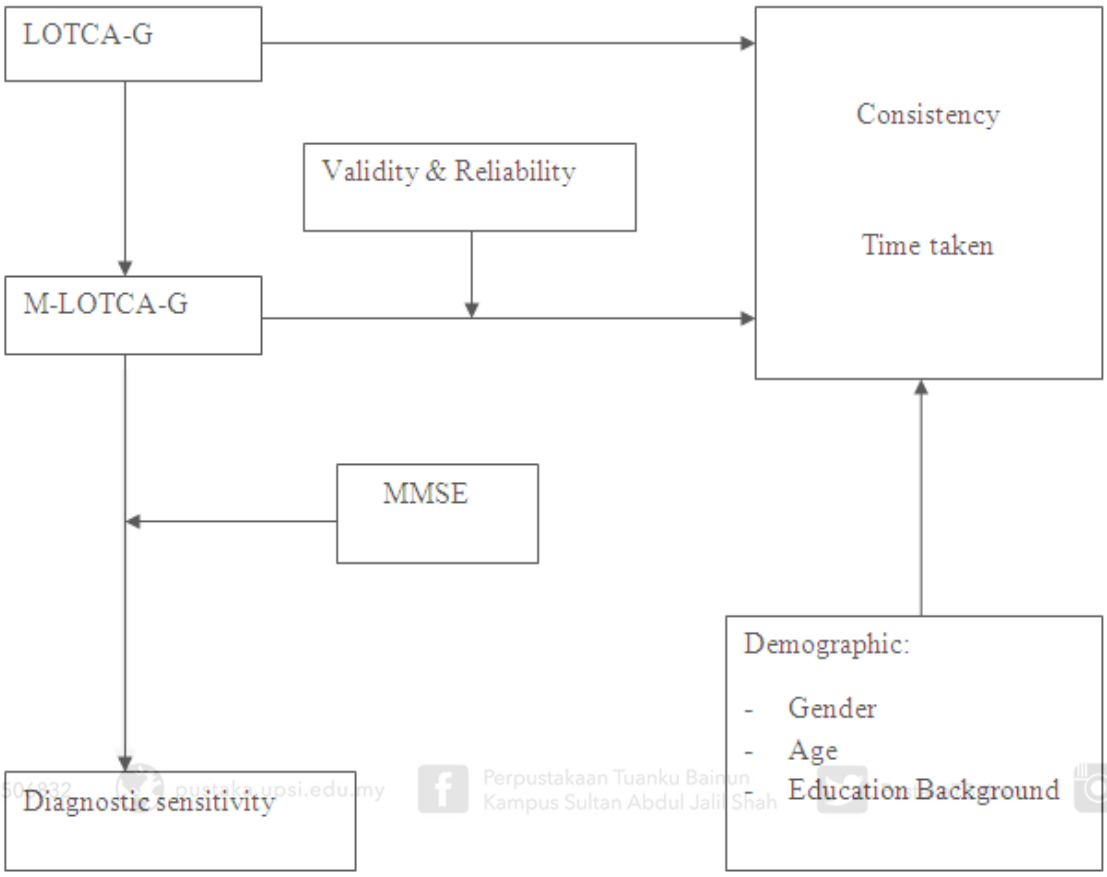
1.6.3 In some instances, however, adaptations of assessment instrument are needed even when the language remains the same because the culture or life experiences of those speaking the same language differ.

1.6.4 What issues need to be considered with regards to the adaptation of an instrument?

If an assessment device is adapted for use with individuals in a new culture, and especially if the assessment device needs to be translated from one language into another,

a number of cautions are warranted. The language used in the directions for completing the assessment device need to be clear and simple. The materials provided to the test administrator and user, including procedures for scoring the instrument, need to be written so as to minimize potential misunderstandings. One should not simply use the item format (e.g. true-false) that was used on the instrument in the original culture; rather, those adapting the instrument need to consider the appropriateness of the format for the culture. When different culture or national groups vary in their levels of sophistication with differing item format, a sufficient number of exemplary practice exercises should be used. Incidents and situations depicted in items in both the original and target languages should be equally common in their occurrence as well as similar in behavioral and construct interpretation. Vocabulary should be similar in both versions. Text (e.g., test questions), as stated previously, should not simply be translated from one language into the other.

