

The Role of Morphosyntax and Oral Narrative
in the Differential Diagnosis of Specific Language
Impairment

Submitted for the degree of Doctor of Philosophy

by

Wendy Maureen Pearce

B. App. Sc. (Speech Pathology)

Department of Speech Pathology

School of Medicine

Faculty of Health Sciences

Flinders University of South Australia

24 JULY 2006

TABLE OF CONTENTS

ABSTRACT	xii
DECLARATION	xiv
ACKNOWLEDGEMENTS	xv
PUBLICATIONS	xvii
GLOSSARY	xviii
CHAPTER 1: DIAGNOSTIC ISSUES FOR SPECIFIC AND NON-SPECIFIC LANGUAGE IMPAIRMENT	1
Introduction	1
SLI as a Diagnostic Category	3
Purpose for a Differential Diagnosis of SLI	3
A Psychometric Model	4
Assumptions about SLI and their Impact on Diagnosis and Intervention	5
The Relationship between Cognition and Language (Assumption 1)	5
Intelligence as a Single Property or Multiple Competencies	6
Direction of Influence	6
Summary	7
Potential for Development (Assumption 2)	7
Use of Cognitive Referencing as a Prognostic Indicator	7
Use of Cognitive Referencing for Determining Eligibility for Intervention	8
Issues with Variation in Identification of Language Impairment	9
Summary	11
Characteristics of SLI (Assumption 3)	11
Qualitative Differences (Assumption 4)	11
Heterogeneity	13
Explanations of SLI	14
Genetics	14
Neurological Accounts	15
Linguistic Deficit Accounts	16
Limited Processing Capacity Accounts	16
A Dynamic Interactional Model	18
Summary	19
LEVEL OF ANALYSIS	20
Research Aims	22

CHAPTER 2: THE ROLE OF MORPHOSYNTAX IN THE DIAGNOSIS OF LANGUAGE IMPAIRMENT **23**

Introduction	23
Morphosyntactic Accuracy in SLI	23
Age or MLU Referencing	23
Evidence from Age Peer Comparisons	24
Verb phrase errors	24
Noun phrase errors	25
Evidence from Language-matched Comparisons	27
Evidence for Verb Tense Omission as a Clinical Marker of SLI	28
Cautions against Verb Tense as a Unique Clinical Marker of SLI	30
Difficulties beyond verb tense	30
Effective indicators of SLI	30
Alternative view of developmental patterns	32
General Language Measures and SLI	32
Verbal Productivity	33
Complexity	33
Morphosyntactic Features of NLI and Other Language Impairments	33
Non-specific Language Impairment	33
Language Impairments associated with Identified Aetiologies	35
Explanations for Morphosyntactic Deficits in Language Impairment	37
Linguistic Deficit Accounts	37
Grammatical rule deficits	37
Extended optional infinitive (EOI) account	38
Processing Capacity Accounts	39
Working memory accounts	39
Surface (low phonetic substance) account	40
Contributions to Explanation from Cross-linguistic, English as a Second Language and Dialectic Studies	41
Summary	42
Hypotheses AND QUESTIONS	43

CHAPTER 3: THE ROLE OF ORAL NARRATIVE IN THE DIFFERENTIAL DIAGNOSIS OF SLI **45**

Introduction	45
Narrative Features of SLI	46
Narrative Structure	46
Framework for analysis	46
Specific language impairment	48
Character Introduction	50

Cohesion	51
Framework for analysis	51
Specific language impairment	52
Content	53
Information scores	53
Lexical diversity	53
Narrative Features of NLI and other Language Impairments	54
Narrative Structure	54
Character Introduction	55
Cohesion	55
Content	56
Explanations for Narrative Deficits in Language Impairment	56
Linguistic Explanations	56
Processing Capacity Explanations	57
A processing model of discourse	57
Predictions for language impairment	59
Interaction and Independence among Linguistic and Cognitive Skills	60
The Role of Experience	61
Summary	62
Hypotheses and Questions	62
CHAPTER 4: METHODOLOGY: PARTICIPANTS AND PROCEDURES	64
Participant Criteria	64
Exclusion Criteria	64
Inclusion Criteria	66
Non-verbal Ability Criteria	66
Participant Matching	67
Group Matching Criteria	68
Participant Characteristics	70
Language matching	70
Non-verbal cognitive ability matching	71
Language Impairment Domains	72
Socio-Economic Status	73
Procedures	75
Language Sampling Issues	75
Naturalistic versus structured tasks	75
Impact of elicitation procedures on narrative production	76
Elicitation Materials and Procedures	78
Play samples	78
Oral narratives	79
Data Collection	81
Summary	82

