

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.

***THE IMPACT OF ANXIETY, DEPRESSION,
AND COGNITIVE FACTORS ASSOCIATED
WITH ANXIETY, ON EVERYDAY RISK
TAKING BEHAVIOUR.***

A thesis presented in partial fulfilments for the degree of

Doctor of Clinical Psychology

at

Massey University – Wellington, New Zealand

by

BRETT DAVID HUNT

Brett Hunt

2012



Declaration Confirming Content of Digital Version of Thesis

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

Title: *The Impact of Anxiety, Depression, and Cognitive Factors
Associated with Anxiety on Everyday Risk Taking Behaviour.*
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: *BRETT DAVID HUNT*

Student's Signature: *Brett Hunt*

Date: *13/4/2012*

ABSTRACT

Research into risk taking behaviour (RTB) reveals that depression and anxiety (in particular) are associated with risk aversive behaviour, for many different types of risks, including gambling, simulated risk taking tasks, and everyday risks. There has, however, been little research into the relationship between cognitive factors associated with anxiety, and RTB. This is in spite of research in this area finding that perceived risk had a stronger relationship with a cognitive factor (worry) than with anxiety.

The present research is investigating the everyday RTB associated with depression, anxiety, and cognitive factors associated with anxiety. Everyday risks are the type of risks being investigated as these are decisions people make on a daily basis that involve risk that cannot easily be avoided, and being overly avoidant of these risks can lead to negative consequences.

This research is split into two studies, with the first study split into two sections. The first part of study one is the continued development of a measure of everyday RTB across multiple domains. All existing measures of everyday RTB either do not measure RTB in different domains, or have psychometric problems. Therefore, the development of a measure suitable for use in this research project is required. The second part of the first study is investigating the relationships of anxiety and depression level with everyday RTB, across multiple domains. Study one used three samples, New Zealand community and tertiary student samples, and an international internet sample. The second study is investigating the relationship between cognitions associated with anxiety (e.g. worry and metaworry) and everyday RTB. This study used two samples, a New Zealand tertiary student sample, and an international internet sample.

Results from the development of the everyday risk taking measure indicate that the measure that underwent further development, the Everyday Risk Inventory – Expanded (ERI-E) is a reliable measure of everyday RTB, for general community samples in particular. Cronbach's alpha values for the community sample were all above 0.7, but in some domains for the student sample were just below 0.6. Confirmatory factor analysis showed the fit for both the multiple domain and single domain models were moderate to good.

Results from the second part of study 1 showed that the relationships of anxiety and depression, with everyday RTB were weak, with few significant results from either correlational or multiple regression analysis. In particular, depression has a minimal impact on RTB. Sociodemographic factors, particularly age, gender and income had more significant impacts on everyday RTB, with people on lower income, and older people, being risk averse. Gender differences varied

between domains, with females significantly more risk averse for risks involving personal danger and risks to others.

The concept that differences in people's sense of power within their society affects RTB was supported, as in general socio-demographic differences associated with increased power (e.g. higher income and being male) led to people being less risk averse.

Results from study two showed that everyday RTB has a stronger association with cognitive factors associated with anxiety than to anxiety level. In particular it has high correlations with worry and intolerance of uncertainty (IU). Structural equation modelling found that a model with cognitive factors leading to anxiety and differences in everyday RTB was an almost perfect fit for the model, and anxiety had no direct effect on RTB. It was also found that the relationship between everyday RTB and cognitive factors was stronger for high anxiety levels than low anxiety levels. Further research is required to determine the reason why cognitive factors associated with anxiety affect everyday RTB, rather than anxiety level.

The present research contributes to knowledge in this area by showing that cognitive factors impact on RTB, rather than anxiety level. It also found that socio-demographic characteristics, particularly age, were more important in explaining differences in RTB than was found in previous research.

ACKNOWLEDGMENTS

The completion of this thesis has been the result of the support of many people. Most importantly my wife Odette who has supported me in numerous ways throughout the process. Another valuable means of support has been the fellow students in the CHERUBS lab (too numerous to mention) and my fellow clinical students (particularly Heidi, Kiri and Uvonne), who through travelling along the same path have made me not feel so isolated.

I also want to thank my supervisors for their support. Steve, Ruth and Janet have supported me in producing the final product that both them (and I at times) thought might never happen. In particular Steve for his statistical knowledge and perseverance at reading my often not well articulated writing. Also to Harvey Jones for his help in setting up the website for the internet sample, and sending me the data so promptly.

I also want to thank Massey University for the scholarship that helped reduce the financial hardship of study, and for Karl Pajo from the ethics committee for helpful suggestions that made that part of the process easier. Also the lecturers who agreed to let me distribute questionnaires in their classes, and the students who filled them in.