Figure 1.1 shows the conceptual framework of the study. The researcher attempts to translate and validate the LOTCA-G cognitive assessment instrument according to the standard translation and validation for psychological assessment procedures. The researcher also looks for relationship between performance in translated version of LOTCA-G and other translated cognitive screening instrument MMMSE.



Keyword: LOTCA-G

Figure 1.1

Conceptual framework of the study

LOTCA-G which, has been used for cognitive assessment among Malay speaking elderly in Malaysia raises the issues of its managerial and reliability by Occupational Therapy practitioners. The common problems in delivering instruction to the respondent during assessment session might lead to spontaneous translation and time consumption that

formed unreliable information or data regarding their cognitive performance among elderly. Translation and validation of LOTCA-G to M-LOTCA-G are projected towards reliable assessment for local usage and is easier to administer by the clinicians. The collective data of participant's performance in M-LOTCA-G portrayed the validity and reliability of this new version assessment.

Time consumption was the dependent variable to look for in regards to its correlation with both LOTCA-G and M-LOTCA-G. Through systematic comparisons, the present study shows neither LOTCA-G nor M-LOTCA-G's assessment is easier to administer and consumes lesser time. This study examines the diagnostic interpretation as a dependent variable for M-LOTCA-G and MMMSE as the indicator. The relationship between the independent variables and dependent variables will be examined to determine the correlations. The qualitative independent variables which consist of the demographic data will also be checked for their correlations with the dependent variable of time consumption.

1.7 Significance of the study

The specific aim of the study was to validate the reliability of the Malay version of LOTCA-G assessment battery and to provide a reliable basic cognitive function evaluation among the elderly. This validation will enable Malaysian occupational therapists to

determine underlying cognitive problems of their clients. The effects of demographic variables in participants performances will also been identified to guide a better interpretation in the overall evaluation.

The effectiveness in evaluation may allow therapists to plan for a better intervention programs in helping the elderly to be independent in dealing with their daily occupational performances. Reliability in this assessment may help therapists to carry out further related studies regarding Occupational Therapy intervention among the elderly with cognitive impairments. The findings of this study can be used as a guideline and the pathway for further translation and validation efforts to other standardized assessment batteries which are being used by Occupational Therapists in Malaysia. The validation efforts will emphasize a cross-cultural aspect of the assessments to provide precise evaluation in occupational performance of person indeed.

1.8 Limitations of the study

This study focused on the translation and validation of assessment tools for the Malay speaking community and was not generalizable to all Malaysian. The participants were the elderly in an institutional dwelling whom might have dissimilarities in terms of environment of performance and intellectual exposures compared with the normal elderly living in the community. The present study also emphasizes the standard of the Malay

language which is the national norm, while there are some parts in Malaysia where the usage of the Malay language differs in terms of pronunciations and meaning due to particular dialects being practiced in that areas. Therefore M-LOTCA-G may only be applicable in west part of peninsula Malaysia and may not be for the east coast as well as for the Sabah and Sarawak populations where they practice their local dialects. The issues regarding construct validity of the battery were also disregarded due to the scope of the study determined by the programme at the master level as well as the time constraint and limited samples available and used. Therefore, factor analysis was not applicable in this study and was not included in this study.

This present study has been limited in terms of time frame that constrained the interval in carrying out the original version of LOTCA-G and M-LOTCA-G to only 4 weeks that might lead to learning effect in delivering instruction by the. In this present study, the researcher used himself as the only rater for data collection due to limitations in recruiting fellow therapists as raters.

1.9 Operational Definition

Occupational Therapy – a way to treat physical and mental patients by using special therapeutic activities.

Occupational performance – person's ability to perform daily life activities including activities of daily living, work and leisure.

Cognitive impairment – deterioration in cognitive functions

Validity -- Validity is the extent to which a test measures what it claims to measure. It is vital for a test to be valid in order for the results to be accurately applied and interpreted.

Reliability -- Reliability refers to the consistency of a measure. A test is considered reliable if we get the same result repeatedly.