

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

**AN EVALUATION OF THE COGNITIVE OUTCOMES OF
ELECTROCONVULSIVE THERAPY: A RETROSPECTIVE STUDY**

A thesis presented in partial fulfilment of the requirements for the degree of

Doctorate

in

Clinical Psychology

at Massey University, Wellington

New Zealand.

Kiri M Luther, BA(Hons) Psychology

2012

THESIS EMBARGO

Appendix D

MASSEY UNIVERSITY
Application for Approval of Request to Embargo a Thesis
(Pursuant to AC98/168 (Revised 2), Approved by Academic Board 17/02/99)

Name of Candidate: Kiri Michelle Luther.....ID Number: 96139950.....

Degree: DClInPsych.....Dept/Institute/School: School of Psychology

Thesis title: An Evaluation of the Cognitive Outcomes of Electroconvulsive Therapy:
A Retrospective Study.....

Name of Chief Supervisor: Janet Leathem.....Telephone Ext: 62035.....

As author of the above named thesis, I request that my thesis be embargoed from public access until (date): March 2013..... for the following reasons:

- ☐ Thesis contains commercially sensitive information.
- ☐ Thesis contains information which is personal or private and/or which was given on the basis that it not be disclosed.
- ☒ Immediate disclosure of thesis contents would not allow the author a reasonable opportunity to publish all or part of the thesis.

Other (specify):.....

Please explain here why you think this request is justified:

The thesis contains four manuscripts. One is currently under review by a journal. The other three will be submitted for journal review shortly. Often it can take a number of months for the review process and to make any changes requested by the journal. Therefore I need to Embargo the thesis to allow time for this process to occur.

Signed (Candidate): *K. M. Luther*.....Date: 22/02/2012

Endorsed (Chief Supervisor) *[Signature]*.....Date: *22.2.2012*

Approved/Not Approved (Representative of VC) *[Signature]*.....Date: *2/03/2012*

Note: Copies of this form, once approved by the representative of the Vice-Chancellor, must be bound into every copy of the thesis.

ABSTRACT

The aim of the current study detailed in the following pages was to investigate the cognitive functioning from quantitative and qualitative perspectives of a group of 19 people who had received ECT two or more years previously. Reviews of the literature conducted prior to the study suggested the domains most commonly reported affected by ECT were verbal learning and memory, visual learning and memory, global cognitive functioning, subjective complaints, retrograde amnesia/memory, attention, retrieval, autobiographical memory, anterograde amnesia/memory and aspects of executive functioning. The most commonly used objective measures for these domains were the Rey Auditory Verbal Learning Test, the Rey Complex Figure Test, the Mini Mental State Examination and the Autobiographical Memory Inventory. Qualitative assessment most often utilised subjective measures such as the Cognitive Failures Questionnaire or the Squire Subjective Memory Questionnaire. The current study planned to extend qualitative assessment using Interpretative Phenomenological Analysis.

Specific hypothesis were that 1) scores on the RCFT, RAVLT and AMI for patients who received their last ECT two or more years ago would be below the age-matched norms (cut-off ranges in the case of the AMI) for each test, 2) the MoCA would identify more participants with Global Cognitive deficits than the MMSE and 3) participants would *report* a higher degree of difficulty with their memory and cognition than what was identified by the objective assessment measures.

Findings did not confirm hypothesis 1) with the exception of scores on the RCFT. Hypothesis 2) was confirmed, with the MoCA identifying more participants with deficits than the MMSE. Hypothesis 3) was confirmed, with participants reporting subjective complaints that were not identified by the objective measures. The study was limited by small sample size for quantitative analysis and further research utilising a larger sample which assesses at baseline, during and immediately after ECT and the development of a qualitative assessment measure is also recommended.

ACKNOWLEDGEMENTS

I would like to express my sincere thanks to my supervisors, Professor Janet Leathem and Dr Steven Humphries from Massey University for their support, constant guidance during the process of this research, and statistical assistance.

I would also like to express my thanks to Dr Nisar Contractor, ECT Treating psychiatrist at Capital and Coast District Health Board for the opportunity to carry out this research, and his nurse Susan Vella for the hours spent assisting me with participant recruitment and access to patient files.

On a personal level I am extremely thankful to my parents, Maggie and Dave Luther for their financial and emotional support over the seven and a half years I have been completing this Doctorate. Without it I don't think I could have persevered.

I am also extremely grateful for the support of my partner, Dr Alain Marcuse who has been able to empathise with me during the final stages of this process.

And finally, but probably most importantly I wish to thank all the amazing people who consented to participate in this research. Your stories humbled me, without you, this research could not have happened.

TABLE OF CONTENTS

| | |
|---|------------|
| Thesis Embargo | i |
| Abstract | ii |
| Acknowledgements..... | iii |
| List of Tables | vii |
| List of Figures..... | ix |
| Candidates Declaration | x |
| CHAPTER 1 – Overview | 1 |
| CHAPTER 2 – Background of Electroconvulsive Therapy (ECT)..... | 3 |
| History..... | 3 |
| Present Day ECT Procedure..... | 4 |
| When should ECT be used? | 6 |
| Research and Literature on ECT and Cognitive Functioning | 7 |
| CHAPTER 3 –Cognitive Outcomes of Electroconvulsive Therapy: | |
| A Review | 10 |
| Abstract | 12 |
| Introduction | 13 |
| ECT and Depression | 13 |
| Adverse Cognitive Outcomes of ECT..... | 15 |
| Method | 16 |
| Results | 17 |
| Discussion | 18 |
| References | 19 |
| Statement of Contribution | 28 |

