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## Appendices



**Appendix A**  
**Data Recording Sheets to Capture Participants' Responses during Shared Storybook Reading**

**Attribute-entity**

**Participant** \_\_\_\_\_

**Session:** \_\_\_\_\_

**Date:** \_\_\_\_\_

	Exp pause, drawing attention	Question/mand	Request to use board	Model and req. to imitate	Hand-over-hand
Dirty pants					
Dirty shirt					
Broken aeroplane					
Broken car					
Dirty teddy					
Dirty pants					
Dirty shirt					
Dirty teddy					
Broken aeroplane					
Broken car					



**Agent-Action**

**Participant** \_\_\_\_\_

**Session:** \_\_\_\_\_

**Date:** \_\_\_\_\_

	Exp pause, drawing attention	Question/mand	Request to use board	Model and req. to imitate	Hand-over-hand
Dog sleep					
Dog run					
Boy laugh					
Dog run					
Boy fall					
Boy fall					
Boy cry					
Boy cry					
Boy laugh					
Dog sleep					



**Possessor-possession**

**Participant** \_\_\_\_\_

**Session:** \_\_\_\_\_

**Date:** \_\_\_\_\_

	Exp pause, drawing attention	Question/mand	Request to use board	Model and req. to imitate	Hand-over-hand
Bunny's shoe					
Girl's hat					
Girl's nose					
Girl's hat					
Bunny's shoe					
Girl's nose					
Bunny's tummy					
Girl's hand					
Girl's hand					
Bunny's tummy					

**Appendix B**  
**Clearance Obtained From the Research Ethics Committee of the Faculty of Humanities**  
**of the University of Pretoria**



2 September 2008

Dear Prof. Alant

**Project:** The effect of the use of communication boards versus a digital speech generating device on the learning of vocabulary and graphic symbols by children who have little or no functional speech

**Researcher:** KM Tönsing

**Supervisor:** Prof. E Alant

**Department:** Centre for Augmentative and Alternative Communication

**Reference number:** 95036131

Thank you for the application you resubmitted to the Research Proposal and Ethics Committee, Faculty of Humanities.

I have pleasure in informing you that the Research Proposal and Ethics Committee formally **approved** the above study on 28 August 2008. The approval is subject to the candidate abiding by the principles and parameters set out in her application and research proposal in the actual execution of the research.

The Committee requests you to convey this approval to Ms Tönsing.

We wish you success with the project.

Sincerely



**Prof. Brenda Louw**  
**Chair: Research Proposal and Ethics Committee**  
**Faculty of Humanities**  
**UNIVERSITY OF PRETORIA**  
**e-mail: [brenda.louw@up.ac.za](mailto:brenda.louw@up.ac.za)**



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

Faculty of Humanities  
Research Ethics Committee

2012-05-25

Dear Prof Bornman

**Project:** Using a matrix strategy to teach graphic symbol combinations to children with limited speech during shared storybook reading  
**Researcher:** K Tönsing  
**Supervisor:** Dr S Dada  
**Reference numbers:** 9503613

The change of focus of the study has been noted, and I confirm that it will not be necessary to re-submit the proposal to the Ethical Research Committee. Data collection may therefore continue.

The Committee requests you to convey this approval to the researcher.

We wish you success with the project.

Sincerely

**Prof John Sharp**  
**Chair: Postgraduate Committee &**  
**Research Ethics Committee**  
**Faculty of Humanities**  
**UNIVERSITY OF PRETORIA**  
**e-mail: john.sharp@up.ac.za**



## Appendix C

### Permission from Gauteng Department of Education



UMnyango WezeMfundo  
Department of Education

Lefapha la Thuto  
Departement van Onderwys

Enquiries: Nomvula Ubisi (011)3550488

Date:	20 May 2010
Name of Researcher:	Tönsing Kerstin Monika
Address of Researcher:	25 B Lavender Lane
	1087 Cura Ave
	Equestria, Pretoria
Telephone Number:	0128074637/0826616007
Fax Number:	0124204389
Research Topic:	Joint Storybook Reading with Support of Augmentative and Alternative Communication (AAC): Effect on the Expression of Two-Symbol Semantic Combinations by Children with Little or No Functional Speech (LNFS)
Number and type of schools:	4 LSEN Schools
District/s/HO	Tshwane South and North

#### Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

**Permission has been granted to proceed with the above study subject to the conditions listed below being met, and may be withdrawn should any of these conditions be flouted:**

1. *The District/Head Office Senior Manager/s concerned must be presented with a copy of this letter that would indicate that the said researcher/s has/have been granted permission from the Gauteng Department of Education to conduct the research study.*
2. *The District/Head Office Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Officials in the project.*
3. *A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would indicate that the researcher/s have been granted permission from the Gauteng Department of Education to conduct the research study.*


Office of the Chief Director: Information and Knowledge Management  
Room 501, 111 Commissioner Street, Johannesburg, 2000 P.O.Box 7710, Johannesburg, 2000  
Tel: (011) 355-0809 Fax: (011) 355-0734



4. A letter / document that outlines the purpose of the research and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Senior Managers of the schools and districts/offices concerned, respectively.
5. The Researcher will make every effort obtain the goodwill and co-operation of all the GDE officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operation will not receive additional remuneration from the Department while those that opt not to participate will not be penalised in any way.
6. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Director (if at a district/head office) must be consulted about an appropriate time when the researcher/s may carry out their research at the sites that they manage.
7. Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year.
8. Items 6 and 7 will not apply to any research effort being undertaken on behalf of the GDE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.
9. It is the researcher's responsibility to obtain written parental consent of all learners that are expected to participate in the study.
10. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport, faxes and telephones and should not depend on the goodwill of the institutions and/or the offices visited for supplying such resources.
11. The names of the GDE officials, schools, principals, parents, teachers and learners that participate in the study may not appear in the research report without the written consent of each of these individuals and/or organisations.
12. On completion of the study the researcher must supply the Director: Knowledge Management & Research with one Hard Cover bound and one Ring bound copy of the final, approved research report. The researcher would also provide the said manager with an electronic copy of the research abstract/summary and/or annotation.
13. The researcher may be expected to provide short presentations on the purpose, findings and recommendations of his/her research to both GDE officials and the schools concerned.
14. Should the researcher have been involved with research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of the purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks forward to examining the findings of your research study.

Kind regards

  
Martha Mashego  
ACTING DIRECTOR: KNOWLEDGE MANAGEMENT & RESEARCH

24-05-2010

<b>The contents of this letter has been read and understood by the researcher.</b>	
<b>Signature of Researcher:</b>	
<b>Date:</b>	

## Appendix D

### Consent Letters by Governing Body, Principal, Teacher and Parent for Pilot Participant



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

(Date)

The Head  
(School's name)

Re: Request for permission to conduct a pilot study at (name of school)

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission to recruit participants for a pilot study from (name of school).

The title of my study is “Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol combinations by children with little or no functional speech (LNFS)”. The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. The aim of the pilot study is to test the proposed procedures and material on one participant. Three stories will be read to the participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a communication board that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt the participant to point to symbol sequences. Each story will be read a number of times. The participant's learning will be monitored with a picture description task.

Should you grant permission for me to conduct the study at your school, I would kindly ask the help of teachers and/or therapists to identify a learner who would be a suitable participant.

The following would then be required of learner taking part in the study:

- 1) To meet me, possibly during break time at school
- 2) To undergo a screening procedure to determine their abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

Centre for Augmentative and Alternative Communication (CAAC),  
Sentrum vir Aanvullende en Alternatiewe Kommunikasie (SAAK)  
Communication Pathology Building  
University of Pretoria, Lynnwood Road  
PRETORIA, 0002  
Republic of South Africa

Fax: +27 86 510 0841  
Tel: +27 12 420 2001  
[juan.bornman@up.ac.za](mailto:juan.bornman@up.ac.za)  
[www.caac.up.ac.za](http://www.caac.up.ac.za)

This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days.

- 3) If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
- 4) If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
- 5) To then take part in an individual daily story reading activity over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect the learners' interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- The parent(s)/legal guardian(s) of the learner will be approached to request consent for their child to participate in the study. They will be informed of every aspect of the study, and also made explicitly aware of their right to withdraw their child's participation at any point in the study without any negative consequences to their child or themselves. They will be given information (telephone number, email) in order to contact me at any point in time to obtain clarification on any aspect of the study.
- Prior to each session, the participant will be formally asked for his/her assent for participation in a modality that they are able to understand and use (e.g. graphic symbols, manual signs, spoken). If the participant does not give assent, the session will not be carried out at that point in time, without any negative consequences to the participant. If the participant becomes unwilling to participate during a session, the session will be discontinued and the participant will be escorted back to his/her class. A small token will be given to the participant upon completion of the session. The type of token will be selected based on parent and teacher input.
- Your permission to conduct the study under the auspices of your school can be withdrawn at any time without negative consequences to your school.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- A summary of the research results will be available to any interested staff and/or the child's parent(s)/legal guardian(s).

Potential harm to the participant in this study might entail him/her being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participant beforehand, this potential is hoped to be minimized. Request for assent at the beginning of each session will also give the participant the opportunity to refuse participation. Should it become evident that participant is unwilling to continue a task during a session, the task will be discontinued and the participant will be escorted back to class.

The participant might miss out on learning time spent in his/her classes when participating in the study. Great care will be taken to schedule the study in a way that the participant misses minimal active learning time and that the school routine will be minimally affected. I would liaise with yourself, teachers and parents regarding this. The proposed time frame for data collection is May to July 2010. Care will be taken that the proposed schedule will not interfere with the parents' or the school's time plans.

Potential benefits for the participant include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. Should parents/legal guardians of the participant decide to withdraw their child's participation, any data pertaining to the participant will be immediately destroyed. The results of the study are intended to serve as guidelines for the main study. The main study is intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of the participant.

I would appreciate it if you, as the Head of (*name of school*), would consider this request favourably. Should you grant permission, I would kindly ask you to sign below to acknowledge your permission.

Should you need any further information on the study, please do not hesitate to contact me on (*cell number*) or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP)  
(*cell no*)

Date

\_\_\_\_\_  
Dr Shakila Dada  
Lecturer  
University of Pretoria  
012 420 2001

Date

\_\_\_\_\_  
(*name of principal*)  
The Head: (*name of school*)

Date



(Date)

To the parent/legal guardian of \_\_\_\_\_, enrolled at (*school's name*)

Dear Sir/Madam

Re: Request for permission for your child to participate in a pilot study at (*school's name*)

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission for your child to participate in a pilot study.

The title of my study is: “Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol combinations by children with little or no functional speech (LNFS)”. The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. The aim of the pilot study is to test the proposed procedures and material on one participant. Three stories will be read to the participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a communication board that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt the participant to point to symbol sequences. Each story will be read a number of times. The participant’s learning will be monitored with a picture description task.

The following would be required of your child should you give permission for him/her to take part in the study:

1. To meet me, possibly during break time at school
2. To undergo a screening procedure to determine his/her abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

(This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days. Depending on the findings of the screening procedure, a brief interview might be scheduled with yourself as parent. I may then request you to complete a screening checklist regarding your child's expressive communication.)

3. If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
4. If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
5. To then take part in an individual daily story reading activity over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect your child's interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- Permission was obtained from the school principal (see signature on this letter).
- Your child will only participate if you have given consent. Once you have given consent, you still have the right to withdraw your child's participation at any point in the study without any negative consequences to your child or yourself. You are welcome to contact me at any point in time to obtain clarification on any aspect of the study (see contact details below).
- Prior to each session, your child will be formally asked whether they would like to participate in the session. I will make sure that this will be done in a way that your child can understand and respond. If your child is not willing to participate, the session will not be conducted, without any negative consequences for your child. If your child should become unwilling to continue participation once a session is in progress, the session will be discontinued and he/she will be escorted back to class. A small reward will be given to your child upon completion of a session. The type of reward given to your child will be selected based on your input.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- Should you so wish, formal written feedback will be given to you as parent/legal guardian concerning the performance of your child.

Potential harm to your child when participating in this study might entail him/her being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participants beforehand, this potential is hoped to be minimized. Request for participation at the beginning of each session will also give him/her the opportunity to refuse participation. Should it become evident that your child is unwilling to continue a task during a session, the task will be discontinued and your child will be escorted back to class.

Your child might miss out on learning time by being absent from class when participating in the study. Great care will be taken to schedule the study in such a way that your child misses minimal active learning time and that the school routine will be minimally affected. As far as possible, sessions will be scheduled outside of important lessons. I would liaise with yourself, teachers and the head of the school regarding this. The proposed time frame for data collection is May to July 2010. Care will be taken that the proposed schedule will not interfere with your or the school's time plans.

Potential benefits for participants include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. However, should you decide to withdraw your child's participation, any data pertaining to your child will be immediately destroyed. The results of the study are intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of all participants

I would appreciate it if you would consider this request favourably. May I kindly request that you fill in the reply slip attached to indicate whether you grant permission for your child to participate in this study or not.

