CHAPTER 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

The focus of this study has been the question of whether the variable of speech output, as a feature of the output mode of a communication device, has an effect on the attitudes of unfamiliar peers. In this chapter the research methodology used in the study is discussed. The aims of the study are identified first, followed by an analysis of the research design. A brief description of the pilot study, including the results and recommendations, is presented. Finally, the main study is described according to the subjects, the material and equipment used, the ethical issues, the data collection procedures and the data analysis and statistical procedures utilised. The Communication aid/Device Attitude Questionnaire (CADAQ) scale developed by the researcher is discussed in detail within the description of materials and equipment used.

3.2 AIMS

3.2.1 Primary aim

The primary aim of the study was to investigate whether the type of augmentative communication output technique, specifically voice output, had an effect on the attitudes of children, 11 – 13 years years of age, toward disabled peers with LNFS.

3.2.2 Sub-aims

The sub-aims of this study were:

- To determine the attitudes of children to a peer with physical disabilities and LNFS who uses an alphabet board without voice output.
- To determine the attitudes of children to a peer with physical disabilities and LNFS who uses a communication device with voice output.
- To determine whether the attitudes of boys differed from girls towards a peer with physical disabilities and LNFS who uses an AAC system.
- To establish the internal consistency of the measurement scale, the CADAQ.

3.3 RESEARCH DESIGN

A descriptive survey design was used to compare children's responses to a peer, with physical disabilities and LNFS, depending on whether the peer used an AAC device with voice output or not. The research participants were divided into two groups and exposed to different videotapes of the child with LNFS. Group 1 viewed videotape A in which the child used the device with voice output and Group 2 viewed videotape B in which there was no voice output.

The research procedure required the careful preparation of videotaped recordings of a sample of conversational interaction between a child with physical disabilities and LNFS and a friend. Videotape A showed the child using a VOCA, adapted to resemble an alphabet communication board and with synthetic speech output. Videotape B was a copy of Videotape A, without the synthetic speech output. This strategy resulted in identical visual and conversational content, which effectively eliminated many possible variables.

The research participants, unfamiliar peers aged 11 – 13 years, were considered a homogenous group and class groups were randomly assigned to either Group A or Group B. This was to ensure that the groups were comparable in terms of age, gender, academic achievement and exposure to children with disabilities including LNFS. The groups needed to be comparable in terms of these variables as previous research into attitudes of children to peers with disabilities had shown that these factors influenced children's attitudes to peers with disabilities.

A second requirement of the research was the development of a questionnaire, the CADAQ, to measure the attitudes of unfamiliar peers aged 11 – 13 years, toward a child with disabilities and LNFS. The questionnaire was structured to be sensitive to differences in children's attitudinal responses to different types of AAC devices. Forty items were selected to be field tested in the pilot study. Items that were problematic were deleted and the final questionnaire consisted of 37 items. The research participants completed the questionnaires after they had viewed the designated videotape for their group.

3.4 PILOT STUDY

3.4.1 Objective of the pilot study

The objective of the pilot study was to identify any potential problems in terms of the practicality or feasibility of the proposed research, including:

- any difficulties the participants may have with the language or vocabulary of the questionnaire statements
- any difficulties experienced by the participants in understanding the instructions
- whether the estimated time was adequate
- the suitability of the videotapes
- the coding and scoring of the questionnaires.

3.4.2 Pilot study subjects

Participants consisted of equal numbers of boys and girls aged between 11 years 0 months and 13 years 6 months from Grades 6 and 7 at a co-educational (girls and boys) English medium, Senior Primary school situated in the Inner West Municipal area of Durban, KwaZulu-Natal, South Africa. These subjects were selected to ensure similar educational, home language, socio-economic and geographical status as the main study subjects. This was done to facilitate the identification of possible difficulties, as the pilot study subjects would have a similar understanding of questionnaire statements to the research participants.

3.4.3. Pilot study procedures

The procedures as given for the main study were followed.

3.4.4 Pilot study results and recommendations

The results and recommendations following completion of the pilot study are presented in Table 3.1, in addition to the objectives, materials used and procedures.

