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.
Efficacy of Cognitive Behavioural Therapy for Clients who have Sustained a Traumatic Brain Injury (TBI)

A Thesis presented in partial fulfilment of the requirements for the degree of
Doctor of Philosophy (PhD)
in Psychology

at Massey University, Wellington
New Zealand

Muriel Katherine Christianson
2009
Abstract

While the focus of rehabilitation following traumatic brain injury (TBI) is often on management of physical and cognitive impairments, emotional and behavioural changes in the person with the injury may represent major hurdles in adjustment following injury. Mood, anxiety and adjustment disorders are common following TBI. A manualised cognitive behavioural therapy (CBT) treatment programme was developed that incorporated provision of education on consequences of TBI, used cognitive and behavioural strategies to recognise and manage emotional reactions to injury, and promoted achievement of personal goals. Participants were nine people with TBI referred to Massey University Psychology Clinic Wellington, for psychotherapy to assist in managing symptoms of psychological distress or adjustment difficulties following injury. Measures used included the Hospital Anxiety and Depression Scale (HADS) to monitor progress in reduction of symptoms of Anxiety and Depression; the Patient Competency Rating Scale (PCRS) to assess competency across areas of day-to-day living; and the Homework Rating Scale Second Edition (HRS-II) to assess the value of homework assignments for participants. Results were presented graphically in group format and in the form of individual case studies outlining progress in achieving individual goals. There was considerable variation in the responses of participants to treatment. When anxiety and depression were secondary to other referral issues such as fatigue and pain that remained high over treatment sessions, there was limited movement on HADS Anxiety and Depression scores. The small number of participants impacted on the ability to detect differences between Patient and Informant ratings on the PCRS or to demonstrate increased levels of awareness over treatment sessions. Consistent completion of Homework assignments proved difficult for participants. Factors that impacted on achievement of personal goals included ongoing levels of fatigue and pain, levels of personal expectation, interpersonal and organisational skills, insight into emotional reactions, and good family and social support. There is a part for a CBT approach in adjusting to changes following TBI, particularly in assisting with reassessing expectations following injury.
Dedication

This research project is dedicated to my husband Nigel John Christianson, who provided support and encouragement in the initial stages of the project. While he is not able to see the final outcome of my research, his spirit has remained a source of strength and encouragement in completion of this study.
Acknowledgements

Thanks are due to my supervisors, Professor Janet Leathem and Dr Duncan Babbage who have provided assistance and encouragement in researching, developing and trialling the CBT programme for this study. Massey University has provided me with a Doctoral Scholarship to fund this research. The Massey University Psychology Clinic Wellington, has assisted with recruitment of participants, and provided a venue for treatment sessions. Thanks go to Mr Simon Bennett, Dr Susan Watson and Ms Karen Kyne who provided clinical treatment sessions for participants. Dr Duncan Babbage and Dr Susan Watson provided clinical supervision for the researcher who also provided clinical treatment.

Thanks go to Massey University Human Ethics Committee Wellington, the Central Regional Ethics Committee of the Health and Disability Ethics Committees, and Accident Compensation Corporation (ACC) Research Ethics Committee for providing approval for this project. Participants in this study were referred to the Massey University Psychology Clinic Wellington, by ACC.

Acknowledgements are due to the nine participants who consented to take part in this study. I would also like to thank Dr Peter Martin and Margaret Martin who provided personal support and assisted with formatting of graphs and the overall document.
# Table of Contents

List of Tables ........................................................................................................................................ 4

List of Figures .......................................................................................................................................... 5

Chapter 1: Overview of Project .................................................................................................................. 7

Chapter 2: Traumatic Brain Injury: Acute and Long Term Consequences ............................................. 11

Acute Consequences .............................................................................................................................. 11

Severity of Injury ................................................................................................................................... 12

Consequences of Traumatic Brain Injury .............................................................................................. 13

Physical: ............................................................................................................................................... 13

Cognitive: ............................................................................................................................................ 14

Emotional: ........................................................................................................................................... 16

Traumatic Brain Injury: Post-Acute Consequences ............................................................................. 17

Psychosocial Issues: ............................................................................................................................... 18

Disturbances in Self-Awareness ............................................................................................................ 25

Neurological Basis for Impairments in Awareness .............................................................................. 25