CHAPTER 5: METHODOLOGY: ANALYSIS AND RELIABILITY	83
LINGUISTIC Analysis	83
Transcription	83
Morphosyntactic Coding and Analysis	84
Obligatory Contexts and Calculation of Accuracy	84
Morphology	85
Syntax and clause complexity	86
Narratives Coding and Analysis	87
Narrative components	87
Structural level	88
Organisational level	89
Key event and information scores	90
Character cohesion	91
Reliability	93
Statistical Analysis of group comparisons	94
Discriminant Function Analysis	95
Rationale	95
Analysis Procedure	96
Summary	97
CHAPTER 6: RESULTS: GROUP COMPARISONS	98
Number of Utterances	98
Morphosyntactic Characteristics	99
Obligatory Contexts	100
Grammatical Morpheme Accuracy	100
Variance and Distribution of Morpheme Accuracy	101
Summary	103
Utterance Complexity and Errors	103
Clausal Structure	103
Utterance Errors	105
Summary	105
Narrative Structure and Organisation	106
Structural Level	106
Organisation Level	107
Summary	108
Key Event and Information Scores	108
Character Cohesion	109
Adequacy	109
Adequacy of Cohesive Strategies	110
Summary	112

SUMMARY OF GROUP COMPARISON RESULTS	112
CHAPTER 7: DISCUSSION: GROUP COMPARISONS	114
Introduction	114
Process for Examination of the Results	115
Differentiation of SLI from NLI	117
Morphosyntax	117
Narrative	118
Differentiation and Identification of Language Impairment	119
Morphosyntax	119
Narrative	121
Summary	122
Differentiation of Delay or Disorder	122
Morphosyntax	123
Narrative	124
Implications	126
Summary	126
Differentiation of Developmental Differences	127
Morphosyntax	127
Narrative	128
Summary	130
Obligatory Contexts for Grammatical Morphemes	131
Summary	131
CHAPTER 8: RESULTS AND DISCUSSION: EFFECTIVENESS OF VARIABLES IN CLASSIFYING LANGUAGE IMPAIRMENT	134
Selection of variables	134
Individual variables	134
Combinations of variables	135
Combinations of Morphosyntactic Variables	135
Combinations of Narrative Variables	135
Combinations of Morphosyntactic and Narrative Variables	136
Diagnostic Effectiveness	136
The Benefits of Single or Multiple Variables	136
The Combined Roles of Morphosyntax and Oral Narrative	138
Summary	139

CHAPTER 9: DISCUSSION: IMPLICATIONS FOR DIFFERENTIAL DIAGNOSIS AND INTERVENTION	141
The role of non-verbal cognition	141
Explanations of LI	143
Evidence for linguistic and processing capacity deficits	144
Extended optional infinitive account	144
Working and episodic memory	145
Domain indexes	147
Evidence for contributions from learning experience and maturation	147
Summary	148
Unique clinical marker or universal vulnerability	149
Effective Measures for assessment and diagnosis	150
Variability and Individual Differences	150
Broad versus Narrow Measures	151
Strength of Multiple Variable Assessment	152
Progress over Time	154
Intervention	155
Limitations of the research	157
Sample Selection and Size	157
Reliability	159
SUMMARY	159
CHAPTER 10: CONCLUSION	161
Theoretical Implications	161
Importance of the Findings	162
Future Directions	164
APPENDICES	166
Appendix A: LITERATURE SUMMARY	167
Appendix B: BACKGROUND INFORMATION	168
Appendix C: LANGUAGE SAMPLE ELICITATION	171
Appendix D: CODING CONVENTIONS FOR MORPHOSYNTAX	179
Appendix E: CODING CONVENTIONS FOR NARRATIVE STRUCTURE	181
Appendix F: CODING CONVENTIONS FOR CONTENT	187
Appendix G: CODING CONVENTIONS FOR COHESION	193
Appendix H: STATISTICAL TABLES FOR RESULTS	196
Appendix I: DISCRIMINANT FUNCTION ANALYSIS	200