Table 3.1: Objectives, Materials Used, Procedures, Results and Recommendations of the Pilot Study

OBJECTIVES	MATERIALS USED	PROCEDURES	RESULTS	RECOMMENDATIONS
1. To identify any difficulties with the language or vocabulary.	CADAQ	Subjects were encouraged to question any word they did not understand. Teachers were requested to check whether language and vocabulary were appropriate.	No questions were raised during the presentation. In discussion pupils were able correctly to define terms such as communication & frustration.	That the wording of the statements not be altered for the main study. No changes of vocabulary were indicated.
2. To determine if instructions were readily understood especially by the second language learners.	Instructions prior to screening of videotape. Instructions prior to completing CADAQ.	The Principal introduced the researcher and stressed the importance of correct answers. Subjects had to confirm whether instructions were understood.	Possible influence on pupil to give socially correct answer rather than their own view. Subjects understood instructions.	That a short introduction be prepared to achieve conformity between groups and to ensure participants give own views. No change to instructions. Researcher to memorise these to avoid reading them.
3. To determine whether estimated time was adequate.	Videotapes CADAQ	Researcher to time each phase of the procedure. Careful observation of subjects to determine time required for completing each statement. Determine time required for discussion and question time.	Initial trial items took longer than expected. It was necessary to proceed at the pace of the slower subjects. Some subjects noted to proceed ahead. Far exceeded time allocated for discussion and questions at end.	That more time be allocated to allow for clarity on trial items. Main study subjects to be requested not to work on ahead. Two questions (paraphrased items) to be eliminated to shorten questionnaire. In discussion with teachers the discussion time was extended.
4. To evaluate the suitability of the videotapes.	Videotapes	Observation of pilot study subjects during viewing. Evaluate pupils' questions. Discussion with teachers.	Background noises on tapes was evident and distracting. All letters not clearly in focus. Conversation lacked flow. Pupils questioned whether child in video was "real".	That videotape be re-filmed in quieter environment to prevent extraneous noises and to ensure all letters in focus. Film continuous extract of conversation to prevent disruptive effects of editing. Video to include short introductory view of child from front so that pupils would not doubt the existence of the child
5. To evaluate the coding of the CADAQ.	CADAC	The questionnaires were scored.	There were two possible interpretations for responses to the statement "I feel sorry for Alan" in that the agree or disagree could both indicate positive attitudes.	That this statement be eliminated from the final questionnaire.

3.4.5 Summary

Following the pilot study the videotapes were re-filmed, and three statements deleted from the questionnaire. The order of some of the statements was changed to ensure that rephrased pairs were widely spaced. (See Appendix A for the questionnaire as used in the pilot study).

3.5 MAIN STUDY

3.5.1 Sampling strategy

Purposive sampling, a non-probability sampling procedure, was utilised by the study (Dooley 1995) as the subjects were selected according to their age and grade level as well as for reasons of geographical convenience. This was in accordance with the characteristic of a descriptive survey that the population must be deliberately chosen, precisely defined and explicitly circumscribed to ensure precise parameters (Leedy 1985).

Four class groups, two Grade 6 and two Grade 7 classes, were selected by the Head of the Grade 7 Department at the school to take part in the study. One Grade 6 and one Grade 7 class were combined to form Group 1. The remaining classes (the other Grade 6 and Grade 7 class) were combined to form Group 2 of the study. The two groups were considered by the teachers and Head of Grade 7 to be comparable in terms of the range of ages, academic performance and understanding of spoken English. Classes also consisted of near equal numbers of girls and boys.

Although the pupils in these groups were not randomly selected from the total population of all the Grade 6 and 7 pupils in the school, the teachers and the head of Grade 7 considered them to be sufficiently representative of the Grade 6 and 7 pupils for the purpose of this study.

3.5.2. Subject selection criteria

The subjects were selected according to the following criteria:

- Age: Pupils aged between 11 years 0 months and 13 years 6 months. This age was chosen as the child with disabilities and LNFS in the videotape was 13 years 1 month at

the time of filming. Other pupils, also unfamiliar peers, had rated a photograph of this child as being between 11 – 12 years of age. He would, therefore, be accepted as a peer.

- Grade Level: Pupils in Grades 6 or 7. Pupils in these grades would normally fall within the selected age criteria.

- Parental Consent: Only pupils who had submitted a signed consent form from their parents to take part in the study were included. This constituted 96% of possible participants as 5 male pupils of the total of 127 pupils had failed to return consent forms. No forms were returned withholding permission for pupils to participate.

- Language: Only pupils receiving their education in English were included. This criterion included children of different home languages: 94.49% of the pupils were from families whose mother-tongue was English, 7 pupils (5.51%) were from families where the mother tongue was not English. Of these, 5 pupils came from Zulu speaking families, 1 from an Afrikaans speaking family and 1 from a family where Polish was the home language.