Denial of Deficits ................................................................................................................................ 26

Social Factors in Awareness Issues ....................................................................................................... 26

Social Impact of Traumatic Brain Injury: ........................................................................................... 28

Long-term Consequences of Brain Injury ............................................................................................ 28

Impact on the Family .............................................................................................................................. 29

Studies on Impact of TBI on the Family ............................................................................................... 30

Chapter 3. Rehabilitation following Traumatic Brain Injury .................................................................... 36

Behavioural Rehabilitation ..................................................................................................................... 36

Cognitive Rehabilitation ......................................................................................................................... 37

Awareness Issues .................................................................................................................................. 38

Interventions for Disordered Self-Awareness ....................................................................................... 38

Adapting Psychotherapy for People with TBI ......................................................................................... 39

Problems Working with People with TBI ............................................................................................. 39

The Therapeutic Alliance ....................................................................................................................... 40

Approach to Psychotherapy with People with TBI .............................................................................. 40

Psychotherapy Interventions .................................................................................................................. 42

Behavioural and Cognitive Behavioural Interventions: ...................................................................... 42

Other Psychotherapeutic Interventions: ............................................................................................... 43

Education: ........................................................................................................................................... 44

Empirical Studies ...................................................................................................................................... 44

Studies of Psychotherapy for Patients with TBI .................................................................................... 44

Methodological Issues with Psychotherapy Research ........................................................................... 54

Group designs ....................................................................................................................................... 54

Single subject designs ............................................................................................................................. 55

Ethical issues ....................................................................................................................................... 56

Summary ................................................................................................................................................ 56

Research Approach for This Study ......................................................................................................... 57

Hypotheses: ............................................................................................................................................ 57

Chapter 4: Setting up the Research Project .............................................................................................. 58
Chapter 5: Method ................................................................................................................................... 70
  Design .............................................................................................................................................. 70
  Participants...................................................................................................................................... 70
  Individual Achievement of Personal Goals .................................................................................... 74
  The Cognitive Behaviour Therapy Manual .................................................................................... 74
Outcome Measures .............................................................................................................................. 75
  Mood and Anxiety ............................................................................................................................. 75
  The Hospital Anxiety and Depression Scale (HADS) ....................................................................... 76
  Adjustment and Awareness................................................................................................................ 77
  The Patient Competency Rating Scale (PCRS) .................................................................................. 78
  Homework Tasks ............................................................................................................................. 79
  The Homework Rating Scale (HRS) .................................................................................................. 80
Procedure .......................................................................................................................................... 81
  CBT Treatment Approach ............................................................................................................... 82
Chapter 6: Results .............................................................................................................................. 85
  Adherence to Therapy Manual ........................................................................................................ 86
Group Data .......................................................................................................................................... 87
  Progress in Reduction of Symptoms of Anxiety and Depression: .................................................. 90
  HADS A Scores: .............................................................................................................................. 90
  HADS D Scores: .............................................................................................................................. 90
Case Studies ......................................................................................................................................... 92
  Participant One: ............................................................................................................................... 92
  Participant Two: ............................................................................................................................... 95
  Participant Three: ............................................................................................................................ 100
  Participant Four: ............................................................................................................................. 104
  Participant Five: ............................................................................................................................. 108
  Participant Six: ............................................................................................................................... 110
  Participant Seven: ........................................................................................................................... 112
  Participant Eight: ............................................................................................................................ 116
  Participant Nine: ............................................................................................................................. 121
  Compliance and Completion of Homework .................................................................................... 130
Chapter 7. Discussion .......................................................................................................................... 132
  Reduction in Symptoms of Anxiety and Depression ........................................................................ 134
  Progress with Additional Referral Areas ......................................................................................... 135
Usefulness of CBT Approach for People with TBI ........................................................................... 138
  Adjusting to Changes in Abilities and Expectations Following Injury ............................................... 138
  Adjustment to Changes within the Family and Social Situations ..................................................... 139
  Changes in Tendency to Worry and in Levels of Motivation .............................................................. 141
  Changes Observed Across Treatment .............................................................................................. 141
# Table of Contents

*Changes in Behaviours and Emotions with CBT Intervention following TBI* ......................... 142

