Absorption, Fantasy Proneness, and Trance: Dissociative Pathways of Affective Self-Regulation in Trauma

Natasha Maria Loi

Bachelor of Arts, University of New England

Bachelor of Psychology (Honours), University of New England

A thesis submitted for the degree of Doctor of Philosophy of the University of New England, Armidale, NSW, Australia

July 2011

Abstract

This thesis set out to investigate the role of dissociation in the human response to traumatic events. The overarching aim was to determine if different forms of exposure to trauma are related to an individual's ability to employ dissociations in experience to self-regulate emotional responses. The role of individual differences in the related personality traits of absorption, fantasy proneness, and imagery ability in generating trance-like dissociations of experience are examined by combining trait questionnaire measures with state measures of the phenomenology of trance, a condition characterised by dissociations in experience. Findings are applied to investigate the role of dissociation in the relationship between recollections of childhood trauma and adults' emotional responses (e.g., skin conductance and heart rate variability) to images of traumatic events. Finally, the dissociation-related neural processes implementing affective self-regulation in trauma exposed adults are examined in an experimental electroencephalographic study. Study 1 examined the structure of experience while responding to a standardised trance induction. Exploratory factor analysis on the Phenomenology of Consciousness Inventory (PCI) determined five factors of trance experience named Altered Awareness, Negative Affect, Self-Control, Positive Affect, and Imagery. Two of these factors (Altered Awareness and Self-Control) were found to closely correspond to Tellegen's absorption-related experiential and instrumental mental sets, respectively. Study 2 explored the contribution of absorption and imagery abilities in the dissociations in experience induced by trance instructions. Absorption ability was found to correlate with the experiences of Positive Affect and Imagery as well as to uniquely predict Altered Awareness. Imagery ability correlated with and uniquely predicted Self-Control and bore no relation to the PCI trance factor of Imagery. Study 3 examined the role of recollected childhood abuse, absorption, fantasy proneness, and imagery ability in emotional self-regulation when viewing distressing images in both baseline and trance induction conditions. Fantasy proneness, but not absorption, was associated with recollections of some types of childhood abuse. Both absorption and fantasy proneness were associated with autonomic self-regulation in the trance induction condition. Study 4 examined the impact of adult trauma exposure on the use of dissociation in self-regulating emotional responses. General population and occupational trauma exposed samples viewed distressing images in the two conditions with autonomic responses, subjective intensity ratings, and brain responses recorded. Trance instruction was found to modulate negative affect in the general population. Two dissociation-related neural mechanisms were found to modulate emotional response, particularly in the occupational trauma exposed sample. Findings from this program of research indicate the utility of trance instruction in modulating negative affect when exposed to traumatic events.

Certification

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree or qualification.

I certify that any help received in preparing this thesis and all sources used have been acknowledged in this thesis.

.....

Acknowledgements

Before beginning this degree, I read a quote which has remained with me as a continual reminder that something very special would arise from this undertaking: *"If one advances confidently in the direction of his dreams, and endeavors to live the life which he imagined, he will meet with success unexpected in common hours."* The words of Henry David Thoreau have been my constant companion through the many highs and lows of this adventure. Their presence on my office wall have reminded me that while not always easy, if you give your utmost to whatever you attempt the rewards will be great. Now that this part of my education is at an end I find these words resonating ever more strongly.

I first and foremost wish to thank my supervisor Dr Graham Jamieson for all of his assistance in this undertaking. I have learnt so much and been challenged often. Thank you for your intelligence and kindness; it certainly would not have been possible to have done any of this without your insight and guidance.

I would also like to thank Professor Don Hine for his kindness, interest, and counsel.

There are so many others who have helped in numerous ways. Primary among these is Ian Evans. Ian's assistance was invaluable not only in the data collection process, but also in his technological know-how. I will always be grateful for all he has done. Thank you. I would also like to acknowledge Chris Lisle whose IT assistance in our department goes above and beyond the call of duty. Chris is always so kind and takes an active interest in students' research. Thank you for all of your IT wizardry. It is so very much appreciated by us all. I would also like to thank other members of the general staff who have, over the years, provided assistance including Dean Davidson, Kerryn Allen, Shonette Bridgeman, Helen Creagan, Rebecca Watson, and Pam Roberts.