- Academic Performance: The class teachers and head of department for Grade 7 had rated these children as having an adequate knowledge of language and vocabulary to understand the questionnaire statements. These criteria excluded pupils from remedial classes. However, children with reading difficulties were not excluded, as each statement was read to the group. No additional criteria, such as behaviour or emotional status, were considered as the study was aimed at describing the responses of an average peer group.

3.5.3 Description of subjects

The participants of both groups were from a co-educational (girls and boys) Senior Primary school in the Inner West Area of Durban, KwaZulu-Natal, South Africa. The medium of instruction at the school was English. Pupils were encouraged to ask questions if a statement was not understood in order to accommodate those pupils whose home language was not English. The pupils were generally from a middle class socio-economic background. The school was a mainstream school where children with severe disabilities were not integrated.

3.5.4 Subjects' biographical data

The total number of participants was 115. Fifty-seven participants comprised Group 1 and these pupils watched Videotape A of the child with LNFS using the device with voice output. The fifty-eight participants of Group 2 watched Videotape B of the child with LNFS using the device without voice output. The composition of the two groups was very similar as represented in Figure 3.1 and Figure 3.2 below.

Figure 3.1: Gender distribution of the groups.

Figure 3.1 indicates that in Group 1, of a total of 57, 31 participants (54%) were girls and 26 (46%) were boys and that of the 58 participants in Group 2, 32 (55%) were girls and 26 (45%) were boys.

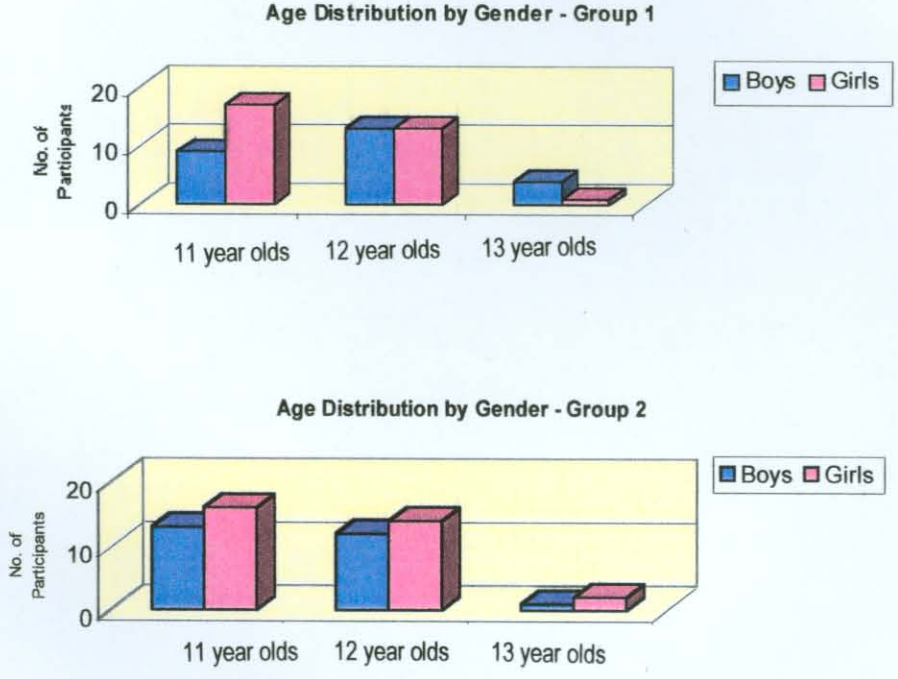

Figure 3.2: Age distribution by gender of the main study participants.

Figure 3.2 reveals that in Group 1, 26 participants were eleven years old (17 girls and 9 boys); 26 subjects were twelve years old (13 girls and 13 boys); and 5 subjects were thirteen years old (1 girl and 4 boys). The age distribution of Group 2 included 29 eleven-year-old subjects (16 girls and 13 boys); 26 twelve-year-old subjects (14 girls and 12 boys); and 3 thirteen-year-old subjects (2 girls and 1 boy).

3.5.5 Materials and equipment

The measuring instrument and the videotapes used in the main study are discussed in detail.

3.5.5.1 Rationale for the development of the survey instrument: the CADAQ

The need to develop a questionnaire to survey the attitudes of peers to a disabled child with LNFS who uses an AAC device was briefly discussed in the literature survey. Relevance to the research objective was the guiding principle in the development of the questionnaire. The questionnaire was based partly on the CATCH, developed by Rosenbaum *et al.* (1986) and partly on a questionnaire of communicative competence, developed by Bedrosian *et al.* (1992).