Should you need any further information on the study, please do not hesitate to contact me on (*cell number*) or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001. Should you grant permission, I will contact you to make an appointment with you to discuss further details.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP)  
(*cell number*)

Date

\_\_\_\_\_  
Dr Shakila Dada  
Lecturer  
University of Pretoria  
012 420 2001

Date

\_\_\_\_\_  
(*name of principal*)  
The Head: (*name of school*)  
(*Telephone number of school*)

Date

Centre for Augmentative and Alternative Communication (CAAC),  
Sentrum vir Aanvullende en Alternatiewe Kommunikasie (SAAK)  
Communication Pathology Building  
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[www.caac.up.ac.za](http://www.caac.up.ac.za)



***Reply slip: Research study at (name of school)***

I, \_\_\_\_\_, parent/legal guardian of  
(parent/legal guardian's name)

\_\_\_\_\_, hereby do / do not (please circle  
(child's name)

appropriate) grant permission for him/her to participate in the pilot study conducted at (*name of school*).

\_\_\_\_\_  
(Signature of parent/legal guardian)

\_\_\_\_\_  
(Date)



(Date)

The Chairperson  
Governing Body: *(name of school)*

Re: Request for permission to conduct a pilot study at *(name of school)*

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission to recruit participants for a pilot study from *(name of school)*.

The title of my study is “Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol combinations by children with little or no functional speech (LNFS)”. The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. The aim of the pilot study is to test the proposed procedures and material on one participant. Three stories will be read to the participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a communication board that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt the participant to point to symbol sequences. Each story will be read a number of times. The participant’s learning will be monitored with a picture description task.

Should you grant permission for me to conduct the study at your school, I would kindly ask the help of teachers and/or therapists to identify a learner who would be a suitable participant.

The following would then be required of learner taking part in the study:

- 1) To meet me, possibly during break time at school
- 2) To undergo a screening procedure to determine their abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

- This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days.
- 3) If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
  - 4) If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
  - 5) To then take part in an individual daily story reading activity. over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect the learners' interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- The parent(s)/legal guardian(s) of the learner will be approached to request consent for their child to participate in the study. They will be informed of every aspect of the study, and also made explicitly aware of their right to withdraw their child's participation at any point in the study without any negative consequences to their child or themselves. They will be given information (telephone number, email) in order to contact me at any point in time to obtain clarification on any aspect of the study.
- Prior to each session, the participant will be formally asked for his/her assent for participation in a modality that they are able to understand and use (e.g. graphic symbols, manual signs, spoken). If the participant does not give assent, the session will not be carried out at that point in time, without any negative consequences to the participant. If the participant becomes unwilling to participate during a session, the session will be discontinued and the participant will be escorted back to his/her class. A small token will be given to the participant upon completion of the session. The type of token will be selected based on parent and teacher input.
- Your permission to conduct the study under the auspices of your school can be withdrawn at any time without negative consequences to your school.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- A summary of the research results will be available to any interested staff and/or the child's parent(s)/legal guardian(s).

Potential harm to the participant in this study might entail him/her being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participant beforehand, this potential is hoped to be minimized. Request for assent at the beginning of each session will also give the participant the opportunity to refuse participation. Should it become evident that participant is unwilling to continue a task during a session, the task will be discontinued and the participant will be escorted back to class.

The participant might miss out on learning time spent in his/her classes when participating in the study. Great care will be taken to schedule the study in a way that the participant misses minimal active learning time and that the school routine will be minimally affected. I would liaise with yourself, teachers and parents regarding this. The proposed time frame for data collection is May to July 2010. Care will be taken that the proposed schedule will not interfere with the parents' or the school's time plans.

Potential benefits for the participant include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. Should parents/legal guardians of the participant decide to withdraw their child's participation, any data pertaining to the participant will be immediately destroyed. The results of the study are intended to serve as guidelines for the main study. The main study is intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of the participant.

I would appreciate it if you, as the governing body of (*name of school*), would consider this request favourably. Should you grant permission, I would kindly ask you to sign below to acknowledge your permission. Should you need any further information on the study, please do not hesitate to contact me on (*cell number*) or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP), (*cell number*)

Date

\_\_\_\_\_

\_\_\_\_\_  
Dr Shakila Dada  
Senior Lecturer  
University of Pretoria, tel. 012 420 2001

Date

\_\_\_\_\_

\_\_\_\_\_  
(*name of principal*)  
The Head: (*name of school*)(*Telephone number of school*)

Date

\_\_\_\_\_

\_\_\_\_\_  
Chairperson of the Governing Body:  
(*name of school*) (*Telephone number of chairperson*)

Date

\_\_\_\_\_



(Date)

The Teacher  
(School's name)

Re: Request for permission for learners from your class to participate in a pilot study at (school's name)

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission to recruit participants for a pilot study from (name of school).

The title of my study is “Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol combinations by children with little or no functional speech (LNFS)”. The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. The aim of the pilot study is to test the proposed procedures and material on one participant. Three stories will be read to the participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a communication board that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt the participant to point to symbol sequences. Each story will be read a number of times. The participant's learning will be monitored with a picture description task.

Should you grant permission for me to conduct the study at your school, I would kindly ask the help of teachers and/or therapists to identify a learner who would be a suitable participant.

The following would then be required of learner taking part in the study:

- 1) To meet me, possibly during break time at school
- 2) To undergo a screening procedure to determine their abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

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[juan.bornman@up.ac.za](mailto:juan.bornman@up.ac.za)  
[www.caac.up.ac.za](http://www.caac.up.ac.za)

This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days.

- 3) If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
- 4) If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
- 5) To then take part in an individual daily story reading activity. over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect the learners' interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- The parent(s)/legal guardian(s) of the learner will be approached to request consent for their child to participate in the study. They will be informed of every aspect of the study, and also made explicitly aware of their right to withdraw their child's participation at any point in the study without any negative consequences to their child or themselves. They will be given information (telephone number, email) in order to contact me at any point in time to obtain clarification on any aspect of the study.
- Prior to each session, the participant will be formally asked for his/her assent for participation in a modality that they are able to understand and use (e.g. graphic symbols, manual signs, spoken). If the participant does not give assent, the session will not be carried out at that point in time, without any negative consequences to the participant. If the participant becomes unwilling to participate during a session, the session will be discontinued and the participant will be escorted back to his/her class. A small token will be given to the participant upon completion of the session. The type of token will be selected based on parent and teacher input.
- Your permission to conduct the study under the auspices of your school can be withdrawn at any time without negative consequences to your school.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- A summary of the research results will be available to any interested staff and/or the child's parent(s)/legal guardian(s).

Potential harm to the participant in this study might entail him/her being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participant beforehand, this potential is hoped to be minimized. Request for assent at the beginning of each session will also give the participant the opportunity to refuse participation. Should it become evident that participant is unwilling to continue a task during a session, the task will be discontinued and the participant will be escorted back to class.

The participant might miss out on learning time spent in his/her classes when participating in the study. Great care will be taken to schedule the study in a way that the participant misses minimal active learning time and that the school routine will be minimally affected. I would liaise with yourself, teachers and parents regarding this. The proposed time frame for data collection is May to July 2010. Care will be taken that the proposed schedule will not interfere with the parents' or the school's time plans.

Potential benefits for the participant include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. Should parents/legal guardians of the participant decide to withdraw their child's participation, any data pertaining to the participant will be immediately destroyed. The results of the study are intended to serve as guidelines for the main study. The main study is intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of the participant.

I would appreciate it if you would consider this request favourably. May I kindly request that you fill in the reply slip attached to indicate whether you grant permission for learners from your class to participate in this study or not. Should you need any further information on the study, please do not hesitate to contact me on 082 661 6007 or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP)  
082 661 6007

Date \_\_\_\_\_

\_\_\_\_\_  
Dr Shakila Dada  
Lecturer  
University of Pretoria  
012 420 2001

Date \_\_\_\_\_

\_\_\_\_\_  
*(name of principal)*  
The Head: *(name of school)*

Date \_\_\_\_\_

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***Reply slip: Research study at (school's name)***

I, \_\_\_\_\_, hereby do / do not (please circle  
(teacher's name)

appropriate) grant permission for \_\_\_\_\_ from my class to  
(learner's name)

participate in the study conducted at (*name of school*):

\_\_\_\_\_  
(Signature of teacher)

\_\_\_\_\_  
(Date)



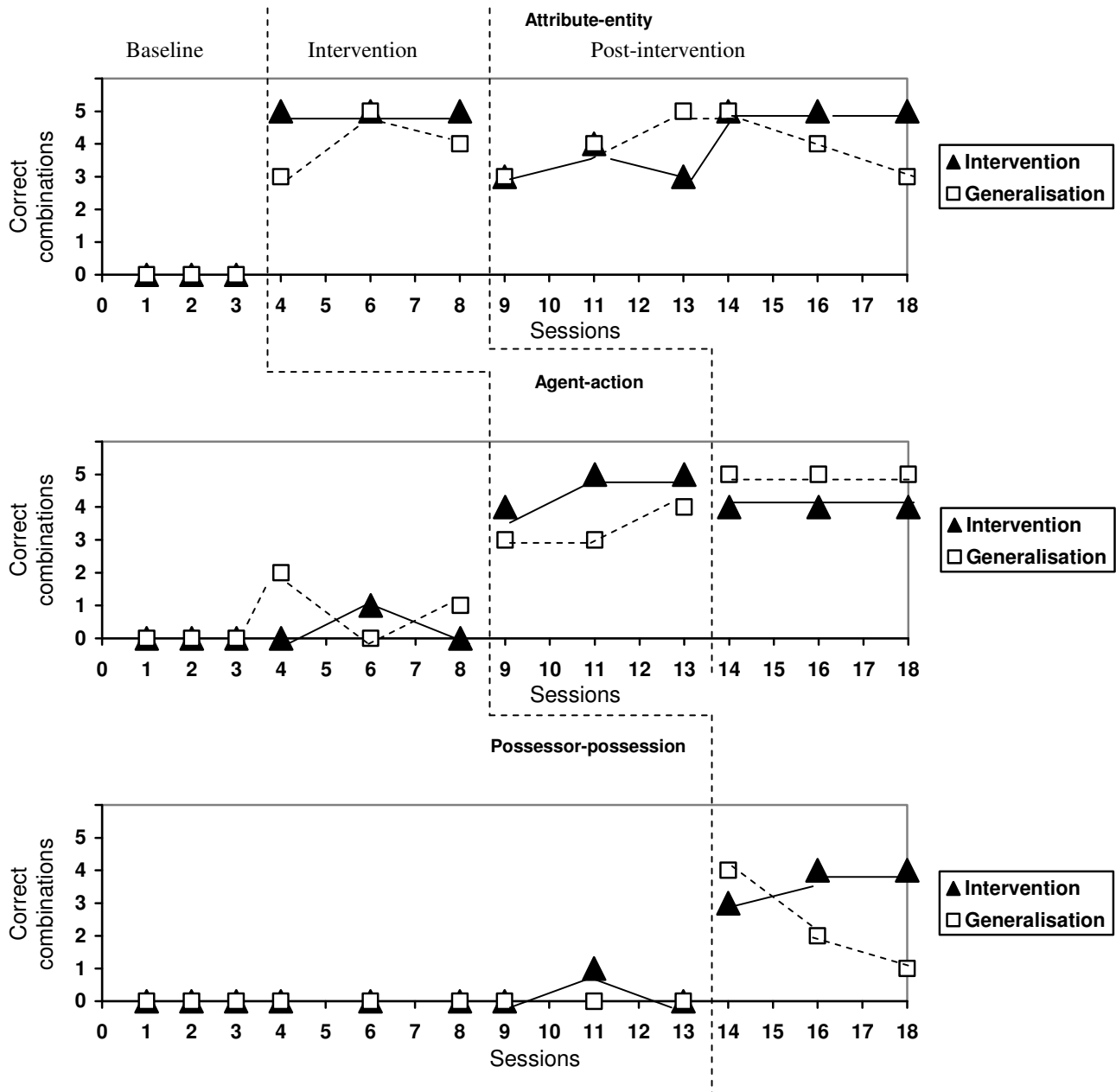
## Appendix E

### Original Selection Criteria

<b>Criterion</b>	<b>Motivation</b>	<b>Measure</b>
Little or no functional speech (less than 30 intelligible spoken words)	There must be motivation to use AAC.	Parent, teacher and therapist report – Language Development Scale (LDS) (Rescorla, 1989) with adaptations to the South African context (Gonasillan, 2011) and to accommodate different expressive modalities (see Appendix J)
Using single graphic symbols expressively	As use of single spoken words typically precedes the use of word combinations, use of single graphic symbols may precede the use of symbol combinations.	Parent, teacher and therapist report.
Not combining symbols for expressive communication	The aim of the study was to teach two graphic symbol semantic combinations.	Parent report
Able to accurately point to items on a 21-item communication board	Participants need to be able to direct-select to make use of the communication board without too much motor effort.	Participants were asked to point out items on a 21-item communication board with graphic symbols.
Functional vision and hearing	Participants need to be able to hear spoken instructions and the story being read out loud to them as well as see the story's pictures and the graphic symbols.	Parent report/medical records. Participants were also asked to point out graphic symbols out of an array of 21, as an indication of functional vision.
Being able to comprehend at least 80% of the graphic symbols used on the communication board with a maximum of 5 training sessions provided if necessary.	In order to be used for expressive communication, participants needed to know what concepts the symbols represented.	Participants were asked to point to graphic symbols on the communication board used for intervention in response to spoken words.
Being able to comprehend at least 80% of the semantic relations targeted in intervention	Children's linguistic ability in comprehension has been suggested to precedes their ability in production (Smolensky, 1996).	Participants were asked to match a spoken 2-word combination to a picture (presented with four foils).
Aged 3-10 years	The age range is delimited in order to ensure that material is appropriate to participants.	Parent report
English home language	Since the intervention was to be conducted in English, second language factors might reduce participants' ability to benefit from the intervention.	Parent report
Receptive language skills on at least 30 month level	Participants would need to understand the stories presented in order to benefit maximally from the intervention.	The Peabody Picture Vocabulary Test - Revised (Dunn & Dunn, 1981) as well as the receptive subtests of the Clinical Evaluation of Language Function- Preschool UK (CELF-Preschool UK) were administered to determine receptive language abilities.