TABLE OF CONTENTS

ABSTRACT	i
ACKNOWLEDGMENTS.....	iii
TABLE OF CONTENTS.....	iv
LIST OF APPENDICES.....	viii
LIST OF FIGURES	ix
LIST OF TABLES.....	x
CHAPTER 1: PROJECT INTRODUCTION.....	1
1.1 Outline of Research	2
1.2 Significance of Research.....	4
1.3 Relevance of Study to Clinical Psychology	4
CHAPTER 2: DEVELOPMENT OF MEASURES TO BE USED IN UNDERTAKING RESEARCH INTO EVERYDAY RISK TAKING	5
2.1 Introduction	5
2.1.1. Terminology used in Risk Research	6
2.1.1.1 Everyday risk taking.....	7
2.1.2. Is RTB a Single Domain or Multiple Domain Construct?	8
2.1.3. Existing Measures of RTB	10
2.1.4. Measures of Anxiety and Depression.....	14
2.1.5. Research Objectives	14
2.2. Methods	14
2.2.1 Samples and Procedure	14
2.2.1.1 New Zealand tertiary student sample.	15
2.2.1.2 New Zealand community sample.	15
2.2.1.3. International internet sample.....	15
2.2.2. Measures.....	16
2.2.2.1 Everyday Risk Inventory -Expanded (ERI-E).	16
2.2.2.2 Depression, Anxiety and Stress Scale (DASS-21).....	17
2.2.3. Statistical Analysis	18
2.3. Results.....	19
2.3.1. Everyday Risk Inventory – Expanded (ERI-E)	19
2.3.1.1. Comparison of samples.	19
2.3.1.2. Initial data analysis.....	20
2.3.1.3. Confirmatory factor analysis.....	21

2.3.2. Factor structure of the DASS-21	34
2.4 Discussion	42
2.4.1 Factor structure of the ERI-E.....	42
2.4.2 Factor structure of the DASS-21.....	45
2.5. Conclusion.....	46

CHAPTER 3: ANXIETY, DEPRESSION AND EVERYDAY RISK TAKING

BEHAVIOUR.....	47
3.1. Introduction	47
3.1.1. The Anxiety – Risk Relationship	47
3.1.1.1. Relationship between anxiety and RTB.....	48
3.1.1.2. Types of risks avoided by anxious people	48
3.1.1.3. Reasons for risk avoidance in anxious people.....	48
3.1.1.4. Trait vs. state anxiety and RTB	50
3.1.1.5. RTB for different types of anxiety disorders.....	50
3.1.1.6. Summary of anxiety – RTB relationship.	50
3.1.2. The Depression – Risk Relationship	51
3.1.2.1. Relationship between depression and RTB.....	51
3.1.2.2. Factors affecting the depression – RTB relationship	51
3.1.2.3. Trait vs. state mood and RTB.....	52
3.1.2.4. Domain specific relationships between depression and RTB.	53
3.1.2.5. Effect of anxiety on the depression – RTB relationship.	53
3.1.2.6. Summary of depression – RTB relationship.	54
3.1.3. Why Everyday Risks May be Different to Other Types of Risks?	54
3.1.4. Socio-Demographic Characteristics and Risk.....	55
3.1.4.1. Nationality and RTB.....	55
3.1.4.2. Gender and RTB.....	56
3.1.4.3. Age and RTB.....	57
3.1.4.4. Other socio-demographic factors and RTB.....	58
3.1.4.5. Summary of socio-demographic characteristics and RTB	59
3.1.5. Gaps in Existing Research.	59
3.1.6. Hypotheses to be Tested	60
3.2 Method	61
3.3 Results	62
3.3.1. Correlational Analysis	63
3.3.1.1. Anxiety, depression and everyday RTB	64
3.3.1.2. Socio-demographic characteristics	65

3.3.2. Multiple Regression Analyses	67
3.3.2.1. Everyday risks.....	68
3.3.2.2. Unknown risks	69
3.3.2.3. Risks involving personal danger	70
3.3.2.4. Risks to others.....	71
3.3.2.5. Social risks.....	72
3.3.2.6. Health risks	73
3.3.2.7. Risks to belongings	73
3.3.3. Analysis of Non-Linear Relationships for Anxiety and Depression.....	74
3.3.3.1. Two-way ANCOVA analyses for anxiety and depression	75
3.3.4. Categorical Socio-Demographic Variables.	78
3.3.4.1. Relationship status.....	78
3.3.4.2. Employment status	80
3.3.4.3. Nationality differences	82
3.3.4.4. Are white males more risk taking?.....	83
3.3.5. Post Hoc Analysis - Sample Subgroups	85
3.3.5.1. Regression analysis by gender	85
3.3.5.2. Regression analysis by age	89
3.4. Discussion	94
3.4.1. Anxiety and Everyday Risk Taking	94
3.4.1.1. Everyday RTB	94
3.4.1.2. Domain specific RTB.....	95
3.4.2. Depression and Everyday Risk Taking	97
3.4.3. Socio-Demographic Factors and Everyday Risk Taking	98
3.4.4. International Differences in RTB.....	103
3.5. Conclusion	103