The CATCH was developed for children aged 9 to 13 years and consists of 36 items with equal numbers of positively and negatively worded statements (Rosenbaum *et al.* 1986). The CATCH was based on the three-dimensional model of attitude formation, namely that attitudes consist of interrelated affective, behavioural intent and cognitive components (Rosenbaum *et al.* 1986).

Construct validity was demonstrated by the confirmation of several hypotheses (Rosenbaum *et al.* 1986). Statistical procedures including factor analysis, coefficient alpha calculations and analysis of variance confirmed that the psychometric properties of the CATCH included acceptable internal consistency, reliability and test-retest reliability (Rosenbaum *et al.* 1986). In addition, good variability of total and factor scores was demonstrated for the CATCH (Rosenbaum *et al.* 1986).

However, the sensitivity of the CATCH to measure the differences in attitudes of peers dependent on the type of AAC aid used by the disabled peer was questioned by Beck and Dennis (1996). The CATCH is a generalised scale in that all the statements refer to a

'handicapped child' (Rosenbaum *et al.* 1986 p. 524). As children's attitudes to disabilities are considered to be less differentiated than those of adults, a generalised scale may not be sufficiently discriminating of the more subtle divergences in attitudes due to minor differences of the disability or the AAC aid used (Beck & Dennis 1996).

The significance of a child's communicative competence and the negative attitudes toward children with communication difficulties in the formation of initial peer attitudes have been highlighted. At the time of this study no valid questionnaires for evaluating peers' perceptions of the communicative competence of children using AAC devices were available. Questions were, therefore, specifically formulated for inclusion in the CADAQ to assess the communicative competence of the child with disabilities and LNFS. Many of these questions were based on the questionnaire designed by Bedrosian and Hoag, to measure the communicative competence of an adult AAC system user (Bedrosian *et al.* 1992).

The above study had proposed to verify the effect of three variables on perceptions of communicative competence in adult AAC users (Bedrosian *et al.* 1992). The variables selected were the length of the aided message, partner reauditorization and the background of the observer e.g. familiarity with AAC users (Bedrosian *et al.* 1992). Content validity was confirmed by a third author of the study, Stephen Calculator (Bedrosian *et al.* 1992). The preliminary questionnaire, consisting of 32 items, was field tested and redundant and inappropriate items were deleted (Bedrosian *et al.* 1992). The final questionnaire consisted of 30 items which were rated on a 5 point Likert-type scale. Results of estimating the reliability in terms of the internal consistency of the questionnaire were cited as a Cronbach alpha of .94 (Bedrosian *et al.* 1992).

The development of an attitude scale designed to detect differences in children's attitudes to AAC users has been recommended (Beck & Dennis 1996). The development of the CADAQ was an attempt to meet this need.

3.5.5.2 The structure of the CADAQ

The CADAQ was designed for children, aged 11 – 13 years. Teachers of Grades 6 and 7 rated the statements as applicable and relevant to the experiences of children of that age group. The teachers also rated the vocabulary and grammar as appropriate but suggested that the

statements be read to the participants by the researcher due to fact that children with specific reading difficulties may be present in Grade 6 and 7 classes.

In the CADAQ, belief statements were written so that agreement represented either a favourable or unfavourable attitude with respect to the variable being assessed. (Likert in Soto 1997). To prevent the acquiescence type of response, half of the questions in the attitude scale were worded in a positive form and half in a negative form. Closed questions were formulated to facilitate ease of completion and to encourage greater co-operation from the participants. For the same reasons individual statements were kept short and checked for ambiguity. The items were arranged in a random order and participants were asked to tick one of the following five response options with respect to each item on the questionnaire: I strongly agree, I agree, I can't decide, I disagree, I strongly disagree.

The survey was also structured to measure the biographic (demographic) differences in age and gender of the participants. Participants were required to complete questions regarding these biographical data to facilitate ease of analysis.

3.5.5.3 The content of the CADAQ

The questionnaire consisted of 37 statements to measure the following three dimensions:

- The affective/behavioural component of attitudes (i.e. the feelings and intent to take action on feelings by peers about a child with disabilities including LNFS), which is referred to by Gorenflo & Gorenflo (1991) as the interactive/affective factor of attitudes.
- The cognitive component of attitudes (i.e. the beliefs of the peers about a child with disabilities including LNFS), which is referred to by Gorenflo & Gorenflo (1991) as a general evaluation of the person with LNFS.
- The communicative competence evaluation.