I would also like to thank those academics who have provided me with support as well as their time, kindness, and friendship. Chief among these are Dr Jennifer Loh who has become a good friend and colleague. Your kindness to me will never be forgotten. I will always be grateful for the opportunities you have afforded me. Thank you so much for your friendship. I would also like to thank Dr Einar Thorsteinsson for his quirky sense of humour and for trying to instil in us his

love of statistics. I'm afraid I may never quite get it, though! I would also like to thank all other academic staff members who, over the years, have given me the opportunity to learn and experience academia.

Thanks must also be given to all the participants who so willingly gave their time to help me in the data collection process.

Thanks also to all my peers (past and present) in Psychology, first in North Wing and now in Howie. Having others go through similar experiences makes the process a little bit easier and having one another as support is vital. So thank you to Nathalie Wess, Navjot Bhullar, Daiva Newby, Sally Rooke, Jane Ebejer, Gail MacDonell, Bernie Cocks, John Scott-Hamilton, Methuen Morgan, Belinda Flannery, and Sarah Eagle. Thanks also to all of the Clinical Masters students who have come and gone over the years. I wish each and every one of you success.

I must also acknowledge the Mary White community who have become my family and home away from home since 2007. Thank you to each and every person I have had the pleasure to call friend. You have all made this undertaking so much easier than if I had been alone. I will never forget the fun times we have shared together. You will always be in my heart.

Thank you for everything, Esso. You will never be forgotten, my friend (January 4, 1953 – 15 October, 2011).

For their additional kindnesses, friendship, and generosity I wish to thank Fredy Valenzuela, John Smith, and Colin and Adrianna Starkey.

Finally, I wish to acknowledge the most important people in my life. First, to Boyd, thank you for being braver than me and realising that taking a 'chance' on us would be one of the best and smartest things we would ever do. You are truly the best friend I have ever had and without your love and support this whole thing would have been so much harder. Thank you for always knowing how to make me laugh even when it seemed like the last thing I felt like doing! Words will never suffice to tell you what you mean to me.

Finally, to Mum, Dad, and Cath, I truly believe I could write an entire thesis on my feelings for you. Whoever was so fortunate to be given such support and love? Cath, my best friend and the more forthright sartorially sophisticated one! (Might a Longchamp finally be in my future?) You are brilliant, brave, and beautiful and will always mean more to me than I will probably ever

be able to tell you. Dad, thank you so much for all your words of encouragement. Your constant support has meant a lot to me. Mum. There aren't enough words. You have made everything in life possible. This thesis would have been impossible without you. Your love, patience, forgiveness, intelligence, and support make my life complete. I love you more than words. This is for you.

Continuous effort – not strength or intelligence – is the key to unlocking our potential.

Winston Churchill

Table of Contents

Abstract ii
Certification iii
Acknowledgements iv
List of Tables xi
List of Figures xii

Chapter 1: General Introduction 1
1.1 Chapter Overviews 3

Chapter 2: Literature Review 6
2.1 Abstract 7
2.2 Introduction 7
2.3 Trauma and Dissociation 9
2.3.1 The Concept of Dissociation 10
2.4 Absorption 14
2.5 Fantasy Proneness 15
2.6 Absorption and Psychosomatic Self-Regulation 16
2.7 Hypnosis and Analgesia 17
2.8 Emotional Numbing 19
2.9 Self-Regulation and Dissociative Responses 21
2.10 How to Study the Effects of Trauma on Cognitive and Affective Self-Regulation 22
2.11 Clinical Implications 24
Statement of Originality 26
Statement of Authors' Contribution 27