### Appendix F

#### Data Collected From Pilot Participant: Number of Correct Two-Symbol Combinations Across the Three Semantic Relations Targeted



## Appendix G

### Letters to Principals and Governing Bodies of Schools to Request Consent for Recruitment of Participants for Main Study



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

(Date)

The Head  
(School's name)

Re: Request for permission to conduct a research project at (name of school)

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission to recruit participants for my proposed study from (name of school).

The title of my study is “Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol combinations by children with little or no functional speech (LNFS)”. The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. Three stories will be read to each participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a communication board that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt participants to point to symbol sequences. Each story will be read a number of times. The participant’s learning will be monitored with a picture description task.

Should you grant permission for me to conduct the study at your school, I would kindly ask the help of teachers and/or therapists to identify learners who would be suitable participants (four to six children).

The following would then be required of learners taking part in the study:

- 1) To meet me, possibly during break time at school
- 2) To undergo a screening procedure to determine their abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

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[www.caac.up.ac.za](http://www.caac.up.ac.za)

- This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days.
- 3) If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
  - 4) If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
  - 5) To then take part in an individual daily story reading activity. over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect the learners' interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- The parents/legal guardians of the learners will be approached to request consent for their children to participate in the study. They will be informed of every aspect of the study, and also made explicitly aware of their right to withdraw their children's participation at any point in the study without any negative consequences to their child or themselves. They will be given information (telephone number, email) in order to contact me at any point in time to obtain clarification on any aspect of the study.
- Prior to each session, each participant will be formally asked for their assent for participation in a modality that they are able to understand and use (e.g. graphic symbols, manual signs, spoken). If a participant does not give assent, the session will not be carried out at that point in time, without any negative consequences to the participant. If a participant becomes unwilling to participate during a session, the session will be discontinued and the participant will be escorted back to his/her class. A small token will be given to the participant upon completion of the session. The type of token will be selected based on parent and teacher input.
- Your permission to conduct the study under the auspices of your school can be withdrawn at any time without negative consequences to your school.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- A summary of the research results will be available to any interested staff or parents/legal guardians.

Potential harm to participants in this study might entail them being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participants beforehand, this potential is hoped to be minimized. Request for assent at the beginning of each session will also give participants the opportunity to refuse participation. Should it become evident that participants are unwilling to continue a task during a session, the task will be discontinued and participants will be escorted back to their class.

Participants might miss out on learning time spent in their classes when participating in the study. Great care will be taken to schedule the study in a way that participants miss minimal active learning time and that the school routine will be minimally affected. I would liaise with yourself, teachers and parents regarding this. The proposed time frame for data collection is May to July 2011. Care will be taken that the proposed schedule will not interfere with the parents' or the school's time plans.

Potential benefits for participants include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. Should parents/legal guardians of participants decide to withdraw their children's participation, any data pertaining to these participants will be immediately destroyed. The results of the study are intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of participants

I would appreciate it if you, as the Head of (*name of school*), would consider this request favourably. Should you grant permission, I would kindly ask you to sign below to acknowledge your permission.

Should you need any further information on the study, please do not hesitate to contact me on (cell number) or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP)  
(cell number)

Date

\_\_\_\_\_  
Dr Shakila Dada  
Lecturer  
University of Pretoria  
012 420 2001

Date

\_\_\_\_\_  
(*name of principal*)  
The Head: (*name of school*)

Date



(Date)

The Chairperson

Governing Body: *(name of school)*

Re: Request for permission to conduct a research project at *(name of school)*

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission to recruit participants for my proposed study from *(name of school)*.

The title of my study is “Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol combinations by children with little or no functional speech (LNFS)”. The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. Three stories will be read to each participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a communication board that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt participants to point to symbol sequences. Each story will be read a number of times. The participant’s learning will be monitored with a picture description task.

Should you grant permission for me to conduct the study at the school, I would kindly ask the help of teachers and/or therapists to identify learners who would be suitable participants (four to six children).

The following would then be required of learners taking part in the study:

- 1) To meet me, possibly during break time at school
- 2) To undergo a screening procedure to determine their abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

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This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days.

- 3) If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
- 4) If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
- 5) To then take part in an individual daily story reading activity. over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect the learners' interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- Permission was obtained from the school principal (see signature on this letter).
- The parents/legal guardians of the learners will be approached to request consent for their children to participate in the study. They will be informed of every aspect of the study, and also made explicitly aware of their right to withdraw their children's participation at any point in the study without any negative consequences to their child or themselves. They will be given information (telephone number, email) in order to contact me at any point in time to obtain clarification on any aspect of the study.
- Prior to each session, each participant will be formally asked for their assent for participation in a modality that they are able to understand and use (e.g. graphic symbols, manual signs, spoken). If a participant does not give assent, the session will not be carried out at that point in time, without any negative consequences to the participant. If a participant becomes unwilling to participate during a session, the session will be discontinued and the participant will be escorted back to his/her class. A small token will be given to the participant upon completion of the session. The type of token will be selected based on parent and teacher input.
- Your permission to conduct the study under the auspices of the school can be withdrawn at any time without negative consequences to the school.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- A summary of the research results will be available to any interested staff or parents/legal guardians.

Potential harm to participants in this study might entail them being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participants beforehand, this potential is hoped to be minimized. Request for assent at the beginning of each session will also give participants the opportunity to refuse participation. Should it become evident that participants are unwilling to continue a task during a session, the task will be discontinued and participants will be escorted back to their class.

Participants might miss out on learning time spent in their classes when participating in the study. Great care will be taken to schedule the study in a way that participants miss minimal active learning time and that the school routine will be minimally affected. I would liaise with the principal, teachers and parents regarding this. The proposed time frame for data collection is May to July 2011. Care will be taken that the proposed schedule will not interfere with the parents' or the school's time plans.

Potential benefits for participants include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. Should parents/legal guardians of participants decide to withdraw their children's participation, any data pertaining to these participants will be immediately destroyed. The results of the study are intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of participants

I would appreciate it if you, as the governing body of (*name of school*), would consider this request favourably. Should you grant permission, I would kindly ask you to sign below to acknowledge your permission.

Should you need any further information on the study, please do not hesitate to contact me on (cell number) or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP), tel. (cell number)

Date

\_\_\_\_\_  
Dr Shakila Dada  
Senior Lecturer  
University of Pretoria, tel. 012 420 2001

Date

\_\_\_\_\_  
(*name of principal*)  
The Head: (*name of school*)(*Telephone number of school*)

Date

\_\_\_\_\_  
Chairperson of the Governing Body:  
(*name of school*) (*Telephone number of chairperson*)

Date

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## Appendix H

### Letters to Parents of Possible Participants to Request Consent for Their Child to Participate in the Main Study



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

(Date)

To the parent/legal guardian of \_\_\_\_\_, enrolled at (*school's name*)

Dear Sir/Madam

Re: Request for permission for your child to participate in a research project at (*school's name*)

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission for your child to participate in my proposed study.

The title of my study is: “Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol combinations by children with little or no functional speech (LNFS)”. The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. Three stories will be read to each participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a communication board that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt participants to point to symbol sequences. Each story will be read a number of times. The participant’s learning will be monitored with a picture description task.

The following would be required of your child should you give permission for him/her to take part in the study:

1. To meet me, possibly during break time at school
2. To undergo a screening procedure to determine his/her abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

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(This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days. Depending on the findings of the screening procedure, a brief interview might be scheduled with yourself as parent. I may then request you to complete a screening checklist regarding your child's expressive communication.)

3. If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
4. If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
5. To then take part in an individual daily story reading activity over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect your child's interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- Permission was obtained from the school principal (see signature on this letter).
- Your child will only participate if you have given consent. Once you have given consent, you still have the right to withdraw your child's participation at any point in the study without any negative consequences to your child or yourself. You are welcome to contact me at any point in time to obtain clarification on any aspect of the study (see contact details below).
- Prior to each session, your child will be formally asked whether they would like to participate in the session. I will make sure that this will be done in a way that your child can understand and respond. If your child is not willing to participate, the session will not be conducted, without any negative consequences for your child. If your child should become unwilling to continue participation once a session is in progress, the session will be discontinued and he/she will be escorted back to class. A small reward will be given to your child upon completion of a session. The type of reward given to your child will be selected based on your input.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- Should you so wish, formal written feedback will be given to you as parent/legal guardian concerning the performance of your child.

Potential harm to your child when participating in this study might entail him/her being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participants beforehand, this potential is hoped to be minimized. Request for participation at the beginning of each session will also give him/her the opportunity to refuse participation. Should it become evident that your child is unwilling to continue a task during a session, the task will be discontinued and your child will be escorted back to class.

Your child might miss out on learning time by being absent from class when participating in the study. Great care will be taken to schedule the study in such a way that your child misses minimal active learning time and that the school routine will be minimally affected. As far as possible, sessions will be scheduled outside of important lessons. I would liaise with yourself, teachers and the head of the school regarding this. The proposed time frame for data collection is May to July 2011. Care will be taken that the proposed schedule will not interfere with your or the school's time plans.

Potential benefits for participants include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. However, should you decide to withdraw your child's participation, any data pertaining to your child will be immediately destroyed. The results of the study are intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of all participants

I would appreciate it if you would consider this request favourably. May I kindly request that you fill in the reply slip attached to indicate whether you grant permission for your child to participate in this study or not. Should you need any further information on the study, please do not hesitate to contact me on (cell number) or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001. Should you grant permission, I will contact you to make an appointment with you to discuss further details.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP)  
(cell number)

Date \_\_\_\_\_

\_\_\_\_\_  
Dr Shakila Dada  
Lecturer  
University of Pretoria  
012 420 2001

Date \_\_\_\_\_

\_\_\_\_\_  
(name of principal)  
The Head: (name of school)  
(Telephone number of school)

Date \_\_\_\_\_

***Reply slip: Research study at (name of school)***

I, \_\_\_\_\_, parent/legal guardian of  
(parent/legal guardian's name)

\_\_\_\_\_, hereby do / do not (please circle  
(child's name)

appropriate) grant permission for him/her to participate in the study conducted at (*name of school*).

\_\_\_\_\_  
(Signature of parent/legal guardian)

(Date)

## Appendix I

### Letter to Teachers to Request Consent for Learner(s) From Their Class to Participate in Main Study



UNIVERSITEIT VAN PRETORIA  
UNIVERSITY OF PRETORIA  
YUNIBESITHI YA PRETORIA

(Date)

The Teacher  
(School's name)

Re: Request for permission for learners from your class to participate in a research study at (school's name)

My name is Kerstin Tönsing. I am a speech therapist currently enrolled for a PhD in Augmentative and Alternative Communication, at the University of Pretoria, under the supervision of Dr Shakila Dada. I would like to request your permission to recruit participants for my proposed study from your class.

The title of my study is: "Joint storybook reading with the support of augmentative and alternative communication (AAC): Effect on the expression of two-symbol semantic combinations by children with little or no functional speech (LNFS)". The aim of this research project is to determine if children who use graphic symbols to communicate, can be taught to combine symbols during a story-reading activity. Three stories will be read to each participant, and specific symbol combinations will be taught during each story. While reading the story, I will model the combinations on a voice output communication device that has Picture Communication Symbols (PCS) and hand-drawn graphic symbols on it, and also prompt participants to press the correct combinations. Each story will be read a number of times, while record will be kept on the learning that the participant shows.

The following would be required of learners taking part in the study:

- 1) To meet me, possibly during break time at school;
- 2) To undergo a screening procedure to determine their abilities in the following areas:
  - Functional vision and hearing
  - Understanding of all the sentence types targeted
  - Comprehension of the graphic symbols used during intervention
  - Receptive language skills

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This screening procedure will take a total of about 2-3 hours and will be conducted over a period of 2-3 days.

- 3) If necessary, to undergo training of specific graphic symbols used in intervention (max. of 5 sessions of about 5 min each)
- 4) If the screening procedures are passed, to engage in a picture description task (about 10 min in duration) for three consecutive days.
- 5) To then take part in an individual daily story reading activity. over the course of about 3 weeks. One story will be read per day. This activity will take about 10 min. Fifteen sessions are planned (three stories, with 5 sessions per story). Ideally, 5 consecutive weekdays would be allocated to each story. On every second day of storytelling, a picture description task (about 10 min in duration) will also be given.