(See Appendix B for the CADAQ as used in the main study).

The thirteen statements that make up the affective/behavioural dimension are presented in Table 3.2. Statements 6, 9, 13, and 15 are considered to reflect a strong affective response, while statements 10, 12, 16, 18, 21, 28, 31 and 37 have a stronger behavioural connotation.

Table 3.2 **The affective/behavioural dimension of the CADAQ.**

Affective/Behavioural Components		
No.	**Questionnaire Statement**	**Rationale for Inclusion**
6	I would worry if Alan sat next to me in class.	Pupils, aged 11 – 13 years, consider who sits next to them as being an important and emotive issue. They want to be seated next to friends or a popular member of the class.
9	I would be scared to talk to Alan.	Included to measure the overall emotive response to communicating with a peer with disabilities and LNFS.
13	I would be embarrassed to communicate like Alan does.	Including to elicit the peers' affective response to the AAC technique used by the video subject.
15	It would be fun to talk to Alan.	Similar to No. 9 but stated in a positive way.
26	I feel upset when I see how Alan has to 'talk'.	Included to determine the peers' emotional response to the video subject based on the AAC system used.
10	I would like to talk to Alan.	Included to measure the willingness (behavioural aspect) of the peer to interact with the child with disabilities and LNFS.
12	I would tell my secrets to Alan.	Sharing secrets is considered an important social transaction by children of this age group. Being prepared to tell secrets to the peer with LNFS indicates both an affective and behavioural aspect.
16	Alan would be unwelcome at my birthday party.	The peer pressures of the social groups within a class frequently determine whom a child feels he or she should invite to a birthday party. In this age group the invitation list is a powerful social tool.
18	If Alan was in my class I would like to do a project with him.	Grade 6 & 7 pupils choose peers of ' high social status' (pupils they consider popular and/or clever) to do a project with – thus this topic elicits both an emotional and behavioural response.
21	I would try to stay away from Alan if he came to my school.	This statement allows for a negative behavioural response indicating a negative affective response to the child with LNFS.
28	Alan would not be my best friend.	The 'best friend' issue is again an extremely important one for peers of this age group and the statement is, therefore, a valuable reflection of their response to the child with LNFS.
31	I would like to go to 'The Spur' with Alan.	Going out with or being seen in public with the popular peer group members is highly significant to this age group. Conversely, it is most important not to be seen with peers considered 'not socially in' – this statement therefore measures the behavioural intent of the peer to an emotionally evocative situation.
37	I would like Alan to sit next to me in class.	Positively worded paraphrase of No. 6

The eleven statements that make up the cognitive (belief) dimension, with the rationale for including each statement in the CADAQ, are presented in Table 3.3.

Table 3.3 The cognitive dimension of the CADAQ.

Cognitive Components		
No.	**Questionnaire Statement**	**Rationale for Inclusion**
2	Our class works too quickly for Alan.	In Grades 4& 5 pressure is put on pupils to finish academic tasks quickly so this becomes an important aspect by which peers judge performance. This statement, therefore, reflects a valuable belief about the ability of the child with disabilities and LNFS to function.
4	Alan would find it difficult to make friends at my school.	This will indicate the peers' belief in the ability of the child with LNFS to be able to meet the socially important function of making friends. It may also reflect the individual's own or perceived difficulty of making friends at his or her particular school.
8	I think Alan has many friends.	This reveals the peers' general belief about the ability of a child with disabilities and LNFS to make friends.
17	Alan would get teased in our class.	'Teasing ' is an issue to a greater or lesser degree in Grade 6 & 7 classes due to perceived differences of peers and is, therefore, a meaningful measure of the belief of peers about the AAC user.
20	Alan would be popular with the girls.	At puberty (11 – 13 years) popularity with peers of the opposite gender becomes an immensely important issue and this statement is important to elicit the peers belief about the social ability of the child with LNFS to relate to the opposite gender.
25	Alan would need lots of help in the classroom.	Independence in academic and class activities is a crucial goal & outcome of Grade 6 & 7 and this statement reveals the peers' belief about how dependent 'Alan' would be in their classroom.
29	Alan had interesting things to say.	As the videotaped conversation is very short this statement reflects the peers' beliefs of what was said as well as about whether a child with LNFS has topics of interest to discuss with them.
32	Alan most likely comes last in class.	This statement was included to get an idea of the peers' beliefs about the overall functioning of the child with LNFS in the classroom.
33	Alan should be good with computers.	As the topic of the conversation in the videotape was largely about computers this statement will reflect the peers' beliefs about 'Alan's' functioning with regard to computers based on what was discussed.
34	I do not think Alan has much fun.	This statement was included to give an indication of the beliefs of the peers about whether children with physical disabilities and LNFS are able to have fun.
36	Alan needs lots of help to tell a story.	This statement provides a measure of how well the peers believe that the child with LNFS can express himself.

