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Cognitive Change and Assessment during Electroconvulsive Therapy

A thesis presented in partial fulfillment of the requirements for the Degree of Doctor of
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Abstract

Electroconvulsive therapy (ECT) is the most effective treatment available for depression; however, cognitive side effects limit its use. If detected early in treatment, cognitive decline can be reduced by modifying the way the treatment is administered. Currently, no gold standard measures exist to assess ECT related cognitive change. The studies within this thesis aimed to improve the standard in which cognition is assessed during a course of ECT.

Study One surveyed health professionals across New Zealand on their current practice of cognitive assessment during ECT. Study Two collected normative data for a neuropsychological measure of motor speed which had potential to be included in a cognitive screening measure for use with people receiving ECT. Study Three prospectively investigated objective cognitive changes in 13 people receiving electroconvulsive therapy for a mood disorder. Study Four investigated the subjective cognitive changes by qualitatively analysing patients' reports of cognitive function throughout treatment. Finally, a brief but comprehensive cognitive screening measure was proposed for repeated use with patients receiving ECT. This measure was largely informed by findings from the aforementioned studies.

Time, resources and a lack of sensitive tests restricted professionals from conducting more frequent and thorough cognitive assessments. ECT resulted in both cognitive decline and improvement across a range of cognitive domains. Alleviation in depression was associated with improvement in cognitive function from baseline. Six weeks post ECT, cognitive decline most often resolved back to or was superior to the baseline functioning. Domains sensitive to decline during a course of treatment included retrograde memory, anterograde memory, verbal and visual learning, attention, verbal fluency and information processing speed. Retrograde amnesia was more likely for memories formed closer in time to ECT treatment. Subjective reports of cognitive change were broad, and varied as a function of treatment phase and severity of depression. It is proposed that future research determine the psychometric properties of the suggested screening measure.

Preface

As I was entering the Doctor of Clinical Psychology programme at Massey University, a predecessor in the programme, Dr Kiri Luther, also working under the supervision of Professor Janet Leathem, had just completed her doctoral research in the field of cognitive change associated with electroconvulsive therapy (ECT). Kiri conducted cognitive assessments with 19 people who had received ECT at least two years previously and found that some areas of cognitive deficit due to ECT endured into the long term. This finding highlighted the importance of minimising cognitive dysfunction early on in treatment by frequently monitoring and assessing cognitive function and thereby preventing long term cognitive deficits. Kiri and Janet's passion for the topic was contagious, and I was soon convinced that further research in this area was warranted.

A discussion with the ECT administering psychiatrist at Capital and Coast District Health Board (C&C DHB) Dr Nisar Contractor revealed longstanding frustration with the paucity of assessment measures available to sensitively detect cognitive change during ECT. Current measures were reportedly insensitive to detecting cognitive change reported by patients, and lengthier neuropsychological assessments, though more sensitive, were impractical due to time constraints. It was decided that further research into the neuropsychological assessment of patients receiving ECT, and the subsequent development of a brief screening measure tailored to detect cognitive change during ECT would be beneficial to both patients receiving ECT and health professionals responsible for their care.

At the outset of planning the research, it was hoped that a large enough number of participants would be recruited in order to analyse the results collectively using parametric statistics. After conversations with Professors Richard Porter and Bob Knight, two New Zealand researchers who have both contributed extensively to research in this field, the issue of recruitment was raised. It soon became apparent the greatest challenge in conducting this type of research would be in recruiting participants. This concern was also expressed by Susan Vella, ECT nurse at C&C DHB.

Recruitment challenges would be due to a number of factors: the small number of people who are prescribed ECT, the large physical distances between District Health Boards (DHBs) and thus the travel involved to recruit participants from across DHBs, and due to the characteristics of the population under investigation. For example, as most people who receive ECT suffer from severe depression, many would not be well enough to undergo cognitive assessments, to consent to taking part in research or be motivated to partake in research. In addition, there was a strict timeframe for completion of the research; the entirety of the research needed to be designed, receive ethics approval, be conducted, analysed, written up and submitted within 24 months.

Although early on in planning the research it was understood and acknowledged that recruiting participants would be difficult, it was agreed that a meaningful contribution to the existing pool of knowledge on cognitive effects of ECT could still be made even with a small participant sample. The implication, however, was that the way in which the results would be analysed would need to differ. Presenting the results as a series of case studies would abolish the need for a large participant pool required for hypothesis testing, and instead would represent what cognitive changes occurred for each individual as a function of how many treatments they had had, and how their mood changed over their course of treatment. The method of analysis was appropriate as each individual was variable in terms of ECT administration, seizure duration, threshold, number of treatments, psychiatric illness, co-morbidities, socio economic status, educational history, age, sex, and ethnicity to name a few. As analysing the results as a series of case studies would still provide rich and meaningful data, it was decided to go ahead with conducting the research. Despite receiving

support and referrals from four DHBs in the Lower North Island¹, the number of participants recruited was, as anticipated, low. However, meticulous efforts were made to ensure that baseline assessments, follow-up assessments and reassessments after every three treatments of ECT were made, which resulted in a total of 87 cognitive assessments conducted.

This thesis presents and discusses current research into the short term cognitive effects of electroconvulsive therapy and the assessment thereof. The research was conducted in order to better understand the nature and severity of the cognitive effects endured by 13 patients receiving ECT and to determine precisely, what cognitive changes occurred during their courses of ECT. In addition to adding to the existing literature on the short term cognitive effects of ECT, the current study also endeavoured to determine which measures were sensitive and insensitive to detecting the effects of ECT, and which cognitive changes people were reporting that were not being detected by the objective measures of assessment. The findings of this study later informed the suggestion of a screening measure, to assess and monitor cognitive function during a course of ECT.

¹ Capital and Coast DHB, Hutt Valley DHB, Mid Central DHB and Hawke's Bay DHB

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Thank you to the ongoing support and encouragement from Dr Nisar Contractor and Susan Vella psychiatrist and ECT nurse from C&C DHB who played a large part in the initiation of the research, provided ongoing support and encouragement throughout the duration of the research, and always kept me up to date with new referrals and treatment progress of participants.

Thank you to Erwin Sonnendecker, Clinical Psychologist at Hawke's Bay DHB for showing an avid interest in the research, and sharing a passion for improving the way in which cognition is assessed during a course of ECT; a passion which resulted in Erwin contributing some assessment data to the research.

Thank you to my parents for encouraging me in my first year of university to pursue my interests and to take papers which I enjoy, and not worry about whether or not they would someday lead to a career. Advice which has serendipitously led to me writing this doctorate and pursuing a career in clinical psychology. Thank you to my partner, Ben, whose endless support and numerous cups of teas and coffees (and at times dinner brought to my office) has helped me complete this thesis. I would also like to acknowledge my office peers in T4 who have now all become close friends.

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