Chapter 3: Study 1 28
3.1 Introduction 28
3.1.1 Measuring Trance-Like Alterations in Consciousness 30
3.1.2 The Current Study 36
3.2 Method 37
3.2.1 Participants 37
3.2.2 Materials 37
3.2.3 Procedure 39
3.3 Results 40
3.3.1 Structure of Trance Induction Experience as Measured by the PCI 40
3.3.2 Dimensions of the PCI 41
3.3.3 Reliability of the Five Factors 43
3.3.4 The Relationship of the Five Factors with Tellegen's Mental Sets 43
3.4 Discussion 43
3.4.1 Categorical Versus Dimensional Methods 47
3.4.3 Conclusion 49

Chapter 4: Study 2 51
4.1 Introduction 51
4.1.1 Absorption and Imagery Abilities 51
4.1.1.1 Absorption Ability 51

4.1.1.2 Imagery Ability 53
4.1.1.3 Individual Differences in Absorption Ability and Imagery Ability 56
4.1.2 The Current Study 57
4.2 Method 59
4.2.1 Participants 59
4.2.2 Materials 59
4.2.3 Procedure 61
4.3 Results 61
4.3.1 Descriptive Statistics and Bivariate Correlation Analyses 61
4.3.2 Predicting Absorption and Imagery Ability 63
4.3.3 Analyses of Individual Differences in Absorption Ability 65
4.3.4 Analyses of Individual Differences in Imagery Ability Scores 67
4.4 Discussion 70
4.4.1 Limitations 74
4.4.2 Conclusion 75

Chapter 5: Study 3 **76**
5.1 Introduction 76
5.1.1 Self-Regulation 78
5.1.2 Childhood Trauma and its Measurement 80
5.1.3 Psychophysiological Reactions to Affectively Arousing Stimuli 84
5.1.4 The Current Study 87
5.2 Method 89
5.2.1 Participants 89
5.2.2 Materials 89
5.2.2.1 Self-Report Measures 89
5.2.2.2 Stimulus Materials 93
5.2.2.3 Stimulus Creation and Presentation 94
5.2.3 Psychophysiological Data Acquisition 95
5.2.4 Procedure 99
5.2.5 Heart Rate and Skin Conductance Analysis 101
5.3 Results 102
5.3.1 Descriptive Statistics 102
5.3.2 Bivariate Correlation Analyses 103
5.4 Discussion 107
5.4.1 The Relationship between Absorption and Fantasy Proneness 107
5.4.2 Absorption, Fantasy Proneness, and Recollections of Childhood Trauma 108
5.4.3 The Role of "Instrumental" Imagery Ability 109
5.4.4 The Relationship between Self-Control and Reports of Childhood Trauma 110
5.4.5 The Relationship between Autonomic Self-Regulation and Absorption and Fantasy Proneness 110
5.4.6 Limitations 111
5.4.7 Conclusion 112

Chapter 6: Study 4 **114**
6.1 Introduction 114
6.1.1 Vicarious Traumatisation 115
6.1.2 The Use of Negative Affective Images as a Surrogate of a Traumatic Event 118

6.1.3 The Role of the Anterior Cingulate Cortex (ACC) and Amygdala in Emotional Processing 121
6.1.4 EEG and Reactions to Aversive Stimuli 123
6.1.5 The Current Study 125
6.2 Method 128
6.2.1 Participants 128
6.2.1.1 Sample 1 128
6.2.1.2 Sample 2 128
6.2.1.3 Between-Groups Analyses 129
6.2.2 Materials 129
6.2.2.1 Self-Report Measures 129
6.2.2.2 Stimulus Materials 130
6.2.2.3 Stimulus Creation and Presentation 130
6.2.3 EEG Data Acquisition 130
6.2.4 Procedure 134
6.2.5 Signal Preparation 136
6.2.6 ERP Analysis 136
6.3 Results 138
6.3.1 Additional Bivariate Correlation Analyses 138
6.3.2 Mixed Model ANOVAs 141
6.3.3 PLS Analysis 144
6.3.3.1 Latent Variable 1 144
6.3.3.2 Latent Variable 2 148
6.4 Discussion 152
6.4.1 State and Trait-Like Dissociations and Trance-Related Changes in Emotional Regulation 153
6.4.2 The Difference between the Trauma Exposed and General Population Samples in the Baseline and Trance Conditions 156
6.4.3 The Relationship between Neural Activity and Trait and Affective Response Measures 157
6.4.3.1 Latent Variable 1 158
6.4.3.2 Latent Variable 2 159
6.4.4 Limitations 161
6.4.5 Conclusion 162

