

Acknowledgements

THE ICONICITY OF SELECTED PICTURE COMMUNICATION SYMBOLS FOR RURAL ZULU-SPEAKING CHILDREN

Professor Barbara van Tonder and Kyle Lloyd, who took time to read through

Angelique, Ingrid, Sylvia, Lorna K and Jilda R, who always listened intently

by

Tannie Mokoena, Adelene Haupt and the more younger Facilitators, who helped to plan the project and opened their homes to me.

Miss Newlands, the Schreiber

ELIZABETH HAUPT

transport and gifts of books and decorated the paper to reflect her

Dudu, Momo and Thabo Warren who kept me company and kept me safe in the bushveld

Debbie Argot and Leonie Venter, Moetra Padike, Matshidiso and my wife and Zimmerman who gave valuable language and culture advice.

In partial fulfilment of the requirements for the

MASTERS DEGREE IN ALTERNATIVE AND AUGMENTATIVE COMMUNICATION

Centre for AAC

UNIVERSITY OF PRETORIA

Unless the Lord builds a house, its builders labor in vain.

Pretoria

November 2001



Acknowledgements

I am extremely indebted to the following people for their patience and support throughout the development of this text:

- Mom and Dad, Cori, Nikki and Paula, who were simply always where I needed them
- Professor Erna Alant, who spent hours in reading and discussing my ideas
- Professors Stephen von Tetzchner and Lyle Lloyd, who inspired me tremendously
- Angela, Ingrid, Sylvia, Jabu K and Jabu R, who always listened and cared
- Tannie Esther, Marius, Hanna and the three younger Potolozis, who prayed for this project and opened their home to me
- Miss Newlands, the School Board and entire staff of DSS, who helped me out with transport and piles of leave and who filled the gaps I so often left
- Dudu, Musa and Uncle Warren, who kept me company and kept me safe in the ‘bundus’
- Uncle Arno and Uncle Kjell, Messrs Radebe, Mabizela (jr and sr), Cele and Khumalo, who gave valuable language and culture advice
- Dr Margaret Marggraff, who checked my discussion on isiZulu
- Messrs Müller and Bulcock from the KwaZulu-Natal Department of Education and Culture, who always replied speedily and efficiently on queries
- Mrs Rina Owen and René, who helped in statistical matters
- All the wide-eyed little people who participated in the study

Unless the Lord builds the house, its builders labour in vain...

Ps 127:1

Summary

The influence of cross-cultural differences in the perception of medical material has long been acknowledged and documented. As the majority of graphic representational systems most frequently used in South Africa are based on English symbols, it is important to consider the potential impact of such symbols on non-English speaking patients. The financial assistance of the National Research Foundation (NRF) towards this research is hereby acknowledged. Opinions expressed and conclusions arrived at are those of the author and are not necessarily to be attributed to the National Research Foundation.

Symbolic literacy has been established as an important factor in the learning of symbolic information about the toxicity of symbols suggests clinicians to use everyday examples and as such will be valuable to South African healthcare professionals in improving literacy.

The purpose of this study was to investigate the toxicity of selected Patient Communication Symbols (PCS) for and 2000 cycling ten-year-olds. The participants were each presented with 10 samples of a commercially available media-to communication system from which the labels had been removed. The participants were required to match a symbol with a specific word which had been prepared for this methodology after a high degree of recallability about the particular symbols in the context in which they are generally used.

With both their toxicity values at 75% and matching the symbols to 90% of the criteria applied, respectively, 7.3% and 11.1% of the symbols on the communication system emerged as known to the participants. In no order contradicted and a question of symbols, the overlay, the total frequency of matching of symbols, and gender did not influence results. Those symbols classified as colour were on average the most familiar.

An analysis of errors revealed that for some symbols many of the participants who gave a single specific label, be it the target label or a non-target label, while for others a label was given on many possible levels, or none were indicated. The term "mislabelled" was coined to describe how well-defined or specific the evoked response was to a symbol assigned to the mind of a viewer. Results suggest that participants did not have an understanding of the information reflected upon by natives in symbols. This finding is consistent with the appearance of errors, as well as participants' lack of previous experience with conventional Western pictures. Clinical implications and recommendations for additional research are discussed.

