An Evaluation of the Effectiveness of the Lidcombe Program of Early Stuttering Intervention

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Abstract

This thesis presents a randomised controlled trial of the Lidcombe Program of Early Stuttering Intervention. The Lidcombe Program was developed for the treatment of stuttering in preschool-age children. The effectiveness of the Lidcombe Program was compared to a control group in a parallel group randomised controlled trial with blinded outcome assessment. A number of supplementary studies were conducted in support of the trial; two literature reviews, two retrospective file audits and a statistical simulation study.

A review of randomised studies of treatments for stuttering showed that there have been 27 such studies published in English language journals. Of these only one was devoted to a treatment for early stuttering and that was the Lidcombe Program. The randomised study showed that 3 months of this treatment was associated with a lower level of stuttering compared to a control group who received no treatment. However, with a sample size of 23, this study lacked power and the children did not receive a full course of treatment. Despite these limitations, this study provided evidence that a medium to large effect size could be anticipated in an adequately powered and properly conducted randomised controlled trial.

Two retrospective file audit studies of children treated with the Lidcombe Program were conducted in Australia and Britain. One purpose of these file audits was to obtain information relevant to the design and conduct of the randomised controlled trial. Data from the case reports on more than 300 children from the two sites were included in a meta-analysis. Results showed that a median of 11 weekly clinic sessions were required for children to attain the criteria for low levels of stuttering for completion of Stage 1 of the Lidcombe Program. Approximately 90% of children had achieved those criteria within 6 months of beginning treatment and almost all children had achieved them within 1 year.

There were two treatment sites for the randomised controlled trial: the University of Canterbury (Christchurch, New Zealand) and the Stuttering Treatment and Research Trust (Auckland, New Zealand). A total of 54 preschool-age children were recruited: 29 to the Lidcombe Program and 25 to the control group. Analysis with t-test showed a highly statistically significant difference ($p = 0.003$) at 9-months post-randomisation. The mean percentage of syllables stuttered (%SS) at 9-months post-randomisation was 1.5 (SD = 1.4) for the Lidcombe Program group compared to 3.9 (SD = 3.5) for the control group, resulting in a treatment effect of 2.3 %SS (95% confidence interval: 0.8-3.9). This treatment effect was more than double the minimum clinically worthwhile difference specified in the trial protocol. These results show that the Lidcombe Program is significantly more effective than natural recovery for reducing stuttering levels in preschool children. The Lidcombe Program is the first early stuttering treatment to be shown to be more effective than natural recovery in a randomised controlled trial.

Acknowledgments

This thesis represents the work of many and I would like to thank all those who contributed to the research it describes. In particular I acknowledge my supervisors Mark Onslow and Ann Packman who provided the wonderful opportunity for me to undertake this research as well as guidance and support to ensure it was completed satisfactorily. I also thank Val Gebski who provided much needed methodological advice and constructive criticism when it was warranted.

With regard to the randomised trial I acknowledge Tika Ormond, Marjorie Blakely and Shelley Williams, who were the speech pathologists who treated the children in Christchurch and Auckland. Tika and Shelley also had the unenviable task of rating hundreds of tapes of children's speech. I also thank Ilsa Schwarz from the University of Canterbury (she is now located at the University of Tennessee) for her support as well as Peta Forder from the National Health & Medical Research Council Clinical Trials Centre who performed the randomisations for the trial. The trial would not have been possible without the generosity of the children and parents who participated. In particular I acknowledge all those families that remained in the trial until the final follow up was completed especially those in the control group.

With regard to the papers that have been published I thank all the co-authors outlined in the next section as well as the many helpful editorial consultants who reviewed the manuscripts. I thank my supervisors at Queensland Health and the University of Queensland who allowed me to finish this thesis as part of my work duties and Elisabeth Harrison who loaned me her doctoral thesis. Finally I thank my family for their support, in particular my wife Mitsuyo Taya and father Colin Jones.

Preface

The section in Chapter 2 describing randomised controlled trials was largely taken from the publication by Jones, Gebski, Onslow, and Packman (2001). The majority of the material included in Chapter 3 was published as Jones, Onslow, Packman, and Gebski (2002). Mark Onslow proposed the survey of studies published in the Journal of Speech, Language and Hearing Research and the Journal of Fluency Disorders, and the author conducted the survey and wrote the manuscript. The other three authors assisted with writing the manuscript.

The two retrospective studies described in Chapters 4 and 5 were published as Jones, Onslow, Harrison, and Packman (2000) and Kingston, Onslow, Huber, Jones, and Packman (2003). For the first study, Elisabeth Harrison was responsible for the data collection and treatment of some of the children. The author provided statistical analysis and contributed significantly to the scientific content of the manuscript. All four authors contributed to writing the manuscript under the direction of Mark Onslow. Mary Kingston was responsible for treatment of the children and data collection in the second study. The author contributed statistical analysis including the meta-analysis of the two studies. The five authors wrote the manuscript with Anna Huber being in charge of collating the ideas from the other authors and writing the original draft.

A very preliminary version of the study outlined in Chapter 6 was presented as Jones (2002). The study as outlined in Chapter 6 has been submitted for publication as Jones, Onslow, Packman, and Gebski (2005). The author designed and conducted the study with methodological guidance from Val Gebski and clinical input from Mark Onslow and Ann Packman. The manuscript was written by the author with assistance from the other three authors.

The randomised controlled trial of the Lidcombe Program included in Chapter 7 was approved by the University of Sydney Ethics Committee and the University of Canterbury Ethics Committee. The design of the trial has been presented or published on three previous occasions: Jones, Gebski, Onslow, and Packman (2000); Jones, Gebski, Onslow, and Packman (2001); and Jones, Blakely, and Ormond (2003). Results from the trial have also been written up in a manuscript and recently published as Jones, Onslow, Packman, Williams, Ormond, Schwarz, and Gebski (2005). The author was responsible for the design and analysis of the trial with methodological input from Val Gebski and clinical input from Mark Onslow and Ann Packman. Tika Ormond and Shelley Williams treated the children as well as collected and rated the tapes of the children's speech. Writing of the manuscripts, book chapter and presentation was conducted by the author with assistance from the co-authors as listed above.

No part of this thesis has been submitted for any other degree at any other institution.

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Acronyms

The following acronyms are used throughout the thesis.

ASRC	Australian Stuttering Research Centre, The University of Sydney
%SS	Percentage of syllables stuttered
NHMRC	National Health and Medical Research Council (of Australia)
START	Stuttering Treatment and Research Trust
DMC	Data Monitoring Committee
TMC	Trial Management Committee
RCT	Randomised controlled trial

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