Copyright Statement

The digital copy of this thesis is protected by the Copyright Act 1994 (New Zealand).

This thesis may be consulted by you, provided you comply with the provisions of the Act and the following conditions of use:

- Any use you make of these documents or images must be for research or private study purposes only, and you may not make them available to any other person.
- Authors control the copyright of their thesis. You will recognise the author's right to be identified as the author of this thesis, and due acknowledgement will be made to the author where appropriate.
- You will obtain the author's permission before publishing any material from their thesis.

To request permissions please use the Feedback form on our webpage.
http://researchspace.auckland.ac.nz/feedback

General copyright and disclaimer

In addition to the above conditions, authors give their consent for the digital copy of their work to be used subject to the conditions specified on the Library Thesis Consent Form.
ASSessment of the quality of observers' records of behaviour

Oliver Charles Mudford
University of Auckland, New Zealand

A dissertation submitted in partial fulfilment
of the requirements for the degree of
Doctor of Philosophy in Psychology
February, 1990
Acknowledgments

I offer many thanks to Associate Professor Ivan L. Beale for supervision of this dissertation. Other Auckland University staff, whose help was welcome, included Mike Owen (for producing the graphs), Esmae Emerson, and Professor Michael Davison (for advice on analysis).

This research could not have been conducted without the cooperation of some people at Mangere Hospital and Training School, particularly Geoff Pratt, John, and Michael Ahrens. My thanks also go to the Auckland University students who became "experienced" observers: Theresa Fleming, Carolyn Phillips, Elisa Lavelle, Tjay Fung Tjong, Jan Iorns, and Gerard Sullivan. Lynda Byrne has been a good companion throughout the study.

The financial assistance of a University Grants Committee Post-Graduate Scholarship and a Shirtcliffe Fellowship is acknowledged.

A preliminary report on the data in this study was presented to the Division of Behaviour Analysis Symposium at the 1989 (August) Conference of the New Zealand Psychological Society at Auckland.
Contents

Acknowledgments ........................................ ii

Contents ........................................... .iii

Abstract ........................................... v

Chapter 1: Measurement by direct observation in applied behaviour analysis. .................. 1

Chapter 2: Assessment of the quality of data by interobserver agreement and by psychometric analysis. . ......... 31

Chapter 3: Evaluation of data quality by assessment of observer accuracy . ..................... 59

Brief introduction to empirical studies. ............. 81

Chapter 4: Assessment of the quality of "real-time" observation data: Empirical analyses. ........ 83

Chapter 5: Further discussion. ........................ 126

Appendix 1: Computer programmes. ................. 143
Appendix 2: The effects of a change of curriculum and reprimand on the stereotypies of an adolescent with an intellectual disability. . . . . . . 159

Appendix 3: Tolerance in the computation of interobserver and observer/criterion agreement with continuously recorded observational data . . . 204
Abstract

The measurement of behaviour by direct observation may be improved when observers have been provided with equipment which enables real-time recording. There are no data available concerning the quality of this type of measurement. Indeed, there is no consensus among researchers as to appropriate methods of quality assessment. In the present series of studies, observers were provided with hand-held computers programmed to act as real-time recorders. The quality of their records was assessed by three "traditional" methods, representative of those which have been used most frequently in previous behavioural research: interobserver agreement, observer/criterion agreement, and relative error. An instrument calibration procedure, the standard method for measurement accuracy analysis in the natural sciences and engineering, was demonstrated for comparison with traditional methods. The traditional methods were found to be unsatisfactory for theoretical and empirical reasons. The calibration procedure was shown to have some considerable potential advantages for applied behaviour analysis. Disadvantages, both statistical and practical, were also discussed.