Summary

The existence of cross-cultural differences in the perception of pictorial material has long been established and documented. As the majority of graphic representational systems most frequently used for augmentative and alternative communication (AAC) is of a pictorial nature, the possibility of such differences impacting on the use of these symbol systems cannot be ignored. Knowledge about the nature and degree of such impact could serve to enhance AAC service delivery. This study constitutes a first step towards such an investigation.

Iconicity has been established as an important factor in the learning of symbols. Information about the iconicity of symbols supports clinicians in vocabulary selection and is especially valuable in South Africa because of widespread illiteracy.

The purpose of this study was to investigate the iconicity of selected Picture Communication Symbols (PCS) for rural Zulu-speaking ten-year-olds. 94 participants were each presented with 36 copies of a commercially available matrix-36 communication overlay from which the glosses had been removed. The participants were required to match a symbol with a spoken isiZulu label. It was proposed that this methodology offers a high degree of social validity since it tests iconicity of symbols in the context in which they are generally used.

With both strict (iconicity values $\geq 75\%$) and lenient (iconicity values $\geq 50\%$) scoring criteria applied, respectively 2,8% and 11,1% of the symbols on the communication overlay emerged as iconic for participants. It was further established that the position of symbols on the overlay, the total frequency of selection of symbols, and gender did not influence results. Those symbols classified as nouns were on average the most iconic.

An analysis of errors revealed that for some symbols many of the participants agreed on a single specific label, be it the target label or a non-target label; while for other symbols either many possible labels, or none, were indicated. The term ‘distinctiveness’ was coined to describe how well-defined or specific the evoked meanings were that a symbol triggered in the mind of a viewer. Results suggest that participants did not make maximum use of the information afforded them by arrows in symbols. This finding is ascribed to the opaqueness of arrows, as well as participants’ lack of previous experience with conventional cues in pictures. Clinical implications and recommendations for additional research are discussed.

Key words: augmentative and alternative communication (AAC), communication overlay, cross-cultural, iconicity, isiZulu, Picture Communication Symbols (PCS) and translation.

Opsomming

Dat kultuur 'n invloed het op die persepsie van prentmateriaal is lank reeds vasgestel en goed gedokumenteer. Aangesien die meeste grafiese simboolsisteme wat algemeen vir alternatiewe en aanvullende kommunikasie (AAK) gebruik word, prentagtig van aard is, kan die waarskynlikheid dat kultuurverskille 'n invloed op die gebruik van hierdie simboolsisteme moet hê, nie geïgnoreer word nie. Inligting omtrent die aard en graad van so 'n invloed kan lei tot die verbetering van AAK dienslewering. Hierdie studie is 'n eerste tree tot so 'n ondersoek.

Dit is bekend dat ikonisiteit 'n belangrike rol speel in die aanleer van simbole. Inligting aangaande die ikonisiteit van simbole steun terapeute in die proses van woordeskatseleksie en is veral in Suid-Afrika belangrik as gevolg van uitgebreide ongeletterdheid.

Die doel van hierdie studie was om die ikonisiteit van geselekteerde Picture Communication Symbols (PCS) vir tienjarige Zoeloekinders vanuit landelike gebiede te bepaal. 94 deelnemers het elk 36 afskrifte van 'n kommersieel beskikbare kommunikasiebord ontvang. Die bord het 36 simbole, waarvan die geskrewe benaming verwyder is, bevat. Deelnemers is gevra om telkens 'n simbool met 'n gesproke isiZoeloe-frase af te paar. Daar word aangevoer dat hierdie metodologie die sosiale herhaalbaarheid van resultate verhoog aangesien ikonisiteit getoets word in die konteks waarin die simbole normaalweg gebruik word.

Met streng (ikonisiteitswaardes $\geq 75\%$) sowel as matige (ikonisiteitswaardes $\geq 50\%$) bepuntingskriteria gebruik, het onderskeidelik 2,8% en 11,1% van die simbole op die kommunikasiebord ikonies geblyk te wees vir die deelnemers. Die posisie van die onderskeie simbole op die kommunikasiebord, die totale frekwensie van seleksie van simbole, en geslag het nie die resultate beïnvloed nie. Simbole uit die selfstandige naamwoordkategorie was oor die algemeen die meeste ikonies.