The thirteen statements of the communicative competence dimension are presented in Table 3.4.

Table 3.4: The communicative competence dimension of the CADAQ.

Communicative Competence Components		
No.	**Questionnaire Statement**	**Rationale for Inclusion**
1	Alan took an active part in the conversation.	To give an overall impression of how the peers rated the communicative competence of the child with LNFS.
3	Kim understood everything Alan said.	To determine the peers' perspective on the competence of the child with LNFS to express himself well enough to be understood as well as the competence of the partner to understand the message.
5	If I couldn't speak I would like to communicate like this.	To elicit an evaluative response on how effective the peers rate the AAC system used.
7	I found it easy to understand what Alan meant.	To establish how well peers had understood the conversation, given the output mode of the technique used.
11	There must be better ways for Alan to communicate.	As a further measure of the peer's evaluation of the proficiency of the AAC system used by the child with LNFS.
14	It was easy to understand what Alan was 'saying'.	A paraphrased version of statement No. 7.
19	Alan could not communicate quickly enough.	AAC is always slower than normal speech. This gives an indication of the peers' rating in terms of communication speed achieved by the AAC technique used.
22	Alan was frustrated communicating like that.	To give an indication of the peers' determination of how the child using the AAC system experienced communication.
23	Alan was unable to say what he really wanted to.	To give an idea of the peers' appraisal of the accuracy of the system used to express what the child with LNFS wanted to say.
24	Alan could answer Kim's questions quickly enough.	This determined how well the peers felt the child with LNFS could respond to a communication partner.
27	Kim did not always understand what Alan wanted to say.	A negatively paraphrased version of No. 3.
30	The way Alan communicated with Kim resulted in some misunderstanding.	A rephrased account of statement No. 27.
35	Alan could say exactly what he wanted to.	A positively phrased form of No. 23.

To establish whether the participants were consistent in their attitudes, several questions were worded in both positive and negative statements e.g. *I would worry if Alan sat next to me in class* vs. *I would like Alan to sit next to me in class.* Other statements were paraphrased e.g. *I found it easy to understand what Alan meant* and *It was easy to understand what Alan was 'saying'.*

The CADAQ scale consisted of a 37 item self-report measure using responses on a five point Likert scale. The five point Likert scale of attitude measurement allowed the researcher to study possible patterns of attitude that may exist (Oppenheim 1973).

Scores from 1 to 5 were assigned for each item. As high scores on the scale indicated more positive attitudes and low scores more negative attitudes, positive responses to positive items as well as negative responses to negative items were assigned higher scores, as suggested by Oppenheim (1973). Examples are shown in Table 3.5 below.

Table 3.5: An example of the scoring of positive and negative items on the CADAQ.

Scoring Examples					
	I strongly agree	I agree	I can't decide	I disagree	I strongly disagree
It would be fun to talk to Alan.	5	4	3	2	1
I would not like Alan to be my best friend.	1	2	3	4	5

(See Appendix C for the allocation of scores for all the CADAQ statements.)

3.5.5.4 The rationale of the development of the stimuli material: videotapes

In using a videotape of a child with LNFS the participants were allowed to observe physical and other differences (sanctioned staring) without violating cultural norms against staring at people who are different, and this may have resulted in more positive attitudes due to reducing the discomfort factor (Donaldson 1980).

The rationale behind the development of the videotapes included:

- The isolation of the variable of voice output.

To achieve this only one conversation was filmed. It was filmed with voice output and was nominated as Videotape A. A copy of this videotape was made but the voice output of the DeltaTalker™ was edited out, and this was used as Videotape B. Videotapes A and B are, therefore, identical with the exception that the voice output of the Talker is edited out of

Videotape B. This ensured that the variable of output mode, namely voice output, was isolated and constituted the only difference between the two tapes. This method eliminated additional variables such as differences in conversational content, percentage of time involving aided messages, average length of aided messages etc. The VOCA used is a DeltaTalker™, manufactured by Prentke Romich Co. utilising synthetic speech output in Videotape A.

- Conformity between using an alphabet board and a VOCA.