Chapter 7: Conclusions **165**
7.1 Introduction 165
7.2 The Research Program in Review 166
7.2.1 Study 1 166
7.2.2 Study 2 168
7.2.3 Study 3 170
7.2.4 Study 4 173
7.3 Implications 178
7.4 Future Directions: The Clinical Implications of Dissociative Coping 179

References **182**

Appendices **210**

Appendix A: A Re-Examination of the Factor Structure of the Inventory of Childhood Memories and Imaginings (ICMI) 210
Appendix B: Task 1 (Baseline Condition) Images with Valence and Arousal Rating Means (and Standard Deviations) and Participants Average Ratings (and Standard Deviations) for Each Image ($N = 51$) 219
Appendix C: Task 2 (Trance Induction Condition) Images with Valence and Arousal Rating Means (and Standard Deviations) and Participants' Average Ratings (and Standard Deviations) for Each Image ($N = 51$) 221
Appendix D: Trance Induction Transcript 223

List of Tables

Chapter 3

3.1 Principal Components Analysis with PROMAX Rotation of Five-Factor Solution of Trance Experience 42

3.2 Correlation Matrix of the Five-Factor Solution 43

Chapter 4

4.1 Means and Standard Deviations for the PCI Five-Factor Model, Total MODTAS, and Total Betts' QMI 62

4.2 Bivariate Correlation Matrix of the Five Factor PCI, Total MODTAS, and Total Betts' QMI 63

4.3 Predicting Total Absorption Ability from the PCI Five-Factor Model 64

4.4 Predicting Total Imagery Ability from the PCI Five-Factor Model 64

4.5 Means and Standard Deviations for the Five-Factor PCI by Level of Absorption Ability 66

4.6 Planned Contrasts for Level of Absorption Ability 67

4.7 Means and Standard Deviations for the Five-Factor PCI by Level of Imagery Ability 69

4.8 Planned Contrasts for Level of Imagery Ability 70

Chapter 5

5.1 Means, Standard Deviations, and Range of Scores for the Questionnaire Variables ($N = 51$) 103

5.2 Bivariate Correlations among the Major Study Variables 106

Chapter 6

6.1 Bivariate Correlation Analyses among the Major Study Variables and Skin Conductance Change Score, Average Intensity Ratings Change Score, and Low and High Frequency Components of Heart Rate Variability Change Scores 140

6.2 Means and Standard Deviations for Skin Conductance, Average Response Ratings, and Low and High Frequency Components of Heart Rate Variability across the Baseline and Trance Conditions for the General and Trauma Exposed Samples 143

List of Figures

Chapter 3

3.1 The scree plot indicating the number of factors to be retained 40

Chapter 5

5.1 An example of the process of stimulus presentation as seen by participants 95

5.2 Electrodes were placed on the volar surfaces of the medial phalanges of the left hand for the recording of electrodermal activity 97

Chapter 6

6.1 Forty-channel NuAmps Quik-Cap© electrode layout 132

6.2 A visual representation of the eye-movement artefact correction task 133

6.3 Interaction plot for the general population sample and trauma exposed sample on average intensity ratings scores across the baseline and trance induction conditions 142

6.4 Electrode saliencies for LV1 145

6.5 ERP of LV1 at right parietal P4 for the trauma exposed sample 146

6.6 The brain (design) scores for LV1 for the trauma exposed (Group 1) and general population samples (Group 2) 148

6.7 Electrode saliencies for LV2 149

6.8 ERP of LV2 at right occipital electrode O2 for the trauma exposed sample 150

6.9 The brain (design) scores for LV2 for the trauma exposed (Group 1) and general population samples (Group 2) 152