- Levels of Insight and Awareness .................................................................................. 143
- Homework Assessment .................................................................................................. 144
- Adherence to the Cognitive Therapy Manual ............................................................... 144
- Individual Achievement of Personal Goals ................................................................. 145
- Limitations of the Study: .............................................................................................. 147
  - Small N Design ......................................................................................................... 147
  - Selecting Appropriate Measures ............................................................................. 148
- Conclusions .................................................................................................................. 149

Appendix 1 ...................................................................................................................... 152

  **COGNITIVE THERAPY FOR CLIENTS WITH TRAUMATIC BRAIN INJURY** ............... 152

Appendix 2 ...................................................................................................................... 182

  **HOMEWORK SHEETS** ............................................................................................ 182

Appendix 3 ...................................................................................................................... 192

  **EDUCATIONAL HANDOUTS** .................................................................................... 192

Appendix 4 ...................................................................................................................... 233

  **COGNITIVE THERAPY CHECKLIST** ........................................................................ 233

  **COGNITIVE THERAPY CHECKLIST contd.** ............................................................. 234

Appendix 5 ...................................................................................................................... 235

  **Adherence to Cognitive Therapy Manual** ............................................................... 235

Appendix 6 ...................................................................................................................... 237

  **Artwork: Impact of Injury for Participant 7** ............................................................. 237

References ...................................................................................................................... 238
List of Tables

Table 2.1 Measures used to Determine Severity of Traumatic Brain Injury. (Lucas, 1998) .........................13
Table 2.2 Studies of Outcomes in People with TBI. .........................................................................................22
Table 2.3 Studies on Social Impact of TBI on Patients and their Families. ......................................................32

Table 3.1 Methodological Characteristics of Studies of Psychotherapy with Brain-Injured Clients. ......49

Table 5.1 Referral Needs for Participants. ........................................................................................................73
Table 5.2 Interpretation of HADS Anxiety and Depression Scale Scores. (Snaith & Zigmond, 1994) ....77
Table 5.3 PCRS Items in Areas of Competency and Awareness. (Leathem et al., 1998) .........................79

Table 6.1 Targeted Individual Treatment Approach ........................................................................................88
**List of Figures**

| Figure 5.1 | Age of participants at time of injury and at time of referral | 72 |
| Figure 5.2 | Recruitment of Participants and Clinicians for Research Project | 83 |
| Figure 5.3 | Proposed Schedule for Administration of HADS, PCRS and HRS-II Measurements | 84 |
| Figure 6.1 | HADS A scores across baseline and treatment for all Participants | 90 |
| Figure 6.2 | HADS D scores across baseline and treatment for all Participants | 91 |
| Figure 6.3 | HADS scores across baseline and treatment conditions for Participant One | 95 |
| Figure 6.4 | Average ratings across PCRS areas for Participant One | 95 |
| Figure 6.5 | HADS scores across baseline and treatment conditions for Participant Two | 99 |
| Figure 6.6 | Average ratings across PCRS areas for Participant Two | 99 |
| Figure 6.7 | HADS scores across baseline and treatment conditions for Participant Three | 102 |
| Figure 6.8 | Average ratings across PCRS areas for Participant Three | 103 |
| Figure 6.9 | HADS scores across baseline and treatment conditions for Participant Four | 107 |
| Figure 6.10 | Average ratings across PCRS areas for Participant Four | 108 |
| Figure 6.11 | HADS scores across baseline and treatment conditions for Participant Five | 111 |
| Figure 6.12 | Average ratings across PCRS areas for Participant Five | 111 |
| Figure 6.13 | HADS scores across baseline and treatment conditions for Participant Six | 115 |
| Figure 6.14 | Average ratings across PCRS areas for Participant Six | 115 |
| Figure 6.15 | HADS scores across baseline and treatment conditions for Participant Seven | 119 |
| Figure 6.16 | Average ratings across PCRS areas for Participant Seven | 120 |
| Figure 6.17 | SUDS ratings for fatigue and headaches for Participant Seven | 121 |
| Figure 6.18 | HADS scores across baseline and treatment conditions for Participant Eight | 125 |
| Figure 6.19 | Average ratings across PCRS areas for Participant Eight | 125 |
| Figure 6.20 | HADS scores across baseline and treatment conditions for Participant Nine | 129 |
| Figure 6.21 | Average ratings across PCRS areas for Participant Nine | 129 |