This was achieved by using the DeltaTalker ™ in spell mode for closer comparison with using an alphabet board and to eliminate the variable of message encoding rate. Furthermore, a special overlay showing only the letters of the alphabet in QWERTY arrangement was used. The letters were printed in upper case, 11mm in height, black on a white background, and were clearly visible on the videotape. The perspex grid of the DeltaTalker™ is also visible and the method of selection used by the AAC user is by direct selection using a headpointer.
(See Appendix D for the overlay used on the DeltaTalker ™.)

3.5.5.5 Description of the videotaped subjects

The child with physical disabilities and LNFS was a thirteen year old male. Cognitively intact, cerebral palsied (severe athetoid) and unable to walk, he was seated in a manual wheelchair during the videotaping. He was from an English-speaking home and as he attended a special school, he was not known to the research participants. He was very familiar with the Delta Talker™. As he had used an alphabet board for several years prior to acquiring his device, and as he had continued to use an alphabet board as an alternative to his device, he was proficient at spelling out his messages.

Kim, the peer, was a slightly older female teenager who had previously met the AAC user on several occasions. Her role on the videotape was that of a conversational partner and she is not seen on the videotape. Only her voice is heard. This strategy maintained the focus on the AAC user and further reduced any possible variables due to her appearance.

3.5.5.6 The process of making the videotapes

The videotape was of a conversation between 'Alan', the thirteen-year-old AAC user, and Kim. At the beginning of the videotape 'Alan' is viewed from the front. He was not wearing his

headpointer and smiled briefly at the camera. This view was included because during the pilot study pupils queried whether the subject of the videotape was 'real'. For the remainder of the videotape the camera was positioned above and behind 'Alan's' left shoulder. In the videotape 'Alan's' shoulder, the left side of his head and helmet, as well as the headpointer and the communication device, were visible. The letters he accessed were clearly visible. (See Appendix E for a transcript of the videotaped conversation.) The videotape was filmed using a NS5 SVHS Panasonic™ camera on a Techoni™ Super High Grade Videotape. It was copied and the voice output of the talker edited out on a non-linear digital edit system.

3.5.6 Ethical issues

Informed voluntary consent was obtained from both the disabled subject and the peer who were videotaped. The identity of the AAC user was protected, as he is only referred to by a pseudonym. The purpose of the research, the exact procedures involved in making the videotapes, the use of the tapes and who would see the tapes were carefully explained to the AAC user and the peer. In addition, written consent was obtained from their parents, principal of the school and the KwaZulu-Natal Educational Department. (See Appendix F for the letter of consent from the principal.)

In addition the disabled subject, his parents and the peer viewed the edited videotapes before they were used in the research and had the right to withdraw their permission at any stage of the research. The videotapes were used only for the purpose of the research and a signed release was obtained from the parents of the subjects.

The privacy and confidentiality of both the videotape subjects and research study participants were strictly maintained. The face of the AAC user was visible but he was not known to the participants. Written consent for the participants who took part in the pilot and final studies was solicited and obtained from their parents, the principals of their schools, and the Kwa-Zulu Natal Educational authority. (See Appendix G for a copy of the letter sent to the principal of the School and Appendix H for the parental consent letter and reply form.)

3.5.7 Data collection procedures

3.5.7.1 Environment

The video was screened and the questionnaires completed in the school's group teaching facility. This facility was familiar to the pupils and highly suitable for the purpose as:

- it easily accommodated the two classes making up each study group
- the tiered seating and large screen of the episcope meant that all the pupils had an excellent view of the videotape
- the controlled environment meant the room was well ventilated but background noise and visual distractions were minimal
- the pupils were comfortably seated and had a suitable writing surface immediately in front of them on which to complete the questionnaires.

3.5.7.2 Data collection

- Four class groups, two Grade 6 and two Grade 7 classes from the same school, were selected by the Head of Department for Grade 7 to take part in the study. One Grade 6 and one Grade 7 class were randomly assigned to form Group 1. This group consisted of 60 pupils.
- A second Grade 6 and a second Grade 7 class were combined to form Group 2 of the study. Group 2 consisted of 62 pupils.
- Both groups completed the study on the same day to ensure no discussion took place between the participants.
- Both groups were seen in the morning before recess to minimise possible fatigue by other activities. Group 1 was seen from 8:45am to 9:45am and Group 2 from 10:00am to 11am.
- The study was carried out by the researcher who was introduced to each group by the Head of Department for Grade 7 at the school. The following short introduction was

identical for both groups: 'I would like to welcome Margi Lilienfeld to our school. She is a therapist at the Browns' School and is presently doing a research project. You are going to assist in this research by answering a questionnaire after you have watched a video'.

