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**“PSYCHOLOGICAL FALLOUT”: THE EFFECTS OF
NUCLEAR RADIATION EXPOSURE**

A thesis presented in partial fulfilment
of the requirements for the degree of
Doctor of Clinical Psychology
at Massey University

REBEKAH LEIGH JOURDAIN

2009

NO ORDINARY SUN

*Tree let your arms fall:
raise them not sharply in supplication
to the bright enbaloed cloud.
Let your arms lack toughness and
resilience for this is no mere axe
to blunt, nor fire to smother.*

*Your sap shall not rise again
to the moon's pull.
No more incline a deferential head
to the wind's talk, or stir
to the tickle of coursing rain.*

*Your former shagginess shall not be
wreathed with the delightful flight
of birds nor shield
nor cool the ardour of unheeding
lovers from the monstrous sun.*

*Tree let your naked arms fall
nor extend vain entreaties to the radiant ball.
This is no gallant monsoon's flash,
no dashing trade wind's blast.
The fading green of your magic
emanations shall not make pure again
these polluted skies . . . for this
is no ordinary sun.*

*O tree
in the shadowless mountains
the white plains and
the drab sea floor
your end at last is written.*

- Hone Tuwhare (1964)

ABSTRACT

The present research includes two studies. Study I was based on the research finding that exposure to nuclear radiation and other toxic chemicals results in those who were exposed not only believing their health to be affected, but experiencing significant and chronic stress. It was hypothesised that ongoing stress for New Zealand's nuclear test veterans resulting from the inability to adapt to their past nuclear exposure would result in them experiencing greater depressive symptomatology, poorer perceived health, and poorer perceived memory performance than a control group.

Psychological profiles of 50 nuclear test veterans and 50 age-matched Control participants were obtained through postal survey and face-to-face interview, using the Geriatric Depression Scale, Medical Outcomes Study Short Form-36, and the Memory Assessment Clinics Self-Rating Scale. As predicted, the nuclear veterans exhibited more depressive symptoms, and perceived their health and memory performance to be poorer than the Control group. A stress theory framework is applied to help conceptualise the experience of the nuclear veterans, and to provide an explanation for their lower scores and consequent poorer functioning.

Through the pathway of poor perceived health leading to anxiety, health anxiety was considered a form of chronic stress the nuclear veterans were experiencing. Consequently, Study II aimed to examine whether Acceptance and Commitment Therapy (ACT) could be usefully applied to relieve this anxiety. Most psychotherapeutic approaches have been developed for problems that have an "irrational" or "pathological" foundation. However, these approaches often fit poorly with psychological distress that stems from cognitions that are reality-based and may need to be accepted rather than changed, such as in the case of nuclear exposure-related health anxiety. ACT may be particularly useful in these situations in which cognitive change is not warranted.

Study II examined the use of ACT with 5 NZ nuclear test veterans (of either Māori or Pākehā descent) experiencing moderate to high levels of health anxiety. Results of self-report measures administered at baseline, during treatment, post-treatment, and at 6-week follow-up indicated varying results amongst these men. One participant showed clinically significant post-treatment reductions in health anxiety, experiential avoidance, and general psychological distress that were maintained at follow-up. Two participants showed clinically significant post-

treatment reductions in health anxiety, experiential avoidance, and distress, despite not engaging in therapy as they did not wish to make changes. For the same reason, a fourth participant chose not to engage in therapy, despite high baseline scores on all measures, and showed no improvement during or after therapy. The fifth participant had low baseline scores on all measures, maintaining these throughout therapy, and at follow-up. Results are explained in terms of cohort and gender effects, with suggestions for adapting ACT with NZ older adults, particularly males. Implications for the utility of ACT with toxic exposure populations, older adults, and various cultures are discussed.

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Thank-you also to Dr Judy Blakey, who collected all of the data for Study I of this project as part of the "New Zealand Nuclear Test Veterans: A Pilot Study [Psychological Impact]." It was a privilege to work alongside her as a Research Assistant, and to learn from her knowledge and experience. I feel greatly indebted to her for her time, patience, generosity, and ideas.

I gratefully acknowledge the help of New Zealand Nuclear Test Veterans Association (NZNTVA) chairman Roy Sefton for his unwavering support of this research and patience with the time it

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I would like to acknowledge the financial support of the Peace and Disarmament Education Trust (PADET) in the final year of this project. It is hoped this thesis will encourage the consideration of more peaceful approaches to conflict.

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PREFACE

Rather than being clearly explicated from the start, this thesis “Psychological Fallout¹: The Effects of Nuclear Radiation Exposure” has evolved over time. Study I was originally part of a larger study investigating both the genetic and psychological impact on New Zealand naval veterans of exposure to nuclear tests in the Operation Grapple testing programme. Researchers from the Institute of Molecular BioSciences and the School of Psychology at Massey University were commissioned in 2001 by the New Zealand Nuclear Test Veterans Association (NZNTVA) to perform the “New Zealand Nuclear Test Veterans’ Study: A Pilot Project” (Podd, Blakey, Jourdain, & Rowland, 2005). I was employed by Massey as a research assistant on this project for a period of about two years between 2001 and 2004. While I did not collect the data (the survey development and interviews were completed by J. A. Blakey), I spent many hours assisting with participant selection, co-ordinating and organising data collection, and completed all of the postal survey and interview coding.

By the end of 2003 I had been accepted into Massey’s Clinical Programme and needed a research topic for a Masters thesis in 2004. With the rich data set collected in the project I had been assisting with, and no-one available to analyse and write it up, I decided to undertake this as my project.² As I was nearing completion of Study I in early 2005, the Clinical Programme, after years of discussion, brought in the new degree of Doctor of Clinical Psychology, incorporating both research and practicum components. After many discussions with and help from staff (particularly Dr Kevin Ronan), as well as Massey’s Graduate Research School, I was able to “upgrade” to the new programme. However, my research component was required to be twice the size of a Masters thesis, and to have a clinical component. Study I had more of a health psychology focus,³ my previous interest before I realised clinical psychology was my passion. Again the nuclear veteran research provided useful information, access to participants, and the opportunity to provide therapy for some of the men.

My own hypotheses regarding health anxiety in the nuclear veterans developed based on information from the NZNTVA chairman (R. Sefton), personal information provided by the veterans, and anecdotal reports from the project Research Officer (J. A. Blakey) during the

¹ The term “psychologic fallout” was originally coined by Stiehm (1992).

² It should be noted that because this study focused on psychological status, it was beyond the scope of the project to explicate the genetic and oncogenic effects of radiation exposure.

³ At this time, it was not required that those in the Clinical Programme complete a clinical thesis, due to the shortage of clinical staff available for research supervision.

process of the Pilot Study. Additionally, discussions with Patrick Dulin and Ian Evans, who both proposed ACT as a useful approach to this “presenting problem,” developed the concept for Study II. With the assistance and support of Mr Sefton,⁴ access to participants for this study was obtained.

The explanation of this process may help with understanding the apparent separateness of the two studies comprising this thesis. Indeed, when Study I was being completed, there was no conception that there would be a Study II, thus, important variables such as health anxiety were not measured.

⁴ Any interested reader wishing to know more about the current status of the NZ nuclear test veterans’ efforts for service recognition and compensation may contact Roy Sefton at roy_sefton@clear.net.nz.