LIST OF TABLES

TABLE 2.1. SUMMARY OF STUDIES INVESTIGATING ACCURACY OF VERB PHRASE MORPHEMES	26
TABLE 2.2. SUMMARY OF STUDIES INVESTIGATING ACCURACY OF NOUN PHRASE MORPHEMES	27
TABLE 3.1. SUMMARY OF STUDIES INVESTIGATING ORAL NARRATIVE DEFICITS IN SLI	49
TABLE 4.1. PARTICIPANT AND GROUP CHARACTERISTICS: SHOWING MEANS, STANDARD DEVIATIONS AND RANGES FOR AGE, LANGUAGE AND NON-VERBAL COGNITIVE ABILITY RESULTS	68
TABLE 4.2. LANGUAGE DOMAIN INDEXES	72
TABLE 4.3. GROUP EFFECTS FOR LANGUAGE DOMAIN INDEXES	73
TABLE 4.4. GROUP EFFECTS AMONG LANGUAGE DOMAIN INDEXES	73
TABLE 4.5. DESCRIPTION OF SOCIO-ECONOMIC INDEXES FROM THE AUSTRALIAN BUREAU OF STATISTICS.	74
TABLE 4.6. MEDIAN SOCIO-ECONOMIC INDEXES FOR PARTICIPANTS' PLACE OF RESIDENCE POSTCODE AREA (INTERQUARTILE RANGE IN BRACKETS)	74
TABLE 4.7. GROUP EFFECTS FOR SOCIO-ECONOMIC INDEXES	74
TABLE 5.1. SUMMARY OF ASPECTS OF NARRATIVE STRUCTURE ANALYSIS AND THEIR INTER-RELATIONSHIPS	89
TABLE 5.2. DEFINITION OF COHESIVE TIE ADEQUACY	92
TABLE 5.3. EXAMPLES OF ANAPHORIC, EXOPHORIC AND AMBIGUOUS REFERENCE IN CONTIGUOUS C-UNITS.	92
TABLE 5.4. PERCENTAGE OF AGREEMENT FOR TRANSCRIPTION AND CODING	94
TABLE 5.5. HOLM ADJUSTED <i>P</i> VALUES FOR SIX GROUP COMPARISONS	95
TABLE 5.6. TYPES OF VARIABLES DERIVED FROM EACH SAMPLING CONTEXT	97
TABLE 6.1. NUMBER OF UTTERANCES	99
TABLE 6.2. GROUP EFFECTS FOR NUMBER OF UTTERANCES	99
TABLE 6.3. NUMBER OF PARTICIPANTS WITH MINIMUM OBLIGATORY CONTEXTS FOR COMPOSITE GRAMMATICAL MEASURES IN CONVERSATIONS AND NARRATIVES	100
TABLE 6.4. MEDIAN ACCURACY FOR GRAMMATICAL MORPHEME COMPOSITES IN CONVERSATIONS AND NARRATIVES	101
TABLE 6.5. GROUP EFFECTS FOR ACCURACY OF GRAMMATICAL MORPHEME COMPOSITES	101
TABLE 6.6. RANGE OF ACCURACY MEASURES FOR COMPOSITE GRAMMATICAL MEASURES IN PLAY CONVERSATIONS (EXPRESSED AS MINIMUM AND MAXIMUM PERCENTAGE CORRECT USE)	102
TABLE 6.7. PERCENTAGE OF PARTICIPANTS WITH HIGH ACCURACY LEVELS FOR GRAMMATICAL COMPOSITES (> 70%).	103

