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The Quicksilver Quest:
Two Psychological Studies Investigating
the Effects of Mercury in Dentistry

A thesis presented in partial fulfilment
of the requirements for the degree of

Doctor of Philosophy
in Psychology

at Massey University,
Wellington Campus, New Zealand.

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2005

ABSTRACT

The longstanding debate over the safety of mercury in dentistry has latterly moved from scientific argument to public health dilemma. Mercury is a neurotoxin. Adverse psychological outcomes can result from exposure, so *The Quicksilver Quest* aimed to investigate mercury in dentistry from a qualitative, critical health psychology perspective, and a quantitative, neuropsychology assessment. The qualitative study used focus group methodology to explore micro-mercurialism linked to dental amalgam fillings. A random sample of people, who had been medically diagnosed with mercury poisoning, formed seven focus groups. The discussion of experiences, beliefs, and health was analysed for themes and issues. The main findings were that the participants were not a homogeneous group, as had been anticipated, but fell into categories differentiated by their symptoms, fiscal resources, and motivation. A placebo effect was rejected as an exclusive explanation for the positive health outcomes reported by those who had had amalgam removal and detoxification. The quantitative study investigated the long-term effects of occupational mercury exposure on a cohort of women in dentistry. The aim was to test the null hypothesis: that women who endured high occupational mercury exposure in the 1970s (43 participants), and matched controls (32 participants), would show no between-group differences on a general and reproductive health survey, and a nine-test neurobehavioural assessment. Results generally supported accepting the null hypothesis. Significant exceptions were current symptom experience, reproductive health, and two mood subscales. There was a suggestion of peripheral nerve damage in the exposed group. Overall, the general discussion systematically reviews tension points in the debate, in light of a proposed model of tolerance to mercury. This begins to explain how it might appear that mercury in dentistry is safe for dental personnel, as pro-amalgam debaters claim, yet unsafe for some dental patients, as anti-amalgam debaters claim. Further study is suggested for occupationally exposed women, on tremor, and to test the proposed tolerance to mercury model. Finally, as the debate has a political aspect, a recommendation is made for a shift in public health policy to dental amalgam being restricted to use only in an adult population.

ACKNOWLEDGEMENTS

I wish to thank a host of people for their contribution to my thesis endeavours, from those who have guided my academic work to those who have waited through my absences and are cheering now.

To Drs Julie Bunnell and Jennifer Stillman, thank you. I could not have had better supervisors: both warm and generous women; and sceptical scientists. It was my very great privilege to be your student. You have surely lifted my game.

I appreciate the advice I have received from academics Dr John Miller, Victoria of University, Wellington, for reading and commenting on my understanding of the chemical and biological aspects of mercury; and Dr Alistair Noble, Massey University, for advice on statistics.

Thanks to Dr Terry Cutress and Dr Mike Godfrey for asking me to investigate their mercury dilemma, that became the study *Biting the Silver Bullet*; and to Dr Colin Feek and Peter Hunter, from the Ministry of Health, for support-in-principle of the thesis, and the *Mercury and Venus* study in particular.

The greatest thanks goes to Colin, and I'll be home soon. Thanks for holding the fort and so much more besides. I know and appreciate that through everything I've strived for, you have been there with unfailing love and support. I couldn't have done this without you.

To our children Kathryn, who completed a BSc/BCA and BSc (Hons) while I wrote this thesis; Jennifer, who completed a double major BA, is in the final semester of an LLB, and is Victoria University Students' Association Vice President (Education); and Andrew, who finished secondary school and is a second year BIT student, I trust that my being a student for so long, has been positive role modelling for the joys of academia. It is looking that way. Thanks for your patience, encouragement and willing help at home.

Other family and friends were important too. For unflagging interest and pride in my work, thanks go to parents Bill and Audrey Mail, brother Markham Mail and friend and sister-in-law, Catharina Mail. Dad died while I was on a data-collecting trip in Jan. 2003, so he has missed the finale. Long-time friend Ruth Page was a great help, especially in the *Mercury and Venus* pilot phase.

Special thanks for being a positive and motivating force in my life for nearly 30 years; and for hospitality throughout the *Biting the Silver Bullet* study, goes to my pro-amalgam mentor from the dental profession, Dr Gus Guise. He has the distinction of being the first person to ask me what my thesis would be, way back when I was an undergraduate student. There was a lot I didn't know then, including this being it.

Thanks for endless support and ideas shared at early morning Friday ☘ L'affaire meetings goes to colleagues from Wellington Polytechnic who, following the merger with Massey University, enrolled for higher degrees: Jenny Jakobs (M.Phil any day now), Dr Lesley Patterson (first to finish), and Sue Scott (PhD candidate, c'mon Sue). It has been also been helpful and supportive to have School of Psychology colleague Ruth Tarrant share the PhD journey. I hope we graduate together.

Participants in the Quicksilver Quest.

To the pilot-volunteers, and the patient-volunteers of the Bay of Plenty Environmental Health Centre, and School Dental Service volunteers, your friends and your sisters - for your willing participation, thank you. You have made a valuable contribution to my understanding of the neurotoxic effects of mercury from dentistry, and one I hope will be shared by the scientific community.

The Quicksilver Quest is dedicated to Colin.

Linda Jones, 2005

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LIST OF ABBREVIATIONS

Adult Environmental Neurobehavioral Test Battery	AENTB
Agency for Toxic Substance and Disease Register	ASTDR
American Dental Association	ADA
Appendices to the Journals of the House of Representatives	AJHR
Blood Brain Barrier	BBB
California Verbal Learning Test	CVLT
Central Nervous System	CNS
Chronic Fatigue Syndrome	CFS
Copper Amalgam	CuAm
Detoxification	detox.
Environmental Risk Management Agency	ERMA
General Practitioner (medical)	GP
Identity	ID
International Academy of Oral Medicine and Toxicology	IAOMT
Lowest Observable Adverse Effect Level	LOAEL
Ministry of Health	MoH
Neurobehavioural Test Battery	NBTB
New Zealand	NZ
New Zealand Dental Association	NZDA
New Zealand Dental Journal	NZDJ
No Observable Adverse Effect Level	NOAEL
Occupational Overuse Syndrome	OOS
Preliminary Questionnaire	PQ
Profile of Mood States	POMS
Silver Amalgam	AgAm
Simple Reaction Time	SRT
Symbol Digit Modalities Test	SDMT
Threshold Limit Value	TLV
Time Weighted Average	TWA
Tolerable Daily Intake	TDI
Tolerance to Mercury Continuum	TMC
World Health Organisation	WHO
X-Ray Fluorescence	XRF