'n Foutanalise het onthul dat sommige simbole min of meer eenstemmig in respons op een spesifieke frase, hetsy die teikenfrase of 'n nie-teikenfrase, aangedui is. Ander simbole is óf nooit, óf in respons op 'n wye verskeidenheid van frases aangedui. Die term 'kenmerkendheid' is gebruik om te beskryf hoe goed-gedefinieer of spesifiek die betekenis is wat 'n simbool in die denke van 'n kyker ontlok.

Uit die resultate blyk dit voorts dat deelnemers nie optimaal gebruik gemaak het van die inligting verskaf deur die pyle in simbole nie. Hierdie bevinding kan waarskynlik toegeskryf word aan die feit dat pyle hoogs abstrak is, asook aan deelnemers se gebrek aan ervaring met konvensies in Westerse tekeninge. Kliniese implikasies en aanbevelings vir verdere navorsing word bespreek.

Kernwoorde: alternatiewe en aanvullende kommunikasie (AAK), kommunikasiebord, kruis-kultureel, ikonisiteit, isiZoeloe, Picture Communication Symbols (PCS) en vertaling.

1.1 Introduction	1
1.1.1 Aim	1
1.1.2 Scope	1
1.1.3 Aims	1
1.1.4 Objectives	1
1.1.5 Summary	1

CHAPTER 2: CONTEXT, CULTURE AND IMPLICATION OF PICTORIAL MATERIAL

2.1 Introduction	1
2.1.1 Aim	1
2.1.2 Scope	1
2.1.3 Aims	1
2.1.4 Objectives	1
2.1.5 Summary	1
2.2 Theoretical framework	1
2.2.1 Theoretical framework	1
2.2.2 Theoretical framework	1
2.2.3 Theoretical framework	1
2.2.4 Theoretical framework	1
2.2.5 Theoretical framework	1
2.3 Theoretical framework	1
2.3.1 Theoretical framework	1
2.3.2 Theoretical framework	1
2.3.3 Theoretical framework	1
2.3.4 Theoretical framework	1
2.4 Summary	1

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction	1
3.1.1 Aim	1
3.1.2 Scope	1
3.1.3 Primary data	1
3.1.4 Secondary data	1
3.1.5 Research design	1
3.1.5.1 Description of the research design	1
3.1.5.2 Research phases	1

Table of contents

CHAPTER 1: INTRODUCTION	1
1.1 INTRODUCTION.....	1
1.2 OUTLINE OF CHAPTERS.....	2
1.3 DEFINITION OF TERMS	2
1.3.1 <i>Communication overlay</i>	2
1.3.2 <i>Culture</i>	3
1.3.3 <i>Distinctiveness</i>	3
1.3.4 <i>Iconicity</i>	3
1.3.5 <i>Iconicity values</i>	3
1.3.6 <i>Learnability</i>	3
1.3.7 <i>Rural</i>	4
1.3.8 <i>Symbol</i>	4
1.4 ABBREVIATIONS.....	4
1.5 SUMMARY.....	4
CHAPTER 2: ICONICITY, CULTURE AND THE PERCEPTION OF PICTORIAL MATERIAL.....	5
2.1 INTRODUCTION.....	5
2.2 ICONICITY OF SYMBOLS.....	5
2.3 PERCEPTION OF SYMBOLS	8
2.4 POSSIBLE INFLUENCES ON THE PERCEPTION OF PICTURES	9
2.4.1 <i>The material on which symbols are printed</i>	9
2.4.2 <i>Schooling</i>	9
2.4.3 <i>Previous experience with symbols</i>	10
2.4.4 <i>Thinking styles</i>	11
2.4.5 <i>An oral versus literate state of mind</i>	12
2.5 THE ENCOMPASSING INFLUENCE OF CULTURE.....	12
2.6 IMPLICATIONS FOR AAC	13
2.7 PREVIOUS CROSS-CULTURAL STUDIES	13
2.8 ICONICITY IN THE CONTEXT OF A COMMUNICATION OVERLAY	15
2.9 SUMMARY.....	16
CHAPTER 3: RESEARCH METHODOLOGY	17
3.1 INTRODUCTION.....	17
3.2 AIMS	17
3.2.1 <i>Primary aim</i>	17
3.2.2 <i>Sub-aims</i>	17
3.3 RESEARCH DESIGN	17
3.3.1 <i>Description of the research design</i>	17
3.3.2 <i>Research phases</i>	18