TABLE 6.8. PROPORTION OF FRAGMENTS, SINGLE CLAUSES, TWO-CLAUSE UTTERANCES, AS PERCENTAGE OF ALL VERBAL UTTERANCES OR C-UNITS; AND THE SUBORDINATION INDEX	104
TABLE 6.9. GROUP EFFECTS FOR CLAUSAL STATUS OF UTTERANCES IN CONVERSATIONS	104
TABLE 6.10. UTTERANCE ERRORS: AS PERCENTAGE OF ALL VERBAL UTTERANCES FOR THE PLAY CONVERSATIONS, AND PERCENTAGE OF ALL C-UNITS FOR THE NARRATIVES.	105
TABLE 6.11. PERCENTAGE OF NARRATIVES AT EACH INDIVIDUAL NARRATIVE LEVEL	107
TABLE 6.12. PERCENTAGE OF NARRATIVES AT EACH NARRATIVE ORGANISATION LEVEL	108
TABLE 6.13. MEDIAN KEY EVENT AND INFORMATION SCORES	109
TABLE 6.14. GROUP EFFECTS FOR EVENT, KEY EVENT AND INFORMATION SCORES	109
TABLE 6.15. ADEQUACY OF COHESIVE TIES EXPRESSED AS MEDIAN PERCENTAGES OF TOTAL COHESIVE TIES (INTERQUARTILE RANGE IN BRACKETS)	110
TABLE 6.16. GROUP EFFECTS FOR ADEQUACY OF COHESIVE TIES	110
TABLE 6.17. ADEQUACY OF COHESIVE TIES STRATEGIES, MEASURED AS MEDIAN NUMBER PER C-UNIT (INTERQUARTILE RANGE IN BRACKETS)	111
TABLE 6.18. GROUP EFFECTS FOR ADEQUACY OF SELECTED COHESIVE TIE STRATEGIES	112
TABLE 7.1. SIGNIFICANT MORPHOSYNTACTIC ACCURACY AND COMPLEXITY VARIABLES IN CONVERSATIONS AND NARRATIVES	116
TABLE 7.2. SIGNIFICANT NARRATIVE STRUCTURE VARIABLES FOR THE FROG AND CAT NARRATIVES	117
TABLE 7.3. SUMMARY OF RESULTS FOR THE FIRST HYPOTHESIS AND ASSOCIATED QUESTIONS	132
TABLE 7.4. SUMMARY OF RESULTS FOR THE SECOND HYPOTHESIS AND ASSOCIATED QUESTIONS	133
TABLE 8.1. MOST EFFECTIVE CLASSIFIERS OF LI AND TDL	137

LIST OF FIGURES

FIGURE 1.1. DYNAMIC INTERACTIONAL MODEL OF EXPLANATIONS FOR LANGUAGE IMPAIRMENT	19
--	----

LIST OF TABLES AND FIGURES IN THE APPENDICES

TABLE A-1. PARTICIPANT DETAILS IN STUDIES INVESTIGATING ACCURACY OF GRAMMATICAL MORPHEMES	167
TABLE B-1. CONVENTIONS FOR CALCULATING MLU	168
TABLE B-2. GROUP EFFECTS FOR PARTICIPANT CHARACTERISTICS	169
TABLE B-3. PAIRWISE COMPARISONS FOR PARTICIPANT CHARACTERISTICS	169
TABLE B-4. PAIR-WISE COMPARISONS FOR LANGUAGE DOMAIN INDEXES	169

