The Psychological Outcome of Constitutional Delay of Growth and Puberty

The Psychosocial Outcome of Male Maturational Delay
Short Stature

Elsie J. Mobbs
Institute of Paediatric Endocrinology, Royal Alexandra Hospital for Children, The Children’s Hospital at Westmead, Sydney, Australia

Thesis Supervisors:
M. Silink, Sydney
C. Cowell, Sydney
D. Cairns, Sydney

63 figures, and 19 tables, 2005

This study was originally presented as a PhD thesis at the Faculty of Medicine at the University of Sydney (Australia).
Drug Dosage

The authors and the publisher have exerted every effort to ensure that drug selection and dosage set forth in this text are in accord with current recommendations and practice at the time of publication. However, in view of ongoing research, changes in government regulations, and the constant flow of information relating to drug therapy and drug reactions, the reader is urged to check the package insert for each drug for any change in indications and dosage and for added warnings and precautions. This is particularly important when the recommended agent is a new and/or infrequently employed drug.

All rights reserved.

No part of this publication may be translated into other languages, reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, recording, microcopying, or by any information storage and retrieval system, without permission in writing from the publisher or, in the case of photocopying, direct payment of a specified fee to the Copyright Clearance Center (see 'General Information').

© Copyright 2005 by S. Karger AG,
P.O. Box, CH–4009 Basel (Switzerland)
Printed in Switzerland on acid-free paper by Reinhardt Druck, Basel
ISBN 3–8055–7941–1
Contents

Acknowledgments ............................................................ VII
Preface ................................................................. VIII

Abstract ................................................................. 1

Chapter 1
General Introduction

1.1 Growth and the Definition of Short Stature ................................. 2
1.2 Medical Diagnosis of Male Maturational Delay Short Stature ................. 3
1.2.1 Causality of Maturational Delay Short Stature: Biological, Psychological, Sociological, Multifactorial and Unknown ............................... 5
1.2.2 Diagnostic Procedures .................................................... 5
1.2.3 Body Height: Target, Mid-Parental, Estimated, Predicted, Final Adult and Desired Height ................................................................. 6
1.3 Social Attitudes to Short Stature ............................................... 7
1.3.1 Social Support Groups as Qualitative Evidence of the Short Stature Problem ................................................................. 8
1.3.2 Health Professional Support Groups ........................................ 8
1.4 Growth Treatment ........................................................... 9
1.4.1 Treatment and Psychosocial Status ......................................... 10
1.4.2 Community Costs .......................................................... 10
1.4.3 Individual Costs to the Treated and the Family ............................. 11
1.5 Psychological Distress ........................................................ 11
1.5.1 Evidence for There Being No Association between Short Stature and Psychological Distress ................................................................. 11
1.5.2 Psychological Distress: An Issue in the Aetiology of Short Stature ............... 11
1.5.3 Evidence for an Association between Short Stature and Psychological Distress ................................................................. 12
1.5.4 Mental Health Rates ......................................................... 12
1.5.5 Mental Health Rates in New South Wales ................................... 13
1.5.6 Growth Clinic: Mental Health Status for Short Stature Children ............. 13
1.5.7 Summarising Mental Health Rate Issues .................................... 14
1.6 Conflicting Research Conclusions of Short Stature Psychosocial Outcomes .... 15
1.6.1 Evidence for Validity and Reliability Problems in Past Short Stature Psychosocial Outcome Studies ................................................................. 15
1.6.2 Resolving Controversy from Psychosocial Outcome Studies .................. 16
Chapter 2
Research Design and Methods

2.1 Summary of Research Problem and Premises ........................................ 17
2.2 Hypotheses ......................................................................................... 17
2.3 Specific Aims for Research Outcome .................................................. 17
2.3.1 Maturational Delay Short Stature Males – Outcome ......................... 17
2.3.2 Physically and Psychologically Healthy Males – Outcome ................ 18
2.4 Summary of Studies ............................................................................ 19
2.5 Study Design ...................................................................................... 19
2.5.1 Sample Size Calculations ............................................................... 19
2.5.2 Approval for This Research ............................................................. 20
2.6 Subjects and Methods ......................................................................... 20
2.6.1 Maturational Delay Short Stature – Subjects .................................... 20
2.6.2 Maturational Delay Short Stature – Method ....................................... 20
2.6.3 Physically and Psychologically Healthy – Subjects ......................... 21
2.6.4 Physically and Psychologically Healthy – Method ............................ 21
2.7 Materials Used in the Assessment of Maturational Delay Short Stature and Physically and Psychologically Healthy Males ......................... 21
2.7.1 Kaufman Brief Intelligence Test ....................................................... 21
2.7.2 SCL-90-R ....................................................................................... 21
2.7.3 Chubon Life Situation Survey .......................................................... 21
2.7.4 Coopersmith Self-Esteem Inventory ............................................... 22
2.7.5 Non-Standardised Growth Assessment .......................................... 22
2.7.6 Statistical Tests ............................................................................... 22

Chapter 3
Study Results for the Maturational Delay Short Stature Males

3.1 Description and Demographics ............................................................. 23
3.1.1 Education ..................................................................................... 23
3.1.2 Employment Demographics by Residential Address ....................... 23
3.1.3 Socioeconomic Status .................................................................... 23
3.1.4 Marital Status ............................................................................... 24
3.2 Adult Final Height Measurements ........................................................ 24
3.3 SCL-90-R Psychological Distress – Clinical versus Non-Clinical .............. 28
3.4 SCL-90-R GSI T-Scores ....................................................................... 28
3.5 Prediction of Final Height Reaching Estimated and/or Target Height ........ 28
3.6 Intelligence .......................................................................................... 30
3.6.1 Intelligence Quotient versus Final Height versus Psychological Status 30
3.6.2 Intelligence Quotient Score versus Psychological Distress versus Treatment 31
3.7 The SCL-90-R Profile ........................................................................... 31
3.8 Treatment Effects versus Final Height versus Psychological Distress ........ 31
### Chapter 4