3.4	PREPARATORY PHASE.....	18
3.4.1	<i>Selection of a communication overlay.....</i>	18
3.4.2	<i>Translation of symbol labels.....</i>	21
3.4.3	<i>Development of test protocol and training of research assistant</i>	29
3.4.4	<i>Pilot study.....</i>	29
3.5	MAIN STUDY	32
3.5.1	<i>Participants</i>	32
3.5.2	<i>Material and equipment.....</i>	34
3.5.3	<i>Data Collection Procedures</i>	35
3.5.4	<i>Data analysis and statistical procedures.....</i>	38
3.5.5	<i>Consistency.....</i>	38
3.6	SUMMARY.....	38
CHAPTER FOUR: RESULTS AND DISCUSSION.....		39
4.1	INTRODUCTION.....	39
4.2	MISSING DATA	39
4.3	CORRECT RESPONSES	40
4.4	ANALYSIS OF ERRORS	42
4.4.1	<i>Analysis per column.....</i>	43
4.5	POSSIBLE INFLUENCES ON RESULTS.....	52
4.5.1	<i>Total frequency of selection of symbols.....</i>	53
4.5.2	<i>Position of symbols on communication overlay.....</i>	53
4.5.3	<i>Gender.....</i>	57
4.6	SUMMARY.....	58
CHAPTER FIVE: SUMMARY AND CONCLUSIONS.....		59
5.1	INTRODUCTION.....	59
5.2	SUMMARY OF THE RESULTS.....	59
5.3	CLINICAL IMPLICATIONS	60
5.3.1	<i>The use of PCS.....</i>	60
5.3.2	<i>The use of commercially available communication overlays</i>	61
5.3.3	<i>Methodological concerns in the testing of iconicity</i>	61
5.4	CRITICAL EVALUATION OF THE STUDY	61
5.5	RECOMMENDATIONS FOR FUTURE RESEARCH	62
5.6	SUMMARY.....	62
REFERENCE LIST		63

List of tables

TABLE 1: A COMPARISON OF PROMINENT STUDIES ON ICONICITY OF AIDED SYMBOL SETS/SYSTEMS PERFORMED AFTER 1979	6
TABLE 2: A COMPARISON OF PREVIOUS CROSS-CULTURAL AAC STUDIES	14
TABLE 3: DESCRIPTION OF JUDGES / FIRST TRANSLATORS	20
TABLE 4: CONCEPTS QUESTIONED BY JUDGES.....	20
TABLE 5: FIRST TRANSLATION INTO ISI ^Z ULU	24
TABLE 6: FIRST BLIND BACK-TRANSLATION, REVIEW AND SUGGESTIONS	26
TABLE 7: SECOND BLIND BACK-TRANSLATION AND PRETESTING	27
TABLE 8: DESCRIPTION OF SECOND TRANSLATORS	28
TABLE 9: DESCRIPTION OF THIRD TRANSLATORS	28
TABLE 10: SUGGESTIONS FOR THE SIX PROBLEM PHRASES.....	28
TABLE 11: DESCRIPTION OF THE RESEARCH ASSISTANT	29
TABLE 12: DESCRIPTION OF PARTICIPANTS IN THE PILOT STUDY.....	30
TABLE 13: PILOT STUDY OBJECTIVES, PROCEDURES, RESULTS AND RECOMMENDATIONS	31
TABLE 14: DESCRIPTION OF SELECTED SCHOOLS	34
TABLE 15: DESCRIPTION OF PARTICIPANTS	34
TABLE 16: MATERIAL AND EQUIPMENT USED	34
TABLE 17: STATISTICAL PROCEDURES EMPLOYED	38
TABLE 18: MISSING DATA.....	40
TABLE 19: PRESENTATION ORDER OF THE LABELS	41
TABLE 20: RANKING OF SYMBOLS IN INTERVALS OF PERCENTAGE CORRECT RESPONSES.....	43
TABLE 21: DISTRIBUTION OF SYMBOLS ACCORDING TO ICONICITY AND DISTINCTIVENESS	45
TABLE 22: SYMBOLS CLASSIFIED AS DISTINCTIVE X LESS ICONIC.....	47
TABLE 23: SYMBOLS CLASSIFIED AS INDISTINCTIVE X LESS ICONIC	49
TABLE 24: DISTRIBUTION OF RECURRENCES	53
TABLE 25: SUMMARY OF TOTAL FREQUENCY OF SELECTION AND ICONICITY VALUES ACROSS WORD CLASSES....	57
TABLE 26: GENDER DIFFERENCES	58