TABLE B-5. PAIRWISE COMPARISONS BETWEEN LANGUAGE DOMAIN INDEXES	169
TABLE B-6. PAIR-WISE COMPARISONS FOR SOCIO-ECONOMIC STATUS	170
TABLE C-1. TOYS FOR PLAY SESSIONS	171
TABLE C-2. FROG NARRATIVE PROMPTS:	177
TABLE C-3. CAT NARRATIVE PROMPTS	177
TABLE C-4. BACKGROUND INFORMATION SHEET	178
TABLE D-1. TRANSCRIPTION ENTRY CONVENTIONS	179
TABLE D-2. ADDITIONAL BOUND MORPHEME TRANSCRIPTION AND CODING CONVENTIONS	179
TABLE D-3. WORD LEVEL MORPHOSYNTACTIC CODING CONVENTIONS	180
TABLE D-4. UTTERANCE LEVEL MORPHOSYNTACTIC CODING CONVENTIONS	180
TABLE E-1. NON-GOAL DIRECTED NARRATIVE COMPONENTS	181
TABLE E-2. GOAL DIRECTED NARRATIVE COMPONENTS	182
TABLE E-3. NARRATIVE LEVELS AND DESCRIPTORS	185
TABLE E-4. NARRATIVE LEVEL DECISION TREE	186
TABLE F-1. INFORMATION SCORE GUIDELINES FOR FROG NARRATIVE	187
TABLE F-2. INFORMATION SCORING GUIDELINES FOR CAT NARRATIVE	189
TABLE F-3. KEY EVENT SCORE GUIDELINES FOR FROG NARRATIVE	192
TABLE F-4. KEY EVENT SCORE GUIDELINES FOR CAT NARRATIVE	192
TABLE G-1. CONVENTIONS FOR CODING COHESIVE DEVICES	193
TABLE G-2. ADEQUACY FOR TYPE OF COHESIVE TIE OPPORTUNITY	194
TABLE G-3. ACCEPTABLE ANIMAL NAMES FOR FROG NARRATIVES	195
TABLE H-1. PAIRWISE COMPARISONS FOR NUMBER OF UTTERANCES	196
TABLE H-2. MEDIAN NUMBER OF OBLIGATORY CONTEXTS (OCS) FOR GRAMMATICAL MORPHEME COMPOSITE MEASURES IN CONVERSATIONS AND NARRATIVES	196
TABLE H-3. PAIRWISE COMPARISONS OF ACCURACY FOR GRAMMATICAL MORPHEME COMPOSITE MEASURES IN CONVERSATIONS AND NARRATIVES	197
TABLE H-4. PAIRWISE COMPARISONS OF CLAUSAL COMPLEXITY MEASURES AND UTTERANCE ERRORS FOR CONVERSATIONS AND NARRATIVES	197
TABLE H-5. PAIR-WISE COMPARISONS FOR NARRATIVE STRUCTURAL AND ORGANISATION LEVEL AND KEY EVENT AND INFORMATION SCORES	198
TABLE H-6. MEDIAN NUMBER OF COHESIVE TIES PER C-UNIT (INTERQUARTILE RANGE IN BRACKETS)	198
TABLE H-7. PAIR-WISE COMPARISONS FOR ADEQUACY OF COHESIVE TIES	199
TABLE I-1. PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FROM INDIVIDUAL CONVERSATION SAMPLE VARIABLES	200
TABLE I-2. PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FROM INDIVIDUAL NARRATIVE SAMPLE VARIABLES	200
TABLE I-3 PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FOR COMBINATIONS OF MORPHOSYNTACTIC VARIABLES FROM CONVERSATION AND COMBINED NARRATIVE SAMPLES	201

TABLE I-4. PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FROM COMBINATIONS OF NARRATIVE VARIABLES	201
TABLE I-5. PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FROM COMBINATIONS OF CONVERSATION SAMPLE VARIABLES AND FROG NARRATIVE MEASURES	201
TABLE I-6. PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FROM COMBINATIONS OF CONVERSATION AND CAT NARRATIVE CONTEXTS	202
TABLE I-7. PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FROM COMBINATIONS OF NARRATIVE SAMPLE VARIABLES (INCLUSIVE OF BOTH FROG AND CAT STORIES).	202
TABLE I-8. PERCENTAGES AND TOTAL NUMBER OF CHILDREN CORRECTLY CLASSIFIED FROM COMBINATIONS OF CONVERSATION SAMPLE VARIABLES AND BOTH FROG AND CAT NARRATIVES	202
FIGURE C-1. FROG NARRATIVE PICTURES (FROG, WHERE ARE YOU? MAYER, 1969)	172
FIGURE C-2. CAT NARRATIVE STIMULUS	176

ABSTRACT

Many researchers and clinicians describe a broad range of language features as characteristic of specific language impairment (SLI), while some researchers have attempted to define a narrower set of language features as clinical markers of SLI. However, how SLI is distinguished from other language impairments that fall outside the psychometric diagnostic criteria for SLI, based on language features is not clear. This thesis is concerned with determining which language features, if any, are capable of differentiating children with SLI from children with non-specific language impairment (NLI). Children with NLI, differ psychometrically from SLI only on their non-verbal cognitive abilities.

Conversation and oral narrative language samples, and verbal responses to probes, were collected from seventy five children aged 2 ½ to 6 years comprising four research groups: 21 participants with SLI, 13 participants with NLI, 21 age-matched participants with typically developing language and 20 younger language-matched participants with typically developing language. Matching for group comparisons required that the SLI and NLI groups had similar levels of language ability on a standardised assessment and mean length of utterance (MLU), which reduced the SLI group to 15 participants for these comparisons. The language-matched group was also matched to the SLI and NLI groups on MLU. A wide range of language variables from the conversation and narrative samples were analysed, covering the domains of general sample measures, morphosyntactic accuracy and complexity, narrative structure, information and cohesion.

The SLI and NLI groups performed similarly in all domains and could not be differentiated diagnostically on the measures examined. The most consistent group differences were for comparisons between the age-matched and language-matched groups, which demonstrated the effects of maturation and development. The language impairment (LI) and language-matched groups could not be differentiated on the majority of general language sample or morphosyntactic measures but the SLI group produced narratives that were structurally more complex and cohesive than the language-matched group.

Language tasks varied in their effectiveness in differentiating groups. More consistent group differences for the grammatical accuracy measures were obtained from the conversations than the narratives, and from composite measures compared to individual measures. Targeted elicitation tasks were more effective than the

conversations or narratives in producing consistent group differences for accuracy of individual verb tense morphemes. More consistent group differences for the narrative features were obtained from a wordless picture book than a single scene picture. A discriminant function analysis showed that LI was most effectively identified using a combination of key morphosyntactic measures from the conversations and key narrative feature measures from the two narratives.

The results have implications for diagnostic practices, intervention practices and theoretical constructs and explanations of SLI and NLI. In particular, a broad, holistic view of LI is supported, as an impairment that impacts on all domains of language which interact with each other and must be considered collectively, rather than as individual, splintered skills.

DECLARATION

I certify that this thesis does not incorporate without acknowledgement any material previously submitted for a degree or diploma in any university; and that to the best of my knowledge and belief it does not contain any material previously published or written by another person except where due reference is made in the text.

Signed: _____ Date: _____

Wendy M. Pearce

ACKNOWLEDGEMENTS

This thesis, begun in 1997, represents a long journey in a quest to gain a better understanding of the nature of language impairments in young children. Many people and experiences from my work in preschools and schools spanning more than 20 years have contributed to the development of my research questions and motivation to pursue them. Their questions, situations and insights have contributed as much to my understanding of the topic as the literature cited in this thesis, albeit from perhaps more practical, real-life clinical perspectives.

I wish to thank my supervisors (Associate Professor Paul McCormack and Ms Deborah James) for the support they provided. In particular, I thank my principle supervisor, Paul McCormack, for his time, support, constructive criticism and encouragement throughout my time working on this thesis. I also extend my thanks to Kylie Lange, Statistical Consultant at Flinders University, who was invaluable for all her patient and helpful assistance in the statistical analysis of the data.

Several academics from other universities provided discussion time, which contributed to the development of concepts within this thesis. I thank Tricia Eadie from La Trobe University for the opportunity to discuss her thesis on grammatical morphology in children with SLI and Down syndrome. I also thank Beth Armstrong from Macquarie University and Linda Hand from The University of Sydney for helping to develop my understanding of cohesion.

Collegiate support from fellow research students in the Department of Speech Pathology and Audiology at Flinders University was also invaluable in providing inspiration, motivation and an ear to listen when needed. In particular, I extend my thanks to Jan Baker, Chris Brebner, Deborah Hersh, Kate King and Stephanie Mallen.

I also wish to thank the speech pathology, teaching and care staff in the Department of Education Training and Employment, Catholic Education, child care centres and speech pathologists in private practice, for their assistance in recruiting subjects for this research in South Australia. I especially thank all the parents and children who contributed their time and energy to participate in this research.