**Study Results for the Psychologically and Physically Healthy Males**

4.1 Demographics ............................................. 39
4.1.1 Ages ............................................. 39
4.1.2 Marital Status ....................................... 39
4.1.3 Education ........................................... 39
4.2 Heights ................................................ 39
4.3 Psychological Distress .................................. 39
4.4 SCL-90-R GSI T-Scores ................................. 39
4.5 The SCL-90-R Profile ................................... 39
4.6 SCL-90-R Symptom Checklist for Psychological Distress versus Final Height .............. 41
4.7 Chubon Life Situation Survey ............................ 42
4.8 Chubon Life Situation Survey versus Final Height ............................................. 42
4.9 Relationship of Quality of Life to Psychological Distress ................................. 43
4.10 Coopersmith Self-Esteem Index versus Final Height ........................................... 43
4.11 Marital Status and Psychological Status .......................................................... 43
4.12 The Non-Standardised Test ................................ 44

### Chapter 5

**Comparative Results of the Maturational Delay Short Stature and the Psychologically and Physically Healthy Males**

5.1 Comparisons of Ages, Heights and Weights .................................................. 45
5.1.1 Ages ............................................. 45
5.1.2 Heights ............................................ 45
5.1.3 Weights ............................................. 45
5.2 Comparison for SCL-90-R .................................... 46
5.3 Comparison for Chubon Life Situation Survey ............................................. 46
5.4 Comparison for Coopersmith Self-Esteem Inventory ........................................ 48
5.5 Comparison for Mobbs Non-Standardised Assessment Questionnaire .................. 48
5.6 Comparison of Non-Standardised Assessment Component of Desired Increase in Height .................................................. 48
Chapter 6
Discussion

6.1 Maturational Delay Short Stature – Final Height ........................................ 50
6.2 Psychological Distress and the Maturational Delay Short Stature Non-Attenders .......................................................... 51
6.3 Maturational Delay Short Stature – Treatment Effects ............................ 51
6.4 Maturational Delay Short Stature – Treatment Effect when Psychological State Is Controlled .................................................... 51
6.5 Maturational Delay Short Stature – Standardised Psychological Assessment Results ................................................................. 52
6.6 Maturational Delay Short Stature – Non-Standardised Psychological Assessment ................................................................. 53
6.7 Assessment Results of Psychologically and Physically Fit and Healthy Males ........ 54

6.7.1 Levels of Psychological Distress ................................................................. 54
6.7.2 Psychologically and Physically Fit Healthy Males – Clinical and Non-Clinical Findings ................................................................. 54
6.8 Maturational Delay Short Stature versus Psychologically and Physically Fit and Healthy Assessment Results ............................ 55
6.9 Maturational Delay Short Stature versus Psychologically and Physically Fit and Healthy – Marital Status ...................................................... 55
6.10 General Discussion .................................................................................. 55

Chapter 7
Conclusions, Recommendations and Summary

7.1 Conclusions ............................................................................................ 57
7.2 Recommendations .................................................................................. 58
7.3 Summary ................................................................................................ 58

Appendices

Appendix A .................................................................................................. 59
Appendix B .................................................................................................. 60
Appendix C .................................................................................................. 60

References .................................................................................................. 61
I would like to thank my supervisors Martin Silink AM, Christopher Cowell and David Cairns for their support and professional expertise which made the completion of this work possible. Much appreciated encouragement, advocacy and professional advice came from the postgraduate co-ordinators John Christodoulou and Louise Baur. Belinda Moore and Anne Craighead, nurse consultants, Robert Vines Growth Centre, for the hospital-based cohort, were invaluable in the associated recruitment process and they provided some of the anthropometric measurements. Jane Haynes provided presentation advice from the secretarial perspective. The Computing Department staff of The Children’s Hospital at Westmead provided skilled communication assistance with many computing hardware changes across locations and Anthony Mobbs, statistician and data team manager, Allianz Insurance Company, provided data recovery and data transport advice across computing software changes. Lt Shane Latimer of the Royal Australian Navy provided psychological advice and assistance for the Navy cohort. Lt Walter Carr of the United States of America New England Submarine base obtained the study access approval to the naval base scientific library and anthropometric information on recruits and Neil Donnelly, statistician, Department of Public Health, read and approved the original PhD research proposal. The work was financially assisted and carried out within the Robert Vines Growth Centre and The Ray Williams Institute of Endocrinology. This thesis is dedicated to my children, Clarissa, Rosemary, Felicity, Anthony and Ralph, and my husband Tony, with love and thanks for helping me maintain my morale and enjoy the PhD experience.
There is an ongoing debate as to whether treatment in short children without growth hormone deficiency is justified [Haverkamp et al., 2000].

Growth treatment for human growth failure when its cause is not identified is generally justified by two possible outcome measures: an increase in height and an increase in psychological well-being. This thesis examines the association of psychological state with attained height in a longitudinal study of a cohort of males who attended as children at the Royal Alexandra Hospital for Children, The Children’s Hospital at Westmead, Growth Clinic, and were adult respondents in this research.

The approval for this research from the Ethics Committee of The Children’s Hospital at Westmead, No. 94033, was granted on the 26th August 1994 with amendments granted 26th April 1996. The terminology then current, being ‘male maturational delay short stature’, and presented for the Ethics Committee approval, is retained in the body of the thesis. The term, ‘constitutional delay of growth and puberty’, which appears to be currently favoured by journal editors, is thus given precedence in the title of this thesis.