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Brief Cognitive Screening Instruments and the Clinical Utility of Three
Screens in a New Zealand Clinical Geriatric Setting

A thesis presented in partial fulfilment of the requirements for the degree of
Doctorate in
Clinical Psychology

at Massey University, Wellington,
New Zealand.

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2012

Abstract

Cognitive impairment (CI) is a serious concern for an aging global population, and its impact is not only felt within the family unit but also society at large.

The current thesis involved two studies – an online survey about the use and role of screening instruments in New Zealand, and an evaluation of the clinical utility of three screens used in a clinical geriatric setting.

The survey found that the Mini Mental Status Examination (MMSE) was the most frequently used screen, followed by the Clock Drawing Test (CDT), Addenbrooke's Cognitive Examination-Revised (ACE-R), Verbal Fluency (FAS), Three Word Recall (3WR), and Trail-making Test (TMT). The opinions of the survey respondents confirmed international publications suggesting that the MMSE does not fulfil the requirements of current assessment and/or screening practices. The survey further suggested that the ACE-R showed promise as an appropriate alternative to the MMSE due to its continuity from the MMSE, and because it appears to meet clinician requirements for brief screening instruments.

The second study evaluated the clinical utility of the ACE-R, MMSE and the Modified Mini Mental State (3MS) within a larger assessment approach. It found that all three screens successfully differentiated between milder forms of CI and dementia; however, predictive ability for milder CI could not be determined. The ACE-R outperformed both the 3MS and MMSE in terms of predictive ability for dementia, with the 3MS showing marginally higher predictive ability than the MMSE. The study suggested that the 3MS's incremental validity did not justify its inclusion in a routine assessment process.

Optimal sensitivity and specificity ratios – providing the best balance between sensitivity and specificity – were obtained with different cut-off scores than those recommended by the screens' original publications. This may have been due to the screens' authors seeking ratios that favoured sensitivity at the cost of specificity. However, in the data set from a clinical geriatric setting, used for this current study, the focus was on limiting both false-negatives and false-positives. While the MMSE

showed adequate sensitivity and specificity, its known cultural and socio-economic bias makes it inappropriate for widespread use.

The predictive ability (and incremental validity) of the ACE-R, coupled with the fact that it is cost-effective, relatively brief and covers all the recommended cognitive domains suggest that it is a suitable substitute for the MMSE in clinical geriatric service settings. Further research is however required to assess any potential biases inherent in the ACE-R. It is recommended that all initial assessments with CI patients include a mood screen due to their high comorbidity and the increased scope of treatment options available when a mood component underlies cognitive complaints.

Acknowledgements

First and foremost, I would like to thank my primary supervisor, Professor Janet Leathem for her guidance and unwavering support throughout the research process. Our numerous brainstorming sessions, your continuous encouragement, and the tissues and hugs you so readily offered during times of struggle were invaluable and very much appreciated. Your patience, good humour, and caring certainly made all the difference in facilitating the completion of this project.

Thank you to Dr Steve Humphries, who provided guidance with questionnaire design, statistical analyses and interpretation. I appreciate your help with the SPSS software and the often step-by-step guidance in performing analyses.

I am very grateful to Dr Crawford Duncan (Psycho-geriatrician) who provided not only expert advice, but granted me access to his clinical database containing test scores of patients spanning at least 7 years. Thank you so much for all the help you provided and the work you put in to transform the data of thousands of people into a user-friendly format that helped me focus on the research questions at hand.

I also want to thank the anonymous patients in the database. While I never met you, your scores formed the basis of the second study, and in my mind, the core of the project as a whole. Likewise, a big thank you to the geriatricians, neurologists, geriatric psychiatrists, and psychologists who participated in the first study. Thank you for your honest comments and ratings in the survey.

To my family, my heartfelt thanks and appreciation for your love, understanding, and support. This thesis was very much a team effort with my parents' constant support and encouragement, and the chats and beers with my brother Werner. Thanks team.

I dedicate this to my parents, Dawie and Annette Strauss.

The Massey University Human Ethics Committee (MUHEC) granted approval to conduct the survey nationwide, and the Health and Disability Ethics Committees (HDEC), and Central Regional Ethics Committee granted ethical approval for the second (ACE-R) study.