| | |
|--|---------------|
| CHAPTER 4 – Objective and Subjective Assessment of the Cognitive Outcomes of Electroconvulsive Therapy: A Review | 29 |
| Abstract | 31 |
| Introduction | 32 |
| Method | 33 |
| Results | 34 |
| Discussion | 35 |
| References | 36 |
| Statement of Contribution | 48 |
| CHAPTER 5 – Variables Affecting Electroconvulsive Therapy | 49 |
| Electrode Placement..... | 49 |
| Waveform and Pulse Width | 51 |
| Electrical Dosage Relative to Seizure Threshold..... | 52 |
| Stimulus Dose Titration | 52 |
| Number of Treatments and Frequency..... | 53 |
| Depression..... | 54 |
| Summary | 54 |
| CHAPTER 6 – Current Research | 55 |
| Assessment of Memory and Global Cognitive Function | 56 |
| Research Aims and Hypotheses | 56 |
| CHAPTER 7 – An Evaluation of the Long-Term Cognitive Outcomes of Electroconvulsive Therapy (ECT): A Retrospective Study | 58 |
| Abstract | 60 |
| Introduction | 61 |
| Participant Recruitment and Demographics | 65 |
| ECT Treatment Demographics | 67 |
| Assessment..... | 68 |
| Procedure | 72 |
| Analysis of Data..... | 72 |
| Results | 73 |
| Discussion | 80 |

| | |
|--|------------|
| Limitations | 81 |
| Recommendations | 82 |
| References | 83 |
| Statement of Contribution | 88 |
| CHAPTER 8 – Qualitative Assessment of the Cognitive Outcomes of | |
| Electroconvulsive Therapy | 89 |
| Abstract | 91 |
| Introduction | 92 |
| Participant Recruitment and Demographics..... | 94 |
| ECT Treatment Demographics | 96 |
| Procedure..... | 97 |
| Analysis of Data | 98 |
| Results | 99 |
| Discussion | 108 |
| References | 110 |
| Statement of Contribution | 113 |
| CHAPTER 9 – Discussion | 114 |
| Overview of Findings..... | 114 |
| Study Limitations | 116 |
| Recommendations | 117 |
| Clinical Implications | 118 |
| Personal Reflections..... | 119 |
| REFERENCES..... | 121 |
| APPENDICIES..... | 126 |
| Appendix A: Ethics Approval HDEC and Massey University | 127 |
| Appendix B: Participant Information and Consent Pack | 129 |
| Appendix C: Data Collection Forms | 134 |
| Appendix D: Current Assessment Forms, CCDHB | 141 |
| Appendix E: Individual Participant Information: Objective | |
| Compared to Subjective | 143 |

LIST OF TABLES

Chapter 2

| | | |
|----------|---------------------|---|
| Table 1. | Side-Effects of ECT | 8 |
|----------|---------------------|---|

Chapter 3

| | | |
|----------|--|----|
| Table 1. | Clinical and Cognitive Outcomes of Electroconvulsive Therapy (ECT) | 25 |
|----------|--|----|

Chapter 4

| | | |
|----------|---|----|
| Table 1. | Measures for Assessing Clinical and Cognitive Outcomes of Electroconvulsive Therapy (ECT) | 42 |
|----------|---|----|

Chapter 6

| | | |
|----------|--|----|
| Table 1. | Domains to be Assessed and Measures to be Used | 56 |
|----------|--|----|

Chapter 7

| | | |
|----------|--|----|
| Table 1. | Participant Demographic Information | 66 |
| Table 2. | Domains to be Assessed and Measures to be Used | 68 |
| Table 3. | Difference between Group Means and Age-Matched Norms (Cut-off Scores for the AMI) for Total Participants and those scoring below and above the Cut-off for the MoCA. | 73 |
| Table 4. | Correlations between the MoCA Total and MMSE Total, Delayed Recall and MoCA Total and MMSE Recall and MMSE Total | 76 |
| Table 5. | Three Layers of Themes | 77 |
| Table 6. | General Comparison of Objective and Subjective Outcomes | 78 |

Chapter 8

| | | |
|----------|-------------------------------------|-----|
| Table 1. | Participant Demographic Information | 96 |
| Table 2. | Summary of Qualitative Analysis | 99 |
| Table 3. | Other Emerging Themes | 107 |

LIST OF FIGURES

Chapter 2

| | | |
|-----------|---|---|
| Figure 1. | EEG Progression of Seizure Induced by ECT | 5 |
|-----------|---|---|

Chapter 5

| | | |
|-----------|----------------------|----|
| Figure 1. | Electrode Placements | 51 |
|-----------|----------------------|----|

Chapter 7

| | | |
|-----------|---|----|
| Figure 1. | A Comparison of the MoCA Total Score with Cut-Off (26) and the MMSE Total Score with Cut-Off (23) | 75 |
|-----------|---|----|

CANDIDATES DECLARATION



MASSEY UNIVERSITY
GRADUATE RESEARCH SCHOOL

Declaration Confirming Content of Digital Version of Thesis

I confirm that the content of the digital version of this thesis

Title: An Evaluation of the Cognitive Outcomes of
Electroconvulsive Therapy: A Retrospective Study

is the final amended version following the examination process and is identical to this hard bound paper copy.

Have you included published articles/material from your thesis? Yes / No

If yes, have you received copyright permission from the
copyright holder (usually the publisher) to include this
material with your thesis? Yes / No

Student's Name:

Student's Signature:

Date: