

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

ACHIEVEMENT, COGNITIVE STYLE  
AND  
ETHNIC GROUP MEMBERSHIP

A thesis presented in partial fulfilment of  
the requirements for the degree of  
Doctor of Philosophy in Education  
at Massey University.

Richard Kendall Harker,  
1976.

## Abstract

Relationships between Ethnicity, environmental variables, Cognitive Style and achievement are examined with a sample of 679 Standard Three children. No relationship is found between Ethnicity (Maori-Pakeha) and Cognitive Style, although the correlations between Cognitive Style and Achievement are different for Maori and Pakeha children, and are sustained when the comparisons are controlled for SES, Family Size, Rural-Urban location, Sex and Age.

Using two criteria of achievement (PAT Tests and Ravens Progressive Matrices), Pakeha children score higher than Maori children, differences which are reduced but not eliminated when control (in a Multiple Regression Analysis) for the five environmental variables mentioned above is undertaken. Using a third achievement criterion (Teacher Ratings), the initial correlation with ethnicity (similar to the other two criteria) is reduced to near zero in a Multiple Regression Analysis.

## Acknowledgements

I should like to record my thanks and appreciation to a number of people.

To Professor R.S. Adams and Dr. D. McAlpine for their encouragement and guidance as supervisors.

To the Interdepartmental Committee for Polynesian Research (Department of Maori Affairs) who financed the data collection phase of this research.

To the large number of senior and post-graduate students who assisted with the individual testing of nearly 700 subjects.

To the Wanganui and Wellington Education Boards for their cooperation and assistance with the data collection programme.

To Mrs. K. Morgan for typing the final copy.

Last, but very far from least, to my wife Helen for typing numerous early drafts and for her forbearance in sharing our lives with a dissertation.

## Table of Contents

	<u>Page</u>
List of Tables	iv
List of Figures	vi
Introduction	1
Chapter 1: Maori Children and School Achievement	3
Chapter 2: Cognitive Style	13
Chapter 3: Sample, Data Collection and Data Analysis	37
Chapter 4: Achievement and Ethnicity: Findings	45
Chapter 5: Cognitive Style and Ethnicity: Findings	76
Chapter 6: Summary and Conclusions	104
Appendix 1: Cognitive Style Test	113
Appendix 2: Data listings	124
Bibliography	175

## List of Tables

	<u>Page</u>
Table 1.1. Table 1 from Lovegrove (1966: 24)	7
2.1. Correlations Between Scores in each of the Conceptual Categories and the sub-test and Total Scores from the California Test of Mental Maturity (From Kagan, Moss & Sigel, 1965: 86)	19
2.2. Intercorrelations of Variables used in the Gray & Knief (1975) study	19
3.1. Roll Numbers and Pupils Tested for Schools Used in Sample	38
3.2. Comparison of Sample Distributions with 1966 Census Figures in Each of the Elley-Irving (1972) Socio-Economic Categories (percentages)	39
4.1. Scores on the Composite PAT Index, the Composite Teacher Rating Index, and Ravens Raw Scores, by Selected Determiners	46
4.2. Scores on Criterion Variables, by Location and SES	48
4.3. Scores on the Composite PAT Index by Ethnic Group and Selected Determiners	51
4.4. Scores on the Composite Teacher Rating Index, by Ethnic Group and Selected Determiners	52
4.5. Ravens Raw Scores, by Ethnic Group and Selected Determiners	53
4.6. T-Tests on Criterion Performance Between High and Low SES Groups, Controlling for Ethnicity and Rural-Urban Location	55
4.7. Frequency of Significant Differences Made by Environmental Variables, on Three Criterion Variables, for Two Ethnic Groups	55
4.8. Ethnic Differences on Other Environmental Variables	58
4.9. Zero Order Correlation Coefficients and Variance Estimates for Variables Used in the Multiple Regression Analysis	61
4.10. Multiple Regression Analysis - PAT	62
4.11. Multiple Regression Analysis - T.R.	63
4.12. Multiple Regression Analysis - Ravens	64
4.13. Multiple Regression Analysis - T.R. Against Other Achievement Criteria and Behavioural Ratings	67
4.14. Direct and Indirect Effects of Ethnicity on Achievement Criteria Summarized from Figures 1, 2 and 3	72

	<u>Page</u>
Table 5.1. Responses on the Cognitive Style Test by Ethnic Group	77
5.2. Responses on the Cognitive Style Test by Location	78
5.3. Responses on the Cognitive Style Test by Socio-Economic Status	79
5.4. Responses on the Cognitive Style Test by Family Size	80
5.5. Responses on the Cognitive Style Test by Sex	82
5.6. Within and Between Group Differences in Responses on the Cognitive Style Test by Location, Family Size, SES and Ethnicity	84-85
5.7. Cognitive Style Responses by Location, Family Size, Sex and Ethnic Group	
(i) Relational Responses	87
(ii) Analytic Responses	88
(iii) Categorical Responses	89
5.8. Correlations Between School Achievement Criteria and Cognitive Style Responses (All Subjects)	91
5.9. Correlations Between School Achievement Criteria and Cognitive Style Responses Within Each Ethnic Group	92
5.10. Correlations and Partial Correlations Between Teacher Rating Index and Scores on the Cognitive Style Test, by Ethnic Group	94
5.11. Correlations and Partial Correlations Between PAT Index and Scores on the Cognitive Style Test, by Ethnic Group	95
5.12. Correlations and Partial Correlations Between Ravens Scores and Cognitive Style Test Score, by Ethnic Group	96
5.13. T-Tests for Rural-Urban Differences, Controlling for Ethnicity, Sex and Sex within Ethnicity	100

## List of Figures

	<u>Page</u>
Figure 4.1. Graphs Illustrating Interaction Effects Between Rural-Urban Location and SES as they Affect Criterion Performance	49
4.2. Path Analysis Diagrams - PAT	68
4.3. Path Analysis Diagrams - T.R.	69
4.4. Path Analysis Diagrams - Ravens	70
5.1. Correlation Coefficients Between Cognitive Style Responses	102