- The researcher then gave the following instructions to each group of participants: 'As part of your theme on disability awareness you are about to watch a 5 minute video of Alan, a physically disabled boy who is in Grade 6 at the school where I work. In the video, Alan is chatting to his new friend, Kim. Due to his disability Alan is not able to speak clearly and he communicates in other ways. All I ask is that you do not discuss the video with your friends while we are watching it and remember to watch it carefully as you are going to answer some questions when we have finished watching it'.

- The videotape was then screened. Group 1 watched Videotape A whereas Group 2 watched Videotape B.

- The participants were then given the following instructions: 'I am now going to hand out the questionnaires and pencils. Please don't chat about the video until all the questions have been answered. You will then be able to ask me any questions you want to about Alan. In the meantime you can tick the block next to your age and whether you are a boy or girl. Please don't write your name on the questionnaires and neither your teachers nor I will know which one is your questionnaire. Remember, there are no right or wrong answers and this is not for marks. I want you to think about the video while you answer the questions. I will read each question and you must tick the answer that best shows how you feel. Please make only one tick per question and don't leave any questions out. Let's start with the first example....'

- The two trial items were then presented and the participants indicated they understood what was required. One trial item was positively stated and one negatively stated.

- The researcher then read each of the 37 statements of the questionnaire aloud.

- At the completion of reading the last statement the researcher requested that the children check that all questions had been responded to before the questionnaires were collected. This was to minimise the problem of incomplete questionnaires.

- The participants were then thanked and their questions regarding AAC or the issues of peers with disabilities involving LNFS were addressed.

- The introduction, videotape screening and administration of the questionnaire took 35 minutes and the remaining 25 minutes was used for discussion of the participants' questions.

- During the completion of the questionnaire the researcher observed the children. No instances of collaboration or copying were noted.

- After scoring the data, the results were analysed according to aims and objectives of the study.

3.5.8 Statistical analysis

The procedures used and the motivation for their selection are presented in Table 3.6.

Table 3.6: Statistical procedures selected

STATISTICAL PROCEDURES SELECTED		
STATISTICAL PROCEDURE	**MOTIVATION FOR SELECTION**	**TO ADDRESS:**
1. Mean score: The mean of the total scores on the CADAQ and for each of the 3 dimensions of the CADAQ was calculated for each group as well as the mean for the total of the girls' and the boys' scores within each group.	As the least variable measure of central tendency the mean was selected above the mode or median to give an estimate of the population mean. To allow comparison between the mean of the total and dimension scores for Group 1 as compared to Group 2 as well as comparison between the mean of the total scores of girls compared to boys.	Sub-aim 1 Sub-aim 2
2. Standard Deviation: Standard deviations for the total and 3 dimensions were computed for both groups as well as for girls' and boys' scores.	To give an idea of the degree of variance from the mean and to allow for an additional descriptive statistical method of comparing the scores of the two groups as well as the boys and girls with respect to total and dimension scores of the CADAQ.	Sub-aim 1 Sub-aim 2
3. Frequencies: Frequencies for each scoring category (1-5) were calculated for each individual variable.	This allowed for comparison between the two groups for each individual variable according to the actual number and percentage of participants scoring 1, 2, 3, 4 or 5. To allow for comparison of responses to rephrased items as a measure of reliability of participants' responses.	Sub-aim 1 Sub-aim 2
4. Analysis of Variance: An analysis of variance of the total scores and the 3 dimension scores of the CADAQ as well as between the means of the boys and girls. The level of significance $\alpha = 0.05$	To determine if there were differences between the means of the groups (Voice or No-voice) and between the means of the boys and girls as well as to determine if there was any interaction between the independent variables of group and gender.	The primary aim. Sub-aim 3
5. Cronbach Alpha's and scale intercorrelations between the 3 dimensions of the CADAQ	To determine the internal consistency of the scale. To determine the correlations between the 3 sub-divisions (dimensions) of the CADAQ.	Sub-aim 4.
6. Item Analysis:	To determine the internal consistency of the scale.	Sub-aim 4

3.6 SUMMARY

This chapter presented the methodology used in the study. The brief description of the research design was followed by an account of the pilot study, including recommendations for changes in the main study. The main study was discussed according to the sampling strategy, subjects and materials and equipment used in the study. The latter included a detailed description of the development and content of the CADAQ. Finally, the ethical issues, data collection and analysis were reported.