List of figures

FIGURE 1: SCHEMATIC REPRESENTATION OF THE SELECTION PROCESS	19
FIGURE 2: SCHEMATIC REPRESENTATION OF THE TRANSLATION PROCESS	23
FIGURE 3: CORRECT RESPONSES PER LABEL.....	40
FIGURE 4: DISTRIBUTION OF RECURRENCES	54
FIGURE 5: TOTAL FREQUENCY OF SELECTION OF SYMBOLS.....	54
FIGURE 6: CORRECT RESPONSES PER SYMBOL.....	54
FIGURE 7: CORRECT RESPONSES AND TOTAL FREQUENCY OF SELECTION.....	54
FIGURE 8: TOTAL FREQUENCY OF SELECTION AND ICONICITY VALUE OF EACH SYMBOL AS POSITIONED ON OVERLAY	56
FIGURE 9: TOTAL FREQUENCY OF SELECTION	56
FIGURE 10: FREQUENCY OF CORRECT RESPONSES (ICONICITY VALUES).....	56

List of appendices

APPENDIX A: COMMUNICATION OVERLAY AS USED IN THE STUDY	70
APPENDIX B: TRAINING OVERLAY AS USED IN STUDY.....	71
APPENDIX C: FIRST, SECOND AND FINAL CONSENSUS.....	72
APPENDIX D: TEST PROTOCOL	73
APPENDIX E: CHECKLIST FOR DETERMINING CONSISTENCY ACROSS SESSIONS	79
APPENDIX F: FIRST TRANSLATIONS.....	80
APPENDIX G: ORIGINAL AND MODIFIED SOURCE PHRASES.....	81
APPENDIX H: FIRST BACK TRANSLATIONS	82
APPENDIX I: SECOND BACK TRANSLATIONS.....	83
APPENDIX J: LETTER TO KWAZULU-NATAL DEPARTMENT OF EDUCATION AND CULTURE.....	84
APPENDIX K: LETTER TO JUDGES.....	85
APPENDIX L: LETTER TO FIRST TRANSLATORS	86
APPENDIX M: LETTER TO SECOND AND THIRD TRANSLATORS.....	87
APPENDIX N: SUMMARY OF RESULTS OF PHASE TWO OF PILOT STUDY	88
APPENDIX O: INFORMATION TO TEACHERS.....	89
APPENDIX P: WORKSHEET	90
APPENDIX Q: ENTIRE BODY OF DATA.....	91
APPENDIX R: ANALYSIS OF ERROR PATTERNS PER LABEL	92

disability, and the need to increase access to services for disabled individuals. This study aims to increase access information and services, and research aimed at enhancing accessible service delivery for individuals with IDSPs in South Africa is clearly warranted.

Picture Comprehension Symbols (PCS) (Johnson, 1961, 1965, 1972) is a set of visual, static or symbolic symbols and is regarded as relatively basic compared to other forms of visual and systems (Diffrida & Locke, 1993; McFerren, 1987). Iconicity has been and labelled as an important factor in symbol learning (Heller, 1987; Heller, 1989; Heller et al., 1989; Heller, Land, Leaming & Dubberly, 1993; Heller, 1995; Leffler, Page & Heller, 1994; Heller, 1997). However, since iconicity is defined as the degree to which an individual perceives similarity between a symbol and its referent (Blaauw, Mayr & Fischer, 1997), it is dependent on the context of the viewer and it cannot be taken for granted that results obtained from one culture and group of people can be generalised to another. Yet the iconicity of PCS has never before been investigated in the context of any of South Africa's main languages. There is a need for culture-specific iconicity information in this country to enhance AAC intervention for individuals with IDSPs.

KwaZulu-Natal (KZN) meaning "place of the Zulus") is the province in South Africa with the second highest disability prevalence rate (6,2%) (Geddes et al., 1999; Puchalski et al., 2002).