The speech pathologists who provided reliability checks for the coding and analysis of various sections of my data, contributed greatly to the quality of thesis. Here, I extend my thanks to Sue Horton, Sue McCandlish, Nicky Fanning, Melissa Saliba and Deborah James for their time, patience and invaluable insights.

Above all, I thank my family for their enduring patience in accepting and working around the time and focus that I directed to this thesis. To my husband, John Candy, I thank you for the many ways in which your practical and emotional support enabled me to devote considerable time and energy to my thesis. To my children Sean and Aidan Foord I thank you for the sacrifices you made when work on this thesis took my attention away from you.

PUBLICATIONS

- Pearce, W. M. (2003). Does the choice of stimulus affect the complexity of children's oral narratives? *Advances in Speech Language Pathology*, 5(2), 95-103.
- Pearce, W. M., McCormack, P. F. and James, D. G. H. (2003). Exploring the boundaries of SLI: findings from morphosyntactic and story grammar analyses. *Clinical Linguistics and Phonetics*, 17(4-5), 325-334.
- Pearce, W. (2000). Challenges to specific language impairment as a valid diagnostic category. In C. Lind (Ed.), *Research, Reflect, Renew: Proceedings of the 2000 Speech Pathology Australia National Conference* (pp. 149-156). Adelaide: Speech Pathology Australia.

GLOSSARY

<i>Abbreviation / Term</i>	<i>Definition</i>
3S	Third person singular morpheme; e.g., runs
AM	Age-matched control group
ART	Article; e.g., a, the
AUX	Auxiliary; e.g., He is running.
BE	Verb 'to be', including copula and auxiliary forms; e.g., am, is, are, was, were (excludes auxiliary DO and HAVE)
CAT	Narratives produced for the single scene picture depicting two children and a cat in a tree.
CELF-P	Clinical Evaluation of Language Fundamentals – Preschool (Wiig et al., 1993)
CON	Conversation samples
COP	Copula; e.g., He is funny.
DO	Verb auxiliary 'do' and its forms; e.g., Do you want it? He doesn't want to.
ED	Regular past tense morpheme; e.g., He jumped .
EOI	Extended optional infinitive
ERRCOH	Percentage of erroneous cohesive ties
ESL	English as a second language
FRAG	Percentage of fragments (as percentage of all verbal utterances)
FROG	Narratives produced for the wordless picture book "Frog where are you?"
FTC	Finite tense composite – accuracy (percentage correct use) measure for the total of all finite tense morphemes; i.e., ED + 3S + AUX + COP
FTIC	Finite tense inflection composite; accuracy measure for finite tense inflections i.e., ED + 3S
GD	Goal directed
GEN	Possessive or genitive; e.g., John's bike
HSLI	High specific language impairment; expressive percentile > 5
INFO	Narrative information score percentage
ING	Continuous aspect morpheme 'ing'; e.g., He is jumping .
IQ	Intelligence quotient
IQR	Interquartile range, a non-parametric measure of variance, describing the middle 50% of distribution, from the 25 th to 75 th percentiles
LC	Low non-verbal cognition, and normally developing language
LI	Language impairment
LM	Language-matched control group
MLU	Mean length of utterance
MOD	Modal; e.g., can, might, should
NAR	Narrative samples
NDW	Number of different words
NGD	Non-goal directed
NLI	Non-specific language impairment
NPC	Noun phrase composite – accuracy measure for the total of targeted noun phrase morphemes; i.e., ART + PLS + GEN

NPIC	Noun phrase inflection composite – accuracy measure for noun inflections; i.e., PLS + GEN
NTVC	Non-tense verb composite – accuracy measure for the total of targeted non-finite verb morphemes; i.e., ING + MOD
NVCA	Non-verbal cognitive ability
OC	Obligatory contexts
ORG	Narrative organisation level: non-goal directed, goal directed or elaborated
RCPM	Raven’s Coloured Progressive Matrices (Raven et al., 1995)
RDLS	Reynell Developmental Scales 3 (Edwards et al., 1997)
SALT	Systematic Analysis of Language Transcripts (computer software, Miller et al.)
SES	Socio-economic status
SLI	Specific language impairment
TDL	Typically developing language
TNW	Total number of words
WPB	Wordless picture book