In accordance with the University's ethical procedure requirements, and in order to protect the learners' interests, the following steps have been/will be taken:

- Permission was obtained from the Gauteng Department of Education (please see information attached).
- Permission was obtained from the school principal (see signature on this letter).
- The parents/legal guardians of the learners will be approached to request consent for their children to participate in the study. They will be informed of every aspect of the study, and also made explicitly aware of their right to withdraw their children's participation at any point in the study without any negative consequences to their child or themselves. They will be given information (telephone number, email) in order to contact me at any point in time to obtain clarification on any aspect of the study.
- Prior to each session, each participant will be formally asked for their assent for participation in a modality that they are able to understand and use (e.g. graphic symbols, manual signs, spoken). If a participant does not give assent, the session will not be carried out at that point in time, without any negative consequences to the participant. If a participant becomes unwilling to participate during a session, the session will be discontinued and the participant will be escorted back to his/her class. A small token will be given to the participant upon completion of the session. The type of token will be selected based on parent and teacher input.
- Your permission to involve participants from your class during school time can be withdrawn at any time without negative consequences to yourself or the learners.
- All data will be treated as confidential, and results will be reported anonymously, without linking identifying information to specific results.
- A summary of the research results will be available to any interested staff or parents/legal guardians.

Potential harm to participants in this study might entail them being uncomfortable or reluctant to engage with an unfamiliar adult (myself) during the activities. By meeting the participants beforehand, this potential is hoped to be minimized. Request for assent at the beginning of each session will also give participants the opportunity to refuse participation. Should it become evident

that participants are unwilling to continue a task during a session, the task will be discontinued and participants will be escorted back to their class.

Participants might miss out on learning time spent in their classes when participating in the study. Great care will be taken to schedule the study in a way that participants miss minimal active learning time and that the school routine will be minimally affected. I would liaise with yourself, parents and the head of the school regarding this.

Potential benefits for participants include increased stimulation to foster the use of symbol combinations in a one-on-one learning situation. The results of the screening assessment as well as the way the participant responds during intervention can furthermore serve as a guideline for teaching and further intervention.

Data pertaining to this study will be stored for 15 years for the purpose of archiving. Should parents/legal guardians of participants decide to withdraw their children's participation, any data pertaining to these participants will be immediately destroyed. The results of the study are intended to be published in the form of a dissertation as well as a research article. As indicated, no identifying information will be included to ensure anonymity of participants

I would appreciate it if you would consider this request favourably. May I kindly request that you fill in the reply slip attached to indicate whether you grant permission for learners from your class to participate in this study or not. Should you need any further information on the study, please do not hesitate to contact me on (cell number) or email me at [kerstin.tonsing@up.ac.za](mailto:kerstin.tonsing@up.ac.za). You are also welcome to contact my supervisor, Dr Shakila Dada, at 012 420 2001.

Kind regards

\_\_\_\_\_  
Kerstin Tönsing  
Speech and Language Therapist  
BCommunication Pathology (UP), MAAC (UP)  
(cell number)

Date \_\_\_\_\_

\_\_\_\_\_  
Dr Shakila Dada  
Lecturer  
University of Pretoria  
012 420 2001

Date \_\_\_\_\_

\_\_\_\_\_  
(name of principal  
The Head: (name of school)

Date \_\_\_\_\_

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**Reply slip: Research study at (school's name)**

I, \_\_\_\_\_, hereby do / do not (please circle  
(teacher's name)

appropriate) grant permission for the following learners from my class to participate in the study conducted at  
(name of school):

\_\_\_\_\_,  
(learner's name)

\_\_\_\_\_,  
(learner's name)

\_\_\_\_\_,  
(learner's name)

\_\_\_\_\_,  
(learner's name)

\_\_\_\_\_,  
(learner's name)

\_\_\_\_\_,  
(learner's name)

\_\_\_\_\_  
(Signature of teacher)

\_\_\_\_\_  
(Date)



Appendix J: Results of Participants 4 and 5

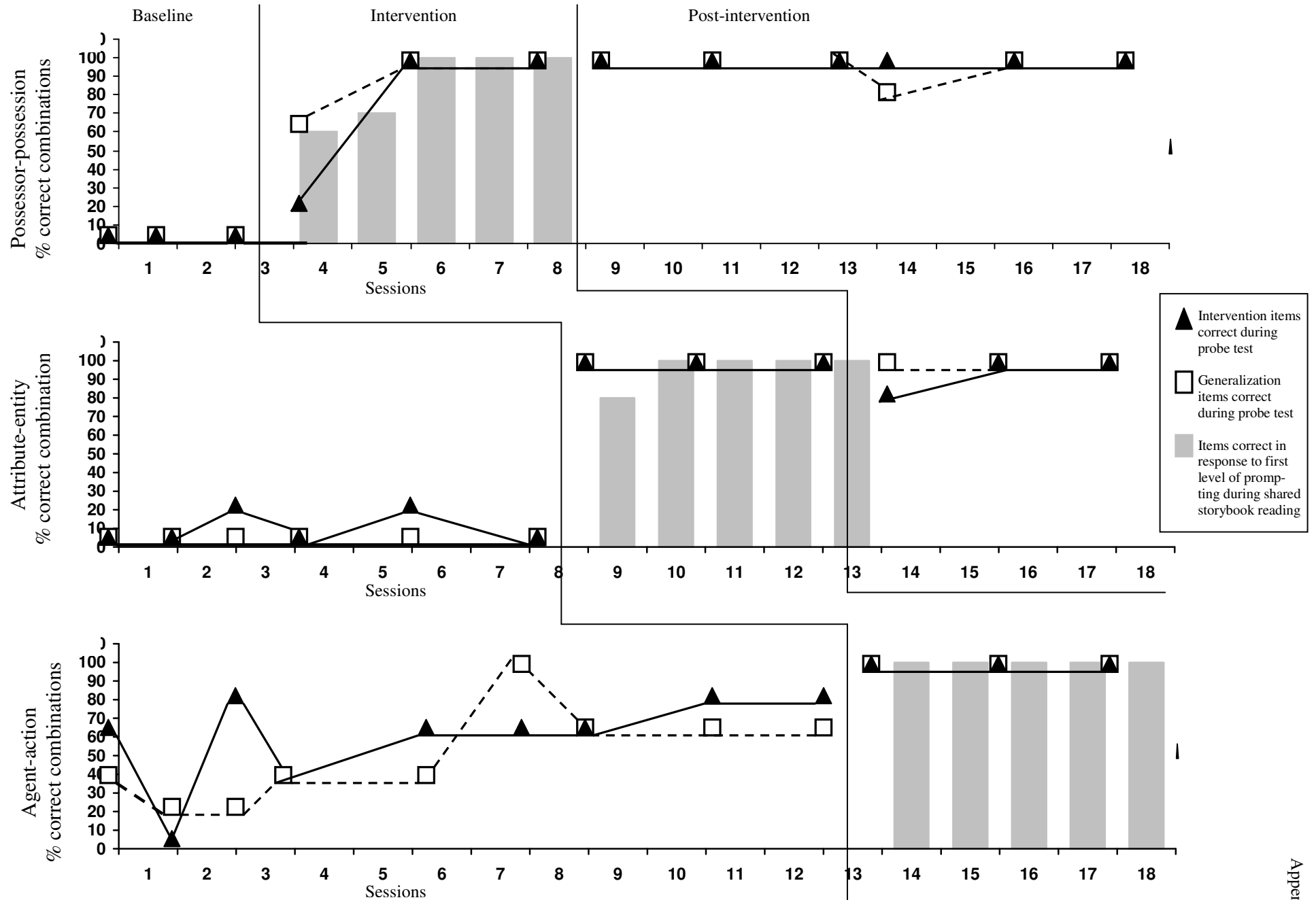


Figure 1A. Percentage of correct two-symbol combinations expressed by Participant 4 across the three semantic relations targeted.

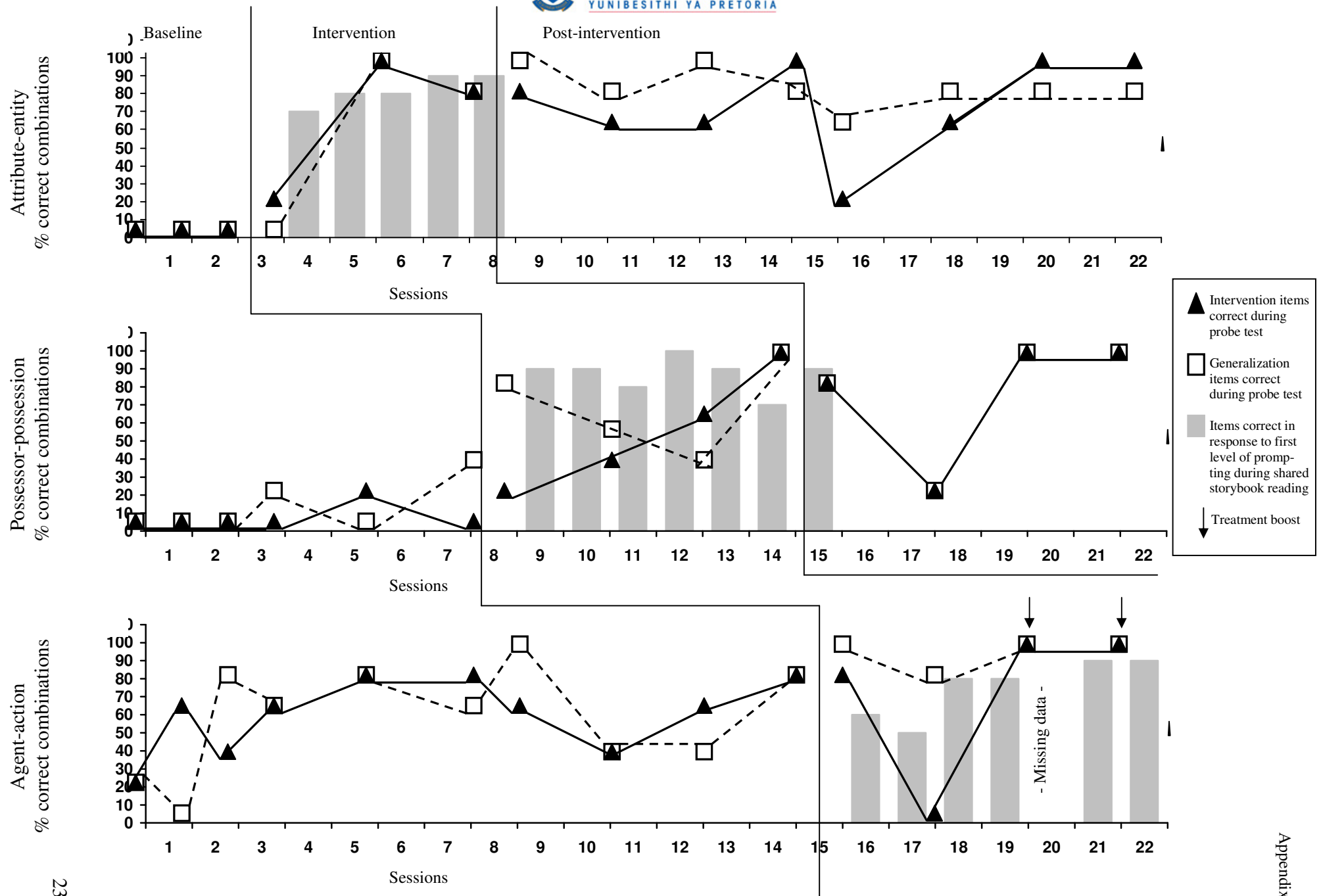


Figure 2A. Percentage of correct two-symbol combinations expressed by Participant 5 across the three semantic relations targeted.

## Appendix K

### Interview Schedules

#### *AAC supported storybook reading: Parent interview schedule (background information)*

Participant number \_\_\_\_\_

1. What is your child's date of birth? \_\_\_\_\_
2. Where does your child stay during term time? \_\_\_\_\_
3. Does your child have siblings? \_\_\_\_\_
4. What diagnosis was given to your child (if any)? \_\_\_\_\_
5. Does your child have any visual problems? Y/N

If yes, please describe: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

6. Does your child have any hearing problems? Y/N

If yes, please describe: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. Please list the words which your child can say (speak) in such a way that outsiders can understand him/her:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

8. How does your child mainly communicate:

Using one word/gesture/picture at a time \_\_\_\_\_

Using two words/gestures/pictures at a time\_\_\_\_\_

Using more than two words/gestures/pictures at a time: \_\_\_\_\_

9. If your child uses more than one word in a sentence, please give some examples:

---

---

10. Does your child ever point to picture symbols to communicate? Y/N

If yes, please describe: \_\_\_\_\_

---

11. Do you read stories to your child at home? Y/N

If yes, how often? \_\_\_\_\_

12. (If participant answered 'yes' to question 11) Does your child enjoy being read to? Y/N

Comments:\_\_\_\_\_

---

13. (If participant answered 'yes' to question 9) Does your child interact with you while you read stories to him/her? Y/N

If yes, please describe: \_\_\_\_\_

---

---

14. Has your child had intervention to improve his/her communication skills? Y/N

If yes, please describe how often/for how long and what the goals of the intervention were.

---

---

15. What are your child's favourite toys? \_\_\_\_\_

16. Please describe how he/she plays with them. \_\_\_\_\_

17. What are your child's favourite games? \_\_\_\_\_

18. Please describe how your child engages in these games. \_\_\_\_\_

19. In order to determine the level of your child's understanding of language, please indicate whether the following statements apply to your child:

*60-72 mths*

- knows all opposites
- Can identify beginning and end sounds
- Knows right and left on self
- Understands the question "What will happen if..."

*(If two or less are typical of the child, proceed to the next set of items):*

*48-60 mths*

- Understands time concepts like last week
- Understands day/night; evening/afternoon/morning
- Understands jokes
- Knows seasons
- Understands concepts first/last
- Knows words like his, ours, theirs
- Understands words like 'most', 'prettiest', better.