CHAPTER 4: COGNITIVE THEORIES FOR ANXIETY AND THE ROLE OF

EVERYDAY RISK TAKING BEHAVIOUR.....	105
4.1 Introduction	105
4.1.1 Previous Research of Cognitive Factors Associated with Anxiety and RTB	106
4.1.2 Cognitive Theories of Anxiety	107
4.1.2.1 Schema theory.....	108
4.1.2.2 Metacognitive model of GAD	109
4.1.2.3 GAD model incorporating Intolerance of Uncertainty.....	113
4.1.2.2 Four factor theory of anxiety	115

4.1.3 Important Cognitive Factors Derived from Models	117
4.1.4. Hypotheses.....	118
4.2. Method	120
4.2.1. Samples and Procedure.....	120
4.2.2. Statistical Analysis	121
4.2.2.1. Measures used	121
4.3. Results.....	124
4.3.1. Comparison of Samples	124
4.3.2. Factor Structure of the DAS-A-17	125
4.3.2.1. DAS-A-17 item analysis	126
4.3.2.2 CFA analysis	127
4.3.3. Normality Assumptions	129
4.3.4. Correlations.....	129
4.3.4.1. Socio-demographic factors.....	129
4.3.4.2. Psychometric measures.....	132
4.3.4.3. Mediating effects of anxiety level on the relationship between cognitive factors and everyday RTB.....	132
4.3.5. International Comparison	138
4.3.6. Post-Hoc Analysis: Analysis of Different Anxiety Levels	140
4.4. Discussion	148
4.5. Conclusion.....	151
 CHAPTER 5: AMALGAMATION OF RESEARCH RESULTS.....	 153
5.1. General Discussion	153
5.2. Importance of Research.....	156
5.3. Limitations.....	157
5.4. Further Research.....	158
REFERENCES	161
APPENDICES	175

LIST OF APPENDICES

Appendix A: Handout for first stage of project.....	175
Appendix B– Statistical information for each sample.	182
Appendix C: Initial ERI-E CFA models	188
Appendix D: DASS Factor Analysis Results for Internet and Student Samples.....	190
Appendix E: DASS CFA models	197
Appendix F: Descriptive statistics for student and internet sample (first stage)	201
Appendix G: Results from ANCOVA analysis – for non-linear affects of anxiety and depression levels.	203
Appendix H: Results from analysis of categorical variables.....	207
Appendix I: handouts for second stage of project	217
Appendix J: CFA results for DAS	226
Appendix K: Descriptive Statistics for second stage of research	231
Appendix L: Post Hoc analysis for scores on measures for different levels of anxiety.....	233
Appendix M: Correlations between ERI-E scales and cognitive measures for different levels of anxiety	238

LIST OF FIGURES

Figure 1: One factor CFA model – final.	25
Figure 2: Model 2 – with second order factor	30
Figure 3: Models being tested in Studies 1 and 2.	106
Figure 4: An outline of Well’s metacognitive theory for GAD, from Wells (1999).....	110
Figure 5: An outline of GAD model incorporating Intolerance of Uncertainty (IU), from (Dugas et al., 1998).	114
Figure 6: An outline of the four factor model of trait anxiety, from Eysenck (1997).....	116
Figure 7: Model being used in structural equation modelling to test mediating effects of anxiety level on the relationship between cognitive factors and everyday RTB.....	133
Figure 8: Effects of anxiety level on the relationship between cognitive factors and everyday RTB.	133