Table of Contents

| | |
|----------------------------------------------------------------------------------------|-----------|
| Abstract | 1 |
| Acknowledgements | 3 |
| Table of Contents | 5 |
| List of Tables and Figures..... | 7 |
| | |
| Chapter: 1 Overview..... | 9 |
| | |
| Chapter 2: Age-related cognitive impairment and dementia..... | 12 |
| 2.1 Defining dementia | 12 |
| 2.1.1 The shifting view of dementia..... | 16 |
| 2.1.2 Mild cognitive impairment (MCI) | 18 |
| 2.2.1 Prevalence, societal cost and effects of cognitive impairment | 19 |
| 2.2.2 Effects of dementia – quality of life, impact on families & society | 21 |
| 2.2.3 Increased need for services | 22 |
| 2.3. The neuropsychology of cognitive impairment | 23 |
| 2.3.1 Cognitive changes associated with normal aging | 23 |
| 2.3.2 Alzheimer's disease | 23 |
| 2.3.3 Vascular dementia..... | 24 |
| 2.3.4 Fronto-temporal dementia..... | 25 |
| 2.3.5 MCI | 25 |
| 2.4 Summary | 26 |
| | |
| Chapter 3: Assessment and Screening in Cognitive Impairment | 27 |
| 3.1. Introduction | 27 |
| 3.2. The assessment and screening of CI | 27 |
| 3.2.1. Cultural issues | 30 |
| 3.2.2. Validity & reliability issues | 31 |
| 3.3. An overview of CI screening instruments..... | 33 |
| 3.4. Conclusion | 41 |
| | |
| Chapter 4: The use of brief cognitive screening instruments in New Zealand...42 | |
| Preface..... | 42 |
| Abstract | 44 |

| | |
|---------------------------------------------------------------------------------------------------------------------|-----------|
| Introduction | 45 |
| Method | 47 |
| Participant recruitment | 47 |
| The questionnaire | 48 |
| Results | 49 |
| Participant characteristics..... | 49 |
| Cognitive screens | 50 |
| Discussion | 57 |
| References | 61 |
| | |
| Chapter 5: The clinical utility of the ACE-R, 3MS, and MMSE in a New Zealand geriatric clinical setting..... | 67 |
| Preface | 67 |
| Abstract | 70 |
| Introduction | 72 |
| Method | 76 |
| Screen description | 76 |
| Participants | 77 |
| Statistical analysis | 79 |
| Results | 79 |
| ACE-R, 3MS, and MMSE total scores | 79 |
| ACE-R subdomain scores | 82 |
| ROC analyses | 85 |
| Discussion | 88 |
| References | 92 |
| | |
| Chapter 6: Conclusion | 97 |
| 6.1 Overall summary | 97 |
| 6.2 Implications..... | 99 |
| 6.3 Future research | 101 |
| 6.4 Concluding comments and recommendations | 101 |
| References | 103 |

List of Tables and Figures

Chapter 2: Age-related cognitive impairment and dementia

| | | |
|-------------|----------------------------------------------------------------------|----|
| Table 2.1: | DSM-IV-TR diagnostic criteria for dementia of Alzheimer's type | 14 |
| Table 2.2: | Vascular dementia (formerly multi-infarct dementia)..... | 15 |
| Table 2.3: | The original 1999 Petersen criteria for MCI..... | 18 |
| Table 2.4: | Updated Mayo Clinic criteria for MCI..... | 18 |
| Figure 2.1: | MCI types and subtypes | 19 |
| Table 2.5: | Prevalence of dementia in New Zealand in 1983..... | 21 |

Chapter 3: Assessment and Screening in CI

| | | |
|------------|-----------------------------------------------------|----|
| Table 3.1: | Overview of brief cognitive impairment screens..... | 34 |
|------------|-----------------------------------------------------|----|

Chapter 4: The use of brief cognitive screening instruments in New Zealand

| | | |
|-----------|------------------------------------------------------------------------------------------------|----|
| Table 1: | Participant characteristics and response rate according to professional discipline (N=82)..... | 50 |
| Table 2: | Screening instruments most frequently used for cognitive impairment..... | 52 |
| Figure 1: | Frequency of use for screening measures..... | 56 |

Chapter 5: The Clinical Utility of the ACE-R versus the MMSE and 3MS: A retrospective New Zealand study

| | | |
|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|----|
| Table 1: | Research studies examining the clinical utility of the ACE, ACE-R, MMSE and 3MS for detecting dementia..... | 74 |
| Table 2: | Clinical comparison of the ACE-R, 3MS, and MMSE total scores for the three diagnostic groups..... | 81 |
| Table 3: | Clinical comparison of the ACE-R subdomain scores for the three diagnostic groups..... | 84 |
| Figure 1: | Receiver Operating Characteristic Curve of the ACE-R, 3MS, and MMSE as a function of sensitivity and specificity at identifying dementia (N = 196)..... | 86 |
| Table 4: | Area Under the Curve statistics for the ACE-R, 3MS, and MMSE (N=196)..... | 87 |

| | | |
|----------|--------------------------------------------------------------------------------------------------------|----|
| Table 5: | Optimal cut-off scores and associated sensitivity and specificity for the ACE-R, 3MS, and MMSE..... | 88 |
|----------|--------------------------------------------------------------------------------------------------------|----|

Appendices

APPENDIX I: Survey Information Sheet

APPENDIX II: Survey Questionnaire