*(If three or less are typical of the child, proceed to the next set of items):*

*30-48 mths*

- Knows name and surname
- Knows age
- Knows categories, e.g. furniture, animals etc.
- Knows basic colours
- Listens attentively and with interest to stories
- Has favourite story
- Understands concept 'because'
- Understands opposites such as long/short, little/a lot, light/heavy

*(If three or less are typical of the child, proceed to the next set of items):*

*33-36 mths*

- Shows interest in explanations of 'why' things are and 'how' things happen
- Can carry out up to three or more verbal commands given in one long utterance
- Demonstrates an understanding of several prepositions

*(If less than two are typical of the child, proceed to the next set of items):*

*30-33 mths*

- Demonstrates an understanding of most common verbs
  - Understands and responds meaningfully to most very long and complex sentence requests or commands
  - Demonstrates an understanding of most common adjectives
- (If less than two are typical of the child, proceed to the next set of items):*

*27-30 mths*

- Demonstrates an understanding of word category associations through functional identifications (correctly answers such questions as “What do you eat with?” “What do you wear” etc.)
  - Understands size difference adjectives (correctly selects “the little doll”, “the small book”, “the large bowl” etc.)
  - Recognizes and can point to pictures of any common object
- (If less than two are typical of the child, proceed to the next set of items):*

*24-27 mths*

- Demonstrates an understanding of several action words (verb forms) by selecting appropriate pictures (for example, correctly chooses which picture shows eating, swinging, throwing, etc.)
- When asked, now points to 3 or more smaller parts of the body (such as chin, elbow, eyebrow, ankle, etc.)
- Recognizes some extended family name categories (such as uncle, grandma, cousin, etc.).

***AAC supported storybook reading: Teacher interview schedule (background information)***

Participant number \_\_\_\_\_

1. How does the learner communicate in class? (*Communication functions, modes and type of sentences used*)

---

---

---

---

2. Does the learner ever point to picture symbols to communicate? Y/N

If yes, please describe: \_\_\_\_\_

---

3. Does the learner seem to have any hearing problems? Y/N

If yes, please describe: \_\_\_\_\_

---

---

4. Does the learner seem to have any visual problems? Y/N

If yes, please describe: \_\_\_\_\_

---

---

5. Please list the words which the learner can say (speak) in such a way that you can understand him/her:

---

---

---

---

6. What are the main outcomes you are working towards for this learner this year?

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---

---

7. Do you read stories to this learner? Y/N

If yes, please describe (how often, format, e.g. group, individual): \_\_\_\_\_

---

---

8. (If answer to 7 was yes) Does the learner enjoy being read to? Y/N

Comments: \_\_\_\_\_

---

9. Please comment on the learner's way of playing (toys and games he/she likes,  
how he engages with those): \_\_\_\_\_

---

---



***AAC supported storybook reading: Therapist interview schedule (background information)***

Participant number \_\_\_\_\_

1. How long have you been seeing this learner for intervention? \_\_\_\_\_
2. How often do you see this learner for intervention? \_\_\_\_\_
3. What format does intervention take (group/individual)? \_\_\_\_\_
4. What are your main goals for intervention? \_\_\_\_\_

---

---

5. How does the learner communicate with you? (*Researcher to probe for communication functions, modes and type of sentences used*)

---

---

---

---

6. Does the learner ever point to picture symbols to communicate? Y/N

If yes, please describe: \_\_\_\_\_

---

7. Does the learner seem to have any hearing problems? Y/N

If yes, please describe: \_\_\_\_\_

---

---

8. Does the learner seem to have any visual problems? Y/N

If yes, please describe: \_\_\_\_\_

\_\_\_\_\_

9. Please list the words which the learner can say (speak) in such a way that you can understand him/her:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

10. Do you read stories to this learner? Y/N

If yes, please describe (how often, format, e.g. group, individual): \_\_\_\_\_

\_\_\_\_\_

11. (If answer to 10 was yes) Does the learner enjoy being read to? Y/N

Comments: \_\_\_\_\_

\_\_\_\_\_

12. Please comment on the learner's way of playing (toys and games he/she likes,

how he engages with those): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



Appendix L

Language Development Survey (Rescorla, 1989) Amended to the South African Context (Gonasillan, 2011) and With Modifications for Different Expressive Modalities

Language Development Survey

By Leslie Rescorla

PLEASE COMPLETE THE VOCABULARY CHECKLIST

Please indicate each word that your child expresses by ticking the appropriate block after the word. Do not include words that your child repeats after you but does not express spontaneously. Also, if your child communicates by pointing to objects or people, these should be spontaneous actions, not pointing in response to questions such as 'Where is Daddy' or 'Show me the cup.'

Does your child express the following words:

FOOD	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
apple							
banana							
biscuit							
bread							
bubblegum							
butter							
cake							
cereal							
cheese							
chips							
coffee							
coke							
cookie							
drink							
egg							
food							
grapes							
hamburger							
hot dog							
ice cream							
juice							
meat							
milk							
orange							
pizza							
Raisins							
Soup							
spaghetti							
sweets							
Tea							
Toast							
Water							

CLOTHES	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
Belt							
Boots							
Coat							
Dress							
Gloves							
Hat							
Jacket							
jersey							
Nappy							
Pants							
pyjamas							
Shirt							
Shoes							
slippers							
Socks							
Talkies							

PLACES	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
Church							
Home							
Hospital							
Library							
McDonalds							
Park							
School							
Store							
Zoo							

ANIMALS	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
bear							
bee							
bird							
bug							
bunny							
cat							
chicken							
cow							
dog							
duck							
elephant							
fish							
frog							
horse							
monkey							
pig							
puppy							
snake							
tiger							
turkey							
Tortoise							

TOYS	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
Ball							
Balloon							
Blocks							
Book							
Bubbles							
Crayons							
Doll							
Picture							
Present							
Slide							
Swing							
Teddy bear							

VEHICLES	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
Bike							
Boat							
Bus							
Car							
Motorbike							
Plane							
Pram							
Train							
Trolley							
Truck							

OUTDOORS	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
Flower							
House							
Moon							
Rain							
Pavement							
Sky							
Snow							
Star							
Street							
Sun							
Tree							



Appendix L

ACTIONS	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
bath							
breakfast							
Bring							
Catch							
Clap							
Close							
Come							
Cough							
Cut							
Dance							
Dinner							
Doodoo							
Eat							
Feed							
Finish							
Fix							
Get							
Give							
Go							
Have							
Help							
Hit							
Hug							
Jump							
kick							
Kiss							
Knock							
look							
Love							
Lunch							
Make							
Nap							
Outside							
pattycake							
Peekaboo							
Push							
Read							
Ride							
Run							
See							
Show							
Sing							
Sit							
Sleep							
Stop							
Take							
throw							
Tickle							
Walk							
Want							
Wash							
Weewee							

PERSONAL

Brush							
comb							
Glasses							
Key							
Money							
paper							
Pen							
Pencil							
Pocketbook							
Tissue							
Toothbrush							
Umbrella							
watch							

MODIFIERS	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
All gone							
All right							
Bad							
Big							
Black							
Blue							
Broken							
Clean							
Cold							
Dark							
Dirty							
Down							
dry							
Good							
Happy							
Heavy							
Hot							
Hungry							
Little							
Mine							
More							
nice							
Open							
Pretty							
Red							
Shut							
Stinky							
That							
This							
Tired							
Up							
Wet							
White							
Yellow							
Yucky							

HOUSEHOLD

Bath							
bed							
Blanket							
Bottle							
Bowl							
Chair							
Clock							
Cot							
Cup							
Door							
Floor							
Fork							
Glass							
Knife							
Light							
Mirror							
Pillow							
Plate							
Potty							
Radio							
Room							
Rubbish							
Sink							
Soap							
Sofa							
Spoon							
Stairs							
Table							
Telephone							
Towel							
TV							
Window							



Appendix L

PEOPLE	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
Aunty							
Baby							
Boy							
Daddy							
Doctor							
Girl							
Grandma							
Grandpa							
Lady							
man							
mommy							
own name							
pet name							
uncle							
TV character							

BODY PARTS

Arm							
Bum							
Chin							
Ear							
Elbow							
Eye							
Face							
Finger							
Foot							
Hair							
Hand							
Knee							
Leg							
Mouth							
Neck							
Nose							
Teeth							
Thumb							
Toe							
tummy							

OTHERS	No	Yes, by speaking (clear articulation)	Yes, by speaking (unclear articulation)	Yes, by a gesture/sign	Yes, by pointing to object/person	Yes, by pointing to a picture	Yes, by other means (please explain)
A, B, C etc.							
Away							
Boo-boo							
Bye-bye							
Excuse me							
Here							
Hi/hello							
In							
Me							
Meow							
My							
Myself							
Night-night							
No							
Off							
On							
Out							
Please							
Shut up							
Takalani							
(TV program)							
Thank you							
There							
Under							
Welcome							
What							
Where							
Why							
Woof							
Yes							
You							
Yummy							
1, 2, 3 etc.							

Please list any additional words your child uses:

---



---



---

Does your child combine two or more words in a 'sentence'? Yes  No

If yes, please provide examples:

---



---















---


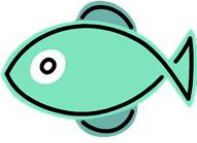





**THANK YOU FOR YOUR TIME.**

### Appendix M

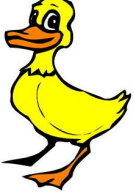




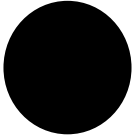

#### Eliciting Pictures, Target Words and Eliciting Phrases Selected to Administer the I-ASCC





Picture	Target word	Eliciting phrase
	Banana	What is this?
	Glue	What is this?
	Sandwich	What is this?
	Boots	What are these?
	Ball	What is this?
	Sharing	These people are drinking from one glass. They don't each have a drink – they are _____ a drink.

Picture	Target word	Eliciting phrase
	Boat	What is this?
	Blocks	What are these?
	Gloves	What are these?
	Swing	What is this?
	Helicopter	What is this?
	Shop	This lady is buying some things. She is buying things at the _____.

Picture	Target word	Eliciting phrase
	Apple	What is this?
	Fish	What is this?
	Doctor	This man is a _____
	Bread	What is this?
	Knee	This man has hurt his _____  (Alternative – show own knee and say ‘What is this?’)
	Dad	This is a boy. This is his mom, and this is his _____
	Chicken	What is this?



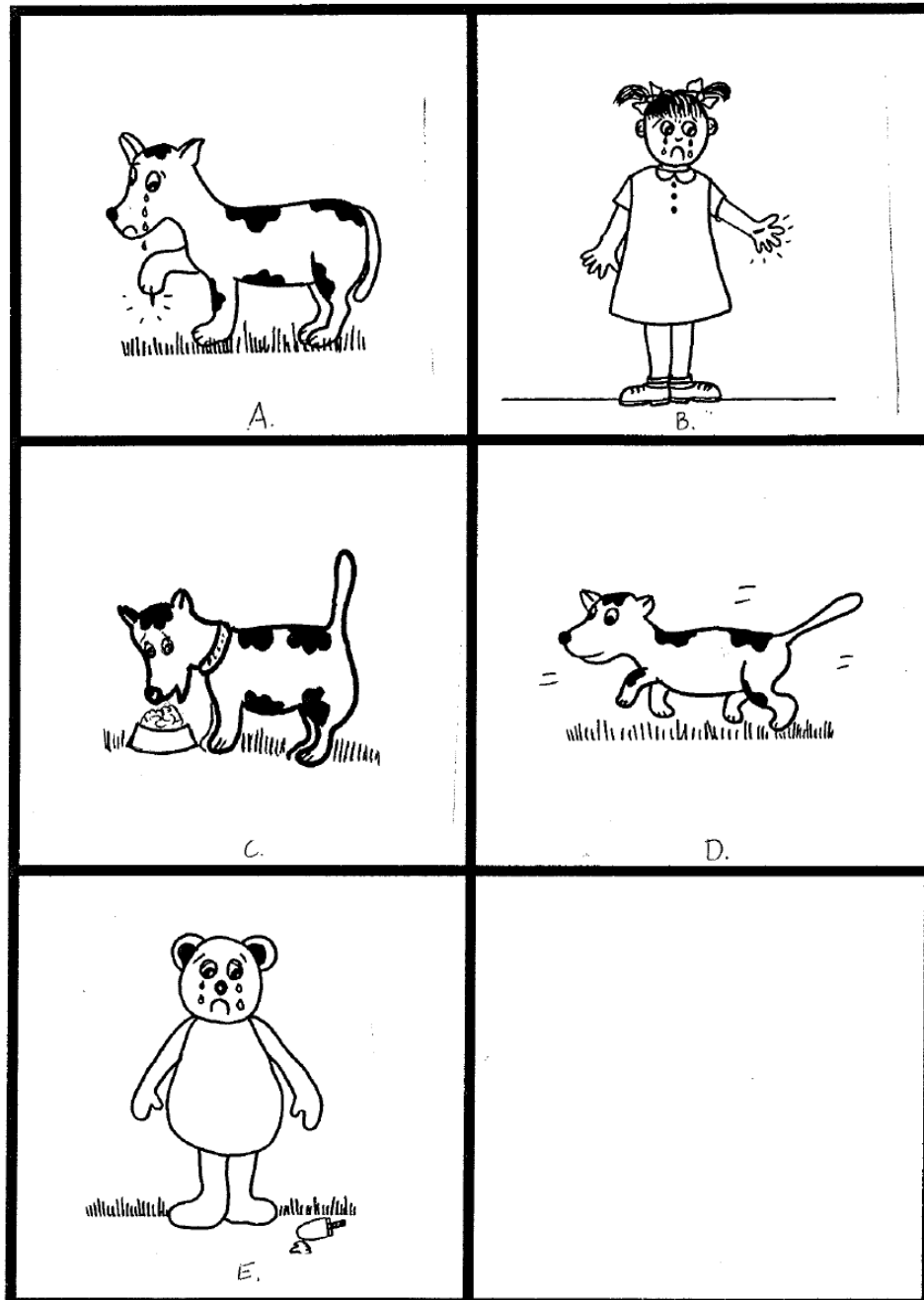
Picture	Target word	Eliciting phrase
	Quack	This is a duck. What noise does she make?
	Underpants	What are these?
	Bird	What is this?
	Lightning	What is this?
	Watermelon	What is this?
	Black	What colour is this?
	Carrots	What are these?