LIST OF TABLES

Table 1: Descriptive statistics and comparisons between samples	19
Table 2: Final CFA results for single factor model	23
Table 3: Item loadings for single factor CFA solution	24
Table 4: CFA fit indices for Model 2 – correlated factors	26
Table 5: Correlations between ERI-E factors (Community sample)	27
Table 6: CFA fit indices for Model 2 – second order factor	27
Table 7: Factor loadings for six factor solution.....	28
Table 8: Everyday Risk Inventory – Expanded domain items with loadings (for community sample	31
Table 9: Internal consistencies for six factor solution	32
Table 10: Descriptive statistics for ERI-E subscales (using ANOVA)	33
Table 11: Correlations between ERI-E subscales.....	33
Table 12: Descriptive statistics for items of DASS-21.....	35
Table 13: Factor loadings for DASS-21 using EFA	37
Table 14: CFA fit indices results for different models of the DASS-21	38
Table 15: Factor loadings for quadripartite model of DASS-21 with theoretically justified correlated errors.....	39
Table 16: Factor loadings for original model of DASS-21 with theoretically justified correlated errors	41
Table 17: Differences between groups on DASS-21 scores.....	62
Table 18: Descriptive statistics for continuous measures – community sample.	63
Table 19: Correlations between anxiety, depression and ERI scales for all samples	64
Table 20: Correlations of socio-demographic variables with ERI-E and DASS-21 scales for community sample.....	66
Table 21: Multiple regression: Analysis of everyday risks scores using forward selection.....	68
Table 22: Multiple regression: Analysis of unknown risks scores using forward selection.	69
Table 23: Multiple regression: Analysis of risks involving personal danger scores using forward selection.....	70

Table 24: Multiple regression: Analysis of risks to others scores using forward selection.....	71
Table 25: Multiple regression: Analysis of social risks scores using forward selection.	72
Table 26: Multiple regression: Analysis of health risks scores using forward selection.....	73
Table 27: Multiple regression: Analysis of risks to belongings scores using forward selection.	74
Table 28: Means (SD) for each level of anxiety and depression for unknown risks.....	75
Table 29: Means (SD) for each level of anxiety and depression for risks involving personal danger.	76
Table 30: Means (SD) for each level of anxiety and depression for social risks.....	77
Table 31: Means (SD) for each level of anxiety and depression for health risks.	77
Table 32: Differences in means for each relationship type.	79
Table 33: Differences between estimated marginal means of different relationship status', with age and income as covariates.	79
Table 34: Differences between estimated marginal means of different employment status', with age as a covariate.....	81
Table 35: Differences between estimated marginal means of different employment status', with age as a covariate.....	81
Table 36: Differences between estimated marginal means of New Zealand and United States participants, age and gender as covariates.	83
Table 37: Differences between estimated marginal means of different ethnic groups for everyday risks score – with age and income as covariates.	84
Table 38: Differences between estimated marginal means of different ethnic groups, with age and income as covariates.	85
Table 39: Multiple regression: Analysis of everyday risk taking by gender, using forward selection.....	86
Table 40: Multiple regression: Analysis of risks to belongings by gender, using forward selection.	87
Table 41: Multiple regression: Analysis of unknown risks by gender, using forward selection.....	87
Table 42: Multiple regression: Analysis of risks involving personal danger risk by gender, using forward selection.....	88
Table 43: Multiple regression: Analysis of risks to others by gender, using forward selection.....	88

Table 44: Multiple regression: Analysis of social risk taking by gender, using forward selection.....	89
Table 45: Multiple regression: Analysis of health risks taking by gender, using forward selection.....	89
Table 46: Multiple regression: Analysis of everyday risk taking by age, using forward selection.....	90
Table 47: Multiple regression: Analysis of risks to belongings by age, using forward selection.....	91
Table 48: Multiple regression: Analysis of unknown risks by age, using forward selection.	91
Table 49: Multiple regression: Analysis of risks involving personal danger risk by age, using forward selection.	92
Table 50: Multiple regression: Analysis of risks to others by age, using forward selection.	93
Table 51: Multiple regression: Analysis of social risks by age, using forward selection.	93
Table 52: Multiple regression: Analysis of health risks by age, using forward selection.	94
Table 53: Descriptive statistics and comparisons between samples	125
Table 54: Descriptive statistics for items of the DAS-A-17 for student sample.	126
Table 55: CFA fit indices results for different models of the DAS-A-17.	127
Table 56: Factor loadings - Two factor DAS-A-17 model for student sample.	128
Table 57: Internal consistency of DAS-A-17 scales.....	128
Table 58: Correlations between socio-demographic variables and psychometric measures for internet sample.	130
Table 59: Correlations between socio-demographic variables and psychometric measures for student sample.	131
Table 60: Correlations between psychometric measures for student sample.	134
Table 61: Correlations between psychometric measures for internet sample.	136
Table 62: Differences between means of New Zealand and United States participants.	139
Table 63: ANOVA of scores for measures for different levels of anxiety (combined sample).	141
Table 64: Correlations between psychometric measures for United States sample.....	142
Table 65: Correlations between psychometric measures for New Zealand sample.....	144
Table 66: Differences in correlations between mild and moderate anxiety levels.	146
Table 67: Differences in correlations between low (normal and mild) and high (moderate and severe) anxiety levels.....	147