

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.

**CYCLONE BOLA:  
A STUDY  
OF THE  
PSYCHOLOGICAL AFTER-EFFECTS.**

A thesis presented in partial fulfilment  
of the requirements for the degree  
of Masters of Arts in Psychology  
at Massey University.

Kerry L. Eustace

1994

**ABSTRACT:**

The present study investigates the long-term post-trauma psychological reactions to Cyclone Bola, which struck the East Coast of the North Island of New Zealand in March, 1988. This study evaluates psychological morbidity in respondents, in particular it estimates prevalence of post-traumatic stress disorder (PTSD). The current study identifies factors which could influence the development of PTSD or other psychological problems which may result from a natural disaster. A questionnaire was posted to subjects identified as either having been evacuated from their homes during Cyclone Bola, or who applied for financial aid following the disaster. Four hundred and ninety three questionnaires were sent to the Gisborne area in July, 1993. One hundred and eighteen replies were suitable for analysis. The study found that, at the time of measurement, 11.8% of respondents could be classified as PTSD cases and 17% scored in the high psychological distress group. Results did not support a direct link between the amount of adversity suffered and the psychological morbidity reported. However, there was an indirect link between the adversity suffered, the emotional distress reported by respondents at the time of the disaster and levels of psychological morbidity. Furthermore, there was support for the mediating influence of how satisfied respondents were with the help they received from relief agencies and with the social support they received at the time of the disaster. There was no support for gender differences in reactions to natural disasters. Some of these findings support previous research. Implications of these findings for future post-disaster psychological intervention are discussed.

### **ACKNOWLEDGEMENTS:**

I would like to thank Nigel Long for all his support and encouragement in the supervision of this thesis. His knowledge and advice were greatly appreciated.

My thanks also to the many other people who assisted me throughout the year, particularly Dr Frank Deane and Dr Ross Flett. Special Thanks go to all the 118 people who responded to the survey and to those members of Civil Defence who assisted with the finding of subjects and for providing essential data for this research. In particular I would like to express my gratitude to Allan McGibbon without whose help the idea for this thesis would never have been born.

Finally, I would like to express my heart-felt thanks to my Mother for being my strongest supporter and without whose encouragement and love I would never have made it this far.

## TABLE OF CONTENTS

<b>Chapter</b>	<b>Page</b>
Abstract .....	ii
Acknowledgements .....	iii
Table of Contents .....	iv
List of Tables and Figures .....	viii
<b>1 INTRODUCTION .....</b>	<b>1</b>
1.1 Background .....	1
1.2 Disaster Research .....	4
1.3 Post-traumatic Stress Disorder .....	7
1.4 Etiology .....	11
1.4.1 Traumatic Severity .....	12
1.4.2 Distress .....	13
1.4.3 Post-disaster Stressors .....	14
1.4.4 Social Support .....	15
1.4.5 Gender .....	19
1.5 The Current Study .....	20
<b>2 METHOD .....</b>	<b>23</b>
2.1 Design .....	22
2.2 Sampling .....	22
2.3 Survey Administration .....	23

2.4	The Event	25
2.5	Measures	27
2.5.1	Biographical Measures	28
2.5.2	Post-traumatic Stress Disorder	28
2.5.3	Psychological Distress	30
2.5.4	Distress	31
2.5.5	Trauma Screening	33
2.5.6	Traumatic Exposure Scale	34
2.5.7	Social Support	36
2.6	Sample Description	37
<b>3</b>	<b>RESULTS</b>	<b>47</b>
3.1	Disaster Experience	47
3.2	Descriptive Statistics	49
3.3	PTSD Cases	53
3.4	General Psychological Distress	55
3.5	Hypothesis Testing	56
3.5.1	Hypothesis One	56
3.5.2	Hypothesis Two	56
3.5.3	Hypothesis Three	57
3.5.4	Hypothesis Four	59
3.5.5	Hypothesis Five	60
3.5.6	Hypothesis Six	61

<b>4</b>	<b>DISCUSSION AND CONCLUSIONS</b> .....	<b>65</b>
4.1	Response Rates .....	65
4.2	PTSD Cases .....	67
4.3	General Psychological Distress Levels .....	69
4.4	Extent of Support for Hypotheses and Comparison of Results with those from previous studies .....	70
4.4.1	Trauma .....	70
4.4.2	Satisfaction with Help Received .....	71
4.4.3	Distress as a predictor of Psychological Morbidity .....	72
4.4.4	Social Support .....	73
4.4.5	Gender Differences .....	75
4.4.6	Contribution of all Variables to Predicting Psychological Morbidity .....	76
4.5	Methodological Limitations of the Present Study .....	78
4.5.1	Sample .....	78
4.5.2	Instruments .....	78
4.6	Theoretical Implications .....	79
4.7	Recommendations for Future Studies .....	81
4.8	Conclusions .....	82
<b>5</b>	<b>REFERENCES</b> .....	<b>85</b>

<b>6</b>	<b>APPENDICES</b> .....	<b>92</b>
A	Press Release .....	92
B	Covering Letter .....	94
C	Information Sheet .....	95
D	Consent Form .....	97
E	Survey .....	98
F	Newspaper Article .....	112
G	Follow-up Letter .....	113
H	Comparisons of mean scores for PTSD and Psychological Distress on Cost of Damage and Trauma Severity .....	114

**LIST OF TABLES AND FIGURES:**

<b>Table</b>	<b>Page</b>
1 Diagnostic criteria for post-traumatic stress disorder .....	8
2 Summary of biographical information .....	39
3 Gender differences in biographical information .....	41
4 Frequencies and percentages of the financial cost of damage (in dollars) caused by Cyclone Bola .....	48
5 Means, standard deviations and the number of cases for all the variables .....	50
6 Inter-correlations of variables .....	52
7 Means, standard deviations and correlations of avoidance and intrusion with the other variables .....	59
8 Comparisons of mean scores for psychological distress on the amount of and satisfaction with social support .....	60
9 Comparison of mean scores for PTSD on the amount of and satisfaction with social support .....	60
10 Standard multiple regression on PTSD .....	63
11 Standard multiple regression on current psychological distress .....	64
H-1 Comparisons of mean scores for PTSD and non-PTSD cases on Cost of Damage and Trauma Severity .....	114
H-2 Comparisons of mean scores for High Psychological Distress and Low Psychological Distress on Cost of Damage and Trauma Severity .....	114

**Figure**

1      Frequencies of post-traumatic stress disorder ..... 54