Picture	Target word	Eliciting phrase
	Radio	What is this?
	Kick	What is this girl going to do with the ball? She will _____ the ball.
	Stones	What are these?
	Spilling	What happened to the milk? Someone has been _____ the milk.

Appendix N

Example of Material From the Test Used to Assess Comprehension of Target

Semantic Relations



## Appendix O

### Matrices of the Three Semantic Relations

#### *Agent-action*

<i>Vocabulary</i>	<b>fall</b>	<b>laugh</b>	<b>cry</b>	<b>sleep</b>	<b>run</b>
<b>the boy</b>	The boy falls	The boy laughs	The boy cries	The boy sleeps	The boy runs
<b>the dog</b>	The dog falls	The dog laughs	The dog cries	The dog sleeps	The dog runs

#### *Attribute-entity*

<i>Vocabulary</i>	<b>shirt</b>	<b>pants</b>	<b>teddy</b>	<b>aeroplane</b>	<b>Car</b>
<b>dirty</b>	Dirty shirt	Dirty pants	Dirty teddy	Dirty aeroplane	Dirty car
<b>broken</b>	Broken shirt	Broken pants	Broken teddy	Broken aeroplane	Broken car

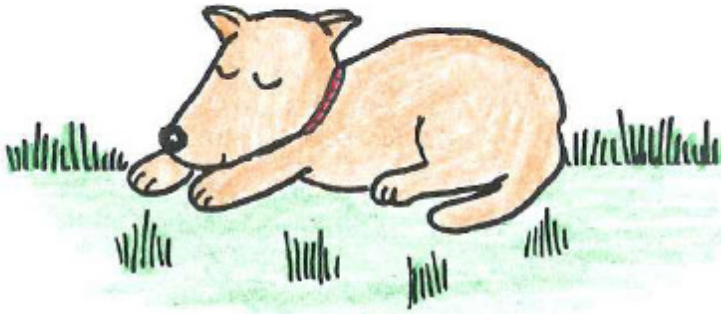
#### *Possessor-possession*

<i>Vocabulary</i>	<b>hand</b>	<b>hat</b>	<b>nose</b>	<b>tummy</b>	<b>shoe</b>
<b>the girl</b>	The girl's hand	The girl's hat	The girl's nose	The girl's tummy	The girl's shoe
<b>the bunny</b>	The bunny's hand	The bunny's hat	The bunny's nose	The bunny's tummy	The bunny's shoe

Note: Shaded cells indicate combinations targeted in intervention, and white cells combinations used to test generalization.

Appendix P

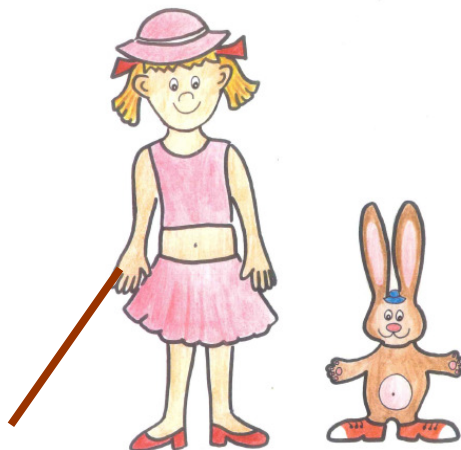
Examples of Picture Material Used to Conduct the Probe Test



Target combination: The dog sleeps

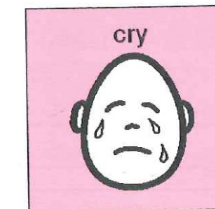
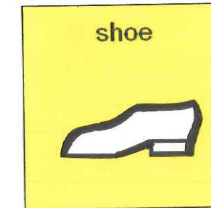
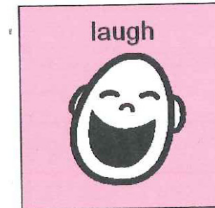
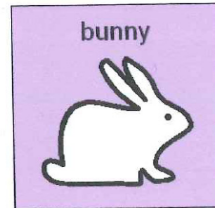
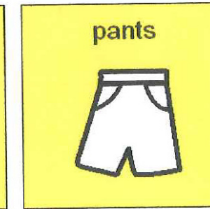
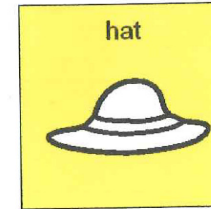
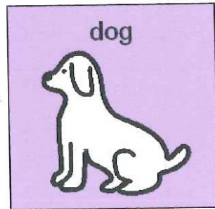
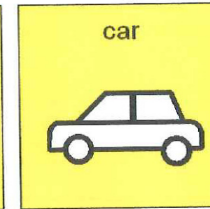
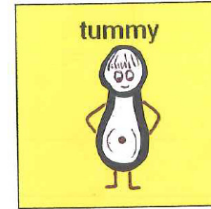
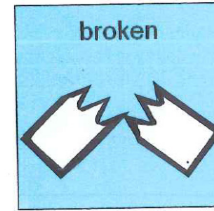
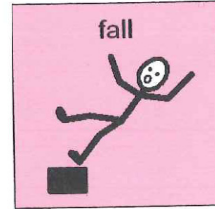
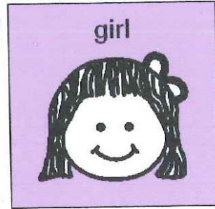
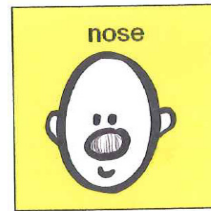
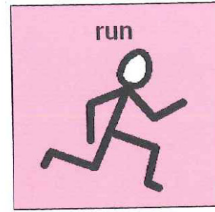
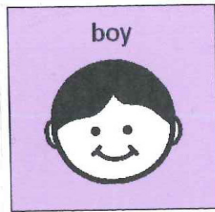


Target structure: Dirty car



Target structure: The girl's hand (the target aspect was pointed out using a stick)

### Appendix Q Communication Board



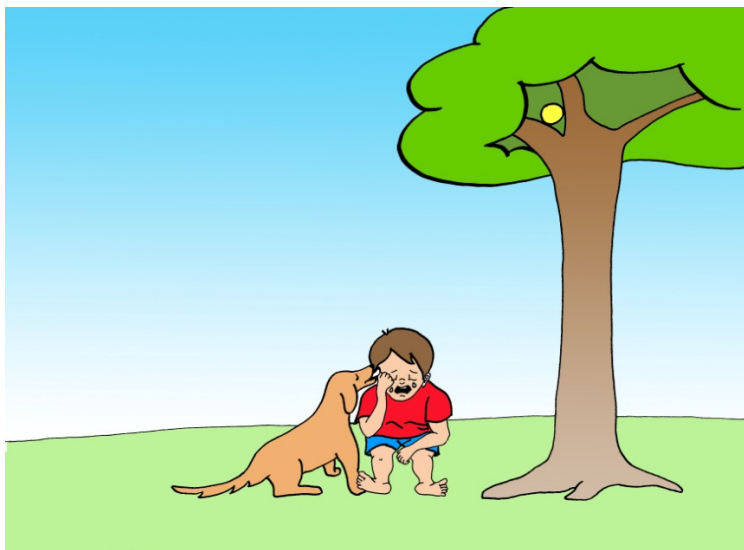
## Appendix R

### Stories

(Text in **bold** denotes intervention items.)

#### *Story 1: Agent-action*

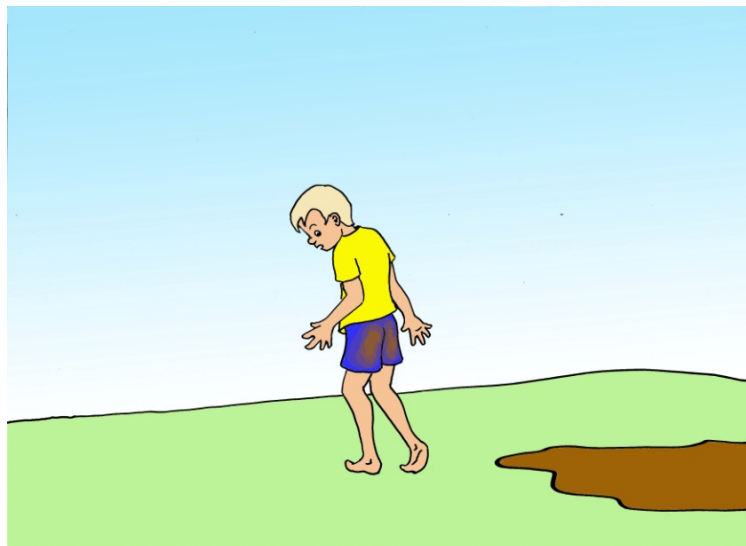
This is a dog. The **dog sleeps**. Here comes a boy. The boy has a ball. He wants to play. Come and play, dog. The boy throws the ball. **The dog runs**. He brings back the ball. The **boy laughs**. He likes playing with the dog. The boy throws the ball again. **The dog runs**. Oh no! The ball is stuck in the tree! The boy climbs up the tree. Oh no! The **boy falls**. He climbs up the tree again. Oh no! **The boy falls** again! Oh-oh! **The boy cries**. He can't get the ball! Here comes Daddy. Daddy sees that the **boy cries**. Sorry! Daddy is tall. He takes the ball down from the tree. Hooray! **The boy laughs**. He is so happy. The boy and the dog play in the garden for a long time. Then they are very tired. The boy goes inside the house. The dog lies down in the grass. Shshsh! **The dog sleeps**.



*Example of an illustration*

*Story 2: Attribute-entity*

This is Bob. Bob is a boy. Bob is going to play. He takes his aeroplane and his car. He also takes his teddy. He goes outside. He jumps in a puddle. Oh-oh! **Dirty pants!** He jumps in the puddle again. **Dirty shirt!** Bob plays with his aeroplane and his car. He pushes them down the hill. Oh-oh! Crash! Boom! Where is the aeroplane? Where is the car? Bob runs down the hill. He finds the **broken aeroplane**. And there is the **broken car**. Where is teddy? He fell in the mud! Oh dear, **dirty teddy!** Bob is sad. He runs to mommy. Oh dear, says Mommy. We must get you and teddy clean. Bob gives mommy his **dirty shirt**. He gives her his **dirty pants** and he gives her the **dirty teddy**. Mommy puts them all in the washing machine. Here comes daddy. He takes the **broken car**. He takes the **broken aeroplane**. He mends them with glue. Oh, look, they are all fixed! And look, the shirt and the pants and the teddy are clean again. Bob is very happy.

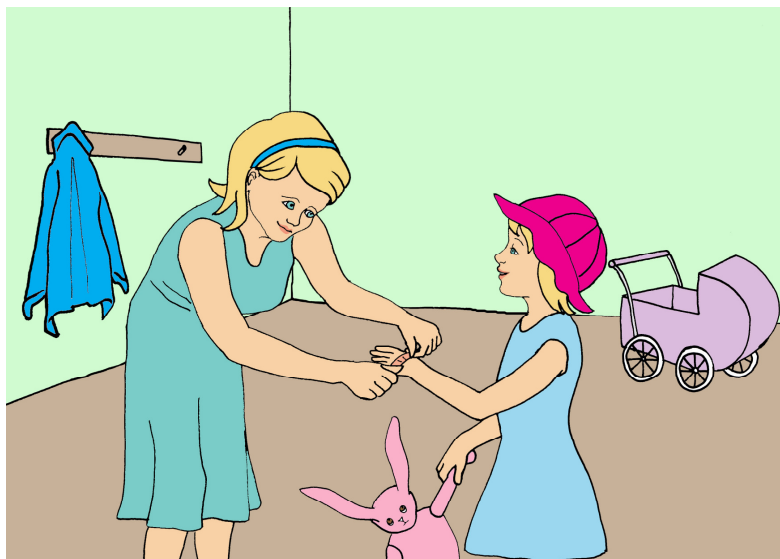


*Example of an illustration*



*Story 3: Possessor-possession*

This is a girl. The girl has a bunny. There is **the bunny's shoe**. The girl puts it on. There is **the girl's hat**! The girl puts it on her head. She wants to go outside. Mommy puts suntan lotion on the **girl's nose**. The girl pushes the bunny in the pram. They are going into the garden. ZZZZZ! What's that? A big black fly comes buzzing. It lands on **the girl's hat**. Go away fly! ZZZZ! The fly buzzes around. It lands on... **The bunny's shoe!** Go away! ZZZZZ. Oh-oh, where is the fly sitting now? On... **the girl's nose!** Oh no! Go away, fly! The fly flies away. The girl and the bunny are eating ice cream. Oh dear, look, here comes a big nasty bee! She sits on... **the bunny's tummy!** The girl hits her with a blanket. Go away! ZZZZ... the bee buzzes around... Oh no, now the bee is sitting on... **the girl's hand**. Sting! The nasty bee has stung the girl! The girl screams. Ouch, that is so sore! Here comes mommy. She puts a plaster on **the girl's hand**. That feels a lot better! Bunny also wants a plaster. Mommy puts a plaster on **bunny's tummy**. Now the girl and the bunny are happy.



*Example of an illustration*



**Appendix S**

**Score Sheet for Data Collection During the Probe Test**

**Probe test score sheet**

**Name:** \_\_\_\_\_

**Date:** 3 June 2011

**Session:** \_\_\_\_\_

**Response  
correct/incorrect**

No	Semantic relation	Transcription	Response correct/incorrect
1	The dog laughs		
2	The boy laughs		
3	Broken aeroplane		
4	The bunny's tummy		
5	The bunny's hand		
6	Dirty shirt		
7	Dirty aeroplane		
8	The boy cries		
9	The dog runs		
10	The girl's hand		
11	Broken shirt		
12	Dirty pants		
13	The bunny's shoe		
14	The boy sleeps		
15	The girl's nose		
16	Broken pants		
17	The girl's hat		
18	The dog cries		
19	Dirty car		
20	The dog falls		
21	The bunny's hat		
22	Dirty teddy		
23	The boy runs		
24	The dog sleeps		
25	The bunny's nose		
26	The boy falls		
27	The girl's shoe		
28	Broken car		
29	Broken teddy		
30	The girl's tummy		



Appendix T

Procedural Integrity Checklist for the Probe Test

		One picture presented within view of the participant.	Experimenter ensures that the child's attention is focused on the picture.	Experimenter cues child with one general question/mand.	For possessor-possession pictures, experimenter points to the aspect of the picture that is being asked about using a stick.	The experimenter gives a time delay of 10 s after asking the question/giving the mand.	If the child attempts to point to a symbol within 10 s, the experimenter permits the child to complete the response.	If the child points to one symbol, the experimenter gives an additional 3 s to see if the child attempts to point to another symbol.	Response acknowledged in neutral way (e.g. <i>aha</i> , <i>mmm</i> , <i>I see</i> , <i>alright</i> ) but no feedback on correctness of the response.	No correcting the child's response, providing a prompt or model.	Non-contingent encouraging feedback given after completion of item ('You're doing a good job', 'You're working so hard.').	No physical, visual or auditory distractions.
1	The girl's shoe											
2	The bunny's hand											
3	Dirty teddy											
4	Dirty aeroplane											
5	The bunny's nose											
6	The boy laughs											
7	Broken shirt											
8	Dirty car											
9	The boy runs											
10	The dog cries											
11	The girl's hat											
12	Broken pants											
13	The dog runs											
14	The bunny's tummy											
15	The girl's nose											
16	Broken car											
17	The dog falls											
18	The bunny's shoe											
19	Dirty shirt											
20	The boy sleeps											
21	The girl's hand											
22	The boy cries											
23	The dog laughs											
24	Broken aeroplane											
25	Dirty pants											
26	The bunny's hat											
27	The dog sleeps											
28	The boy falls											
29	The girl's tummy											
30	Broken teddy											

**General:**

1. Experimenter seated at an angle in front of the participant and the communication board is on the table/laptray facing the participant: \_\_\_\_\_
2. Pictures are presented in random order: \_\_\_\_\_
3. Break provided after every 10 pictures: \_\_\_\_\_



Appendix U

Procedural Integrity Checklist for Intervention Procedures for Stories 1, 2 and 3

Procedural integrity: Story 1 (agent-action)

	Yes	No	Comments
Experimenter seated at an angle in front of the participant and the communication board is on the table/laptray facing the participant.			
Experimenter presents the story one picture at a time by positioning the picture within view of the participant			
Experimenter ensures that the participant's attention is focused on the story			
The experimenter reads the story, commenting and elaborating as needed.			

	<i>No physical, auditory or visual distractions.</i>	<i>Prompt 1: Experimenter draws attention to picture representing target combination (includes strategies such as verbal mand 'look!' and pointing to picture) followed by a pause up to 10 s.</i>	<i>Prompt 2: If no response, experimenter asks a general question or poses a general mand, followed by another up to 10 s pause.</i>	<i>Prompt 3: If no response, experimenter verbally requests participant to answer by using the communication board followed by another up to 10 s pause.</i>	<i>Prompt 4: If a different modality/ unintelligible/partial/ incorrect (and not self-corrected) response to Prompts 1-4 is given, OR no response to Prompt 3, the experimenter models the correct sequence on the board while verbalizing, followed by a request to imitate, followed by another up to 10 s pause .</i>	<i>A partial or intelligible different modality response to Prompts 1-4 is affirmed before further steps are taken.</i>	<i>An incorrect response to Prompts 1-4 is negated and a 1 s pause time is given.</i>	<i>Prompt 5: If no response, a different modality/ unintelligible/partial/ incorrect (and not self-corrected) response is given to Prompt 4, physical assistance is provided to help the participant point to the correct sequence of graphic symbols.</i>	<i>A correct response (including a self-corrected response) to Prompts 1-5 is affirmed and reinforced by an aided model (experimenter points to correct sequence on the board while verbalizing).</i>	<i>The experimenter provides a voice-over whenever the participant points to a symbol on the board.</i>
The dog sleeps										
The dog runs										
The boy laughs										
The dog runs										
The boy falls										
The boy falls										
The boy cries										
The boy cries										
The boy laughs										
The dog sleeps										



**Procedural integrity: Story 2 (attribute-entity)**

	Yes	No	Comments
Experimenter seated at an angle in front of the participant and the communication board is on the table/laptray facing the participant.			
Experimenter presents the story one picture at a time by positioning the picture within view of the participant			
Experimenter ensures that the participant’s attention is focused on the story			
The experimenter reads the story, commenting and elaborating as needed..			

	<i>No physical, auditory or visual distractions.</i>	<i>Prompt 1: Experimenter draws attention to picture representing target combination (includes strategies such as verbal mand ‘look!’ and pointing to picture) followed by a pause up to 10 s.</i>	<i>Prompt 2: If no response, experimenter asks a general question or poses a general mand, followed by another up to 10 s pause.</i>	<i>Prompt 3: If no response, experimenter verbally requests participant to answer by using the communication board followed by another up to 10 s pause.</i>	<i>Prompt 4: If a different modality/ unintelligible/partial/ incorrect (and not self-corrected) response to Prompts 1-4 is given, OR no response to Prompt 3, the experimenter models the correct sequence on the board while verbalizing, followed by a request to imitate, followed by another up to 10 s pause .</i>	<i>A partial or intelligible different modality response to Prompts 1-4 is affirmed before further steps are taken.</i>	<i>An incorrect response to Prompts 1-4 is negated and a 1 s pause time is given.</i>	<i>Prompt 5: If no response, a different modality/ unintelligible/partial/ incorrect (and not self-corrected) response is given to Prompt 4, physical assistance is provided to help the participant point to the correct sequence of graphic symbols.</i>	<i>A correct response (including a self-corrected response) to Prompts 1-5 is affirmed and reinforced by an aided model (experimenter points to correct sequence on the board while verbalizing).</i>	<i>The experimenter provides a voice-over whenever the participant points to a symbol on the board.</i>
The bunny’s shoe										
The girl’s hat										
The girl’s nose										
The girl’s hat										
The bunny’s shoe										
The girl’s nose										
The bunny’s tummy										
The girl’s hand										
The girl’s hand										
The bunny’s tummy										



**Procedural integrity: Story 3 (possessor-possession)**

	Yes	No	Comments
Experimenter seated at an angle in front of the participant and the communication board is on the table/laptray facing the participant.			
Experimenter presents the story one picture at a time by positioning the picture within view of the participant			
Experimenter ensures that the participant’s attention is focused on the story			
The experimenter reads the story, commenting and elaborating as needed.			

	<i>No physical, auditory or visual distractions.</i>	<i>Prompt 1: Experimenter draws attention to picture representing target combination (includes strategies such as verbal mand ‘look!’ and pointing to picture) followed by a pause up to 10 s.</i>	<i>Prompt 2: If no response, experimenter asks a general question or poses a general mand, followed by another up to 10 s pause.</i>	<i>Prompt 3: If no response, experimenter verbally requests participant to answer by using the communication board followed by another up to 10 s pause.</i>	<i>Prompt 4: If a different modality/ unintelligible/partial/ incorrect (and not self-corrected) response to Prompts 1-4 is given, OR no response to Prompt 3, the experimenter models the correct sequence on the board while verbalizing, followed by a request to imitate, followed by another up to 10 s pause .</i>	<i>A partial or intelligible different modality response to Prompts 1-4 is affirmed before further steps are taken.</i>	<i>An incorrect response to Prompts 1-4 is negated and a 1 s pause time is given.</i>	<i>Prompt 5: If no response, a different modality/ unintelligible/partial/ incorrect (and not self-corrected) response is given to Prompt 4, physical assistance is provided to help the participant point to the correct sequence of graphic symbols.</i>	<i>A correct response (including a self-corrected response) to Prompts 1-5 is affirmed and reinforced by an aided model (experimenter points to correct sequence on the board while verbalizing).</i>	<i>The experimenter provides a voice-over whenever the participant points to a symbol on the board.</i>
Dirty pants										
Dirty shirt										
Broken aeroplane										
Broken car										
Dirty teddy										
Dirty shirt										
Dirty pants										
Dirty teddy										
Broken aeroplane										
Broken car										

**Appendix V**  
**Procedural Integrity of the Intervention**

<b>Participant</b>	<b>Phase</b>	<b>Number of sessions scored</b>	<b>% of sessions scored</b>	<b>% of steps adhered to as rated by independent observer</b>
Participant 1	Intervention: A-E <sup>1</sup>	1	20%	98%
	Intervention: A-A <sup>2</sup>	2	22%	98%
	Intervention: P-P <sup>3</sup>	1	20%	100%
Participant 2	Intervention: A-A <sup>2</sup>	2	22%	100%
	Intervention: P-P <sup>3</sup>	2	29%	96%
	Intervention: A-E <sup>1</sup>	1	20%	100%
Participant 3	Intervention: P-P <sup>3</sup>	2	22%	98%
	Intervention: A-A <sup>2</sup>	1	20%	100%
	Intervention A-E <sup>1</sup>	2	22%	100%

<sup>1</sup>Attribute-entity combination

<sup>2</sup>Agent-action combination

<sup>3</sup>Possessor-possession combination

**Appendix W**  
**Procedural Integrity of the Probe Test**

<b>Participant</b>	<b>Phase</b>	<b>Number of sessions scored</b>	<b>% of sessions scored</b>	<b>% of steps adhered to as rated by independent observer</b>
Participant 1	Baseline	1	33%	99%
	Intervention: A-E <sup>1</sup>	1	33%	100%
	Intervention: A-A <sup>2</sup>	1	20%	99%
	Intervention: P-P <sup>3</sup>	1	33%	100%
Participant 2	Baseline	1	33%	100%
	Intervention: A-A <sup>2</sup>	1	20%	100%
	Intervention: P-P <sup>3</sup>	1	25%	100%
	Intervention: A-E <sup>1</sup>	1	33%	100%
Participant 3	Baseline	1	33%	99%
	Intervention: P-P <sup>3</sup>	2	33%	100%
	Intervention: A-A <sup>2</sup>	1	20%	100%
	Intervention A-E <sup>1</sup>	1	20%	100%

<sup>1</sup>Attribute-entity combination

<sup>2</sup>Agent-action combination

<sup>3</sup>Possessor-possession combination



## Appendix X

### Reliability of Transcription and Data Collected Using the Probe Test

Participant	Phase	Number of		Point-by-point	Point-by-point
		sessions	% of sessions	agreement of	agreement of
		scored	scored	transcription	coding
Participant 1	Baseline	1	33%	96%	100%
	Intervention: A-E <sup>1</sup>	1	33%	95%	100%
	Intervention: A-A <sup>2</sup>	1	20%	89%	100%
	Intervention: P-P <sup>3</sup>	1	33%	83%	97%
Participant 2	Baseline	1	33%	100%	100%
	Intervention: A-A <sup>2</sup>	1	20%	86%	100%
	Intervention: P-P <sup>3</sup>	1	25%	91%	100%
	Intervention: A-E <sup>1</sup>	1	33%	94%	100%
Participant 3	Baseline	1	33%	94%	100%
	Intervention: P-P <sup>3</sup>	2	33%	80%	100%
	Intervention: A-A <sup>2</sup>	1	20%	97%	100%
	Intervention A-E <sup>1</sup>	1	20%	83%	93%
Average		1	28%	91%	99%

<sup>1</sup>Attribute-entity combination

<sup>2</sup>Agent-action combination

<sup>3</sup>Possessor-possession combination

### Appendix Y

#### Probe Test: Percentage of Items Correct, PND and IRD with Corresponding CI per Participant, per Phase

	Semantic relation (given in order in which intervention was applied to the semantic relation)	Percentage of items correct			PND		IRD (Baseline- intervention)	85% CI (Bootstrap).	
		Baseline	Intervention	Post- intervention	Baseline- intervention	Baseline- post- intervention			
Participant 1	Intervention	AE	0	40%	68%	67%	100%	.67	[.33, 1.00]
		AA	7%	64%	80%	100%	100%	1.00	[1.00, 1.00]
		PP	7%	100%	-	100%	-	1.00	[1.00, 1.00]
		<b>Overall</b>	<b>6%</b>	<b>67%</b>	<b>71%</b>	<b>91%</b>	<b>100%</b>	<b>.91</b>	<b> [.82, 1.00]</b>
	Generalization	AE	0	40%	63%	100%	88%	1.00	[1.00, 1.00]
		AA	3%	68%	73%	100%	100%	1.00	[1.00, 1.00]
		PP	2%	93%	-	100%	-	1.00	[1.00, 1.00]
	<b>Overall</b>	<b>2%</b>	<b>67%</b>	<b>65%</b>	<b>100%</b>	<b>91%</b>	<b>1.00</b>	<b> [1.00, 1.00]</b>	
Participant 2	Intervention	AA	0	8%	9%	20%	29%	.20	[.00, .40]
		PP	0	30%	0%	50%	0%	.50	[.25, .75]
		AE	0	67%	-	100%	-	1.00	[1.00, 1.00]
		<b>Overall</b>	<b>0</b>	<b>30%</b>	<b>6%</b>	<b>50%</b>	<b>30%</b>	<b>.50</b>	<b> [.33, .67]</b>
	Generalization	AA	0	16%	11%	60%	43%	.60	[.22, 1.00]
		PP	0	30%	0%	50%	0%	.50	[.25, .75]
		AE	0	60%	-	100%	-	1.00	[1.00, 1.00]
	<b>Overall</b>	<b>0</b>	<b>32%</b>	<b>8%</b>	<b>67%</b>	<b>30%</b>	<b>.67</b>	<b> [.50, .83]</b>	
Participant 3	Intervention	PP	0	23%	8%	50%	25%	.50	[.17, .83]
		AA	0	40%	28%	67%	80%	.67	[.33, 1.00]
		AE	0	24%	-	40%	-	.40	[.00, .80]
		<b>Overall</b>	<b>0</b>	<b>27%</b>	<b>15%</b>	<b>50%</b>	<b>46%</b>	<b>.50</b>	<b> [.29, .71]</b>
	Generalization	PP	0	33%	10%	50%	13%	.50	[.17, .83]
		AA	0	20%	8%	67%	40%	.67	[.33, 1.00]
		AE	3%	24%	-	20%	-	.43	[.12, .80]
	<b>Overall</b>	<b>2%</b>	<b>27%</b>	<b>9%</b>	<b>43%</b>	<b>23%</b>	<b>.49</b>	<b> [.27, .70]</b>	

## Appendix Z

### Percentage of Correct Responses per Level of Prompting During the Shared Storybook Reading Activity

Participant	Semantic relation	Levels of prompting				
		Level 1: Drawing participant's attention verbally and pointing to the picture, followed by 10 s time delay	Level 2: Open-ended question, followed by 10 s time delay	Level 3: Request to use board, followed by 10 s time delay	Level 4: Complete aided model and invitation to imitate, followed by 10 s time delay	Level 5: Physical assistance to produce the combination, followed by an aided model by the researcher
Participant 1	Attribute-entity	80.0%	0%	6.0%	12.0%	2.0%
	Agent-action	93.3%	1.1%	0%	5.6%	0%
	Possessor-possession	96.0%	0%	0%	4.0%	0%
	<b>Overall</b>	<b>90.5%</b>	<b>0.5%</b>	<b>1.6%</b>	<b>6.8%</b>	<b>0.5%</b>
Participant 2	Agent-action	37.8%	2.2%	3.3%	48.9%	7.8%
	Possessor-possession	38.6	0%	25.7	34.3%	1.4%
	Attribute-entity	56.0%	4.0%	0%	40.0%	0%
	<b>Overall</b>	<b>42.4</b>	<b>1.9%</b>	<b>10.0%</b>	<b>41.9</b>	<b>3.8%</b>
Participant 3	Possessor-possession	82.2%	2.2%	0%	15.5%	0%
	Agent-action	88.0%	4.0%	0%	8.0%	0%
	Attribute-entity	87.8%	1.1%	1.1%	7.8%	2.2%
	<b>Overall</b>	<b>85.7%</b>	<b>2.2%</b>	<b>0.4%</b>	<b>10.9%</b>	<b>0.9%</b>

## Appendix AA

### Analysis of Correct Responses Across Participants and Structures

			Attribute- entity	Agent- action	Possessor- possession	Total
<b>Participant 1</b>	<b>2 symbols</b>	<b>Same order</b>	37 (58%)	35 (59%)	22 (65%)	94 (60%)
		<b>Reverse order</b>	14 (22%)	10 (17%)	7 (21%)	31 (20%)
	<b>More than 2 symbols</b>		13 (20%)	14 (24%)	5 (15%)	32 (20%)
	<b>Total</b>		64 (100%)	59 (100%)	34 (100%)	157 (100%)
<b>Participant 2</b>	<b>2 symbols</b>	<b>Same order</b>	8 (42%)	7 (57%)	10 (83%)	25 (57%)
		<b>Reverse order</b>	10 (53%)	1 (8%)	0	11 (25%)
	<b>More than 2 symbols</b>		1 (5%)	5 (38%)	2 (17%)	8 (18%)
	<b>Total</b>		19 (100%)	13 (100%)	12 (100%)	44 (100%)
<b>Participant 3</b>	<b>2 symbols</b>	<b>Same order</b>	1 (7%)	5 (28%)	2 (8%)	8 (14%)
		<b>Reverse order</b>	5 (36%)	1 (6%)	20 (83%)	26 (46%)
	<b>More than 2 symbols</b>		8 (57%)	12 (66%)	2 (8%)	22 (39%)
	<b>Total</b>		14 (100%)	18 (100%)	24 (100%)	56 (100%)

## Appendix AB

### Experimental Studies (Including the Current Study) Aimed at Increasing Utterance Length in Children with Limited Speech

Authors and date	Participants: Age and diagnosis	Design	Materials	Treatment	Measurement	Results	
						Effect	Efficiency
Binger, Kent-Walsh, Berens, Del Campo, & Rivera, 2008: “Teaching Latino parents to support the multi-symbol message productions of their children who require AAC”	Three Latino children aged 2;11– 4;1 with severe congenital motor speech impairment <b>Diagnoses:</b> (1) profound phonological process disorder, (2) velocardiofacial syndrome and suspected childhood apraxia of speech (CAS); (3) subpalatal cleft <b>Receptive language:</b> age-appropriate (average range) (TACL-3) <b>Speech intelligibility:</b> IASCC (no context condition): 0-3% <b>Expressive vocabulary:</b> At least 25 words/symbols (CDI) <b>Motor skills:</b> No significant impairments reported <b>Previous experience with aided AAC:</b> Two had none; one minimal <b>Bookreading:</b> Regular experience	Single subject, multiple probe design across three participants	Per story, 30-35 coloured PCS symbols as well as illustrations from the book representing the main characters were used on one overlay on speech output devices (Mercury™ and MightyMo™) and on a communication board. Symbols were arranged according to the Fitzgerald key and the background of each symbol was colour-coded.	Caregivers were taught to use a ‘Read, Ask, Answer’ strategy during shared storybook reading, together with the provision of 2-symbol aided communication boards/SGD’s.	Frequency of children’s initiated and imitated multi-graphic symbol messages within a 10 min book reading activity.	The intervention was shown to be effective as evidenced by PND, level, level change, and trend across the three participants. Generalization to new stories, and maintenance post-intervention was established. PND was 100% for each of the three phases and each of the three participants. Level change was immediate for two participants, and level between intervention and baseline differed considerably.	Participants reached criterion after 3, 11 and 6 sessions respectively.
Binger, Kent-Walsh, Ewing, & Taylor, 2010: “Teaching educational assistants to facilitate the multisymbol message productions of young students who require	Three children (two Latino and one Anglo) aged 4;6 – 6;4 with severe congenital motor speech impairment <b>Diagnoses:</b> (1) Developmental delay, (DD), (2) DD and CAS, (3) cerebral palsy <b>Receptive language:</b> Profound delay, low average and average (TACL-3) <b>Speech intelligibility:</b> IASCC (no context condition): 0-30% <b>Expressive vocabulary:</b> At least 25 words/symbols (CDI)	Single subject, multiple probe design across three participants	Per story, 30-35 coloured PCS symbols as well as illustrations from the book representing the main characters were used on one overlay on speech output devices. Symbols were arranged according to the Fitzgerald key	Educational assistants were taught to use a ‘Read, Ask, Answer, Prompt’ strategy during shared storybook reading, together with the provision of 2-symbol aided	Frequency of children’s initiated and imitated multi-graphic symbol messages within a 10 min book reading activity.	The intervention was shown to be effective as evidenced by PND, level, level change, and trend across the three participants. Generalization to new stories, and maintenance post-intervention was established. PND was 100% for two participants and 80% for the other one.	Participants reached criterion after 3, 5 and 6 sessions respectively.

Authors and date	Participants: Age and diagnosis	Design	Materials	Treatment	Measurement	Results	
						Effect	Efficiency
augmentative and alternative communication ”	<b>Motor skills:</b> One had hemiplegia <b>Previous experience with aided AAC:</b> all <b>Bookreading:</b> Regular experience		and the background of each symbol was colour-coded.	models on communication boards.		Level change was immediate for two participants, and level between intervention and baseline differed considerably.	
Nigam, Schlosser & Lloyd, 2006: “Concomitant use of the matrix strategy and the mand-model procedure in teaching graphic symbol combinations”	Three children with LNFS aged 7;8 to 13;6. <b>Diagnoses:</b> (1) autism and intellectual impairment, (2) intellectual and physical impairment, (3) autism <b>Receptive language:</b> No formal scores, understood simple commands, yes/no questions and wh-type questions <b>Speech intelligibility:</b> Not described <b>Expressive language:</b> According to parent report, participants frequently used 15-45 PCS symbols, one also used 5 manual signs <b>Motor skills:</b> One participant with significant impairments (no independent mobility) <b>Previous experience with aided AAC:</b> All	Multiple probe design across four sets of action-object combinations	Twelve black-and-white PCS on a communication board, arranged according to semantic role.	Matrix structure of 12 target items and 24 generalization items (action-object combinations) was used. The researcher manipulated objects and attempted to elicit the target combination by a mand-model procedure. A communication board with 12 items was used.	Target and generalization action-object combinations produced by pointing to the correct symbol sequence on the communication board	Two of the three participants showed a clear effect of the intervention as evidenced by PND, level and trend across the four sets of combinations targeted. Immediate level change was only observed for sets three and four of the first participant. The two participants demonstrated generalization to 67 and 58% of the untrained exemplars from the matrix. One participant did not show progress, and intervention was abandoned after 13 sessions.	Participant 1: From the graph, it seems that criterion was reached after 16, 16, 9 and 9 sessions for the four sets respectively. Participant 2: From the graph, it seems that criterion was reached after 20, 16, 13 and 11 sessions for the four sets respectively.
Current study	Three children with limited speech and physical impairments aged 7;9 – 10;8 <b>Diagnoses:</b> Cerebral palsy (spastic quadriplegia), spastic quadriplegia following near-drowning <b>Receptive language (ESL):</b> age equivalent 2;11-4;0 (CELF); 2;6-5;0	Multiple probe design across three different types of semantic combinations	21 PCS and hand-drawn symbols on a communication board. Symbols were arranged according to the Fitzgerald key and the background of each symbol was	Matrix structure of 15 target items and 15 generalization items was used (5 of each for each type of combination)	Target and generalization items produced by pointing to at least both target graphic symbols in any order on the	Intervention effect shown for one participant, with two participants displaying low or questionable effect based on IRD, PND, trend, level and level change. Generalization occurred in	Due to setting a teaching criterion of 9 sessions, this is difficult to determine. Learning criterion reached by Participant 1 after

Authors and date	Participants: Age and diagnosis	Design	Materials	Treatment	Measurement	Results	
						Effect	Efficiency
	(PPVT) , borderline to profound delay <i>Speech intelligibility</i> : I-ASCC(no context condition): 0-13% <i>Expressive language</i> : 158-189 concepts (adapted LDS) <i>Motor skills</i> : Two with significant impairments (wheelchair-bound), one of which without independent mobility. One with moderate impairment <i>Previous experience with aided AAC</i> : Two with limited exposure, one with no exposure.		colour-coded.	was used. Researcher taught the target combinations during the joint reading of three stories. Communication board with 21 items was used.	communication board provided in response to a picture and question/mand.	correspondence to the intervention effect. Post-intervention maintenance was measured on two of the three semantic relations targeted and demonstrated for the participant who also showed a clear effect of the intervention.	3, 9, and 3 sessions; by Participant 2 after 7 and 3 sessions (not reached on the first semantic relation); by Participant 3 after 3 sessions (not reached on first and last semantic relation).

*Note.* TACL-3 = Test of Auditory Comprehension of Language (3<sup>rd</sup> edition); CDI = MacArthur Communicative Development Inventory