

Det här verket har digitaliserats vid Göteborgs universitetsbibliotek. Alla tryckta texter är OCR-tolkade till maskinläsbar text. Det betyder att du kan söka och kopiera texten från dokumentet. Vissa äldre dokument med dåligt tryck kan vara svåra att OCR-tolka korrekt vilket medför att den OCR-tolkade texten kan innehålla fel och därför bör man visuellt jämföra med verkets bilder för att avgöra vad som är riktigt.

This work has been digitized at Gothenburg University Library. All printed texts have been OCR-processed and converted to machine readable text. This means that you can search and copy text from the document. Some early printed books are hard to OCR-process correctly and the text may contain errors, so one should always visually compare it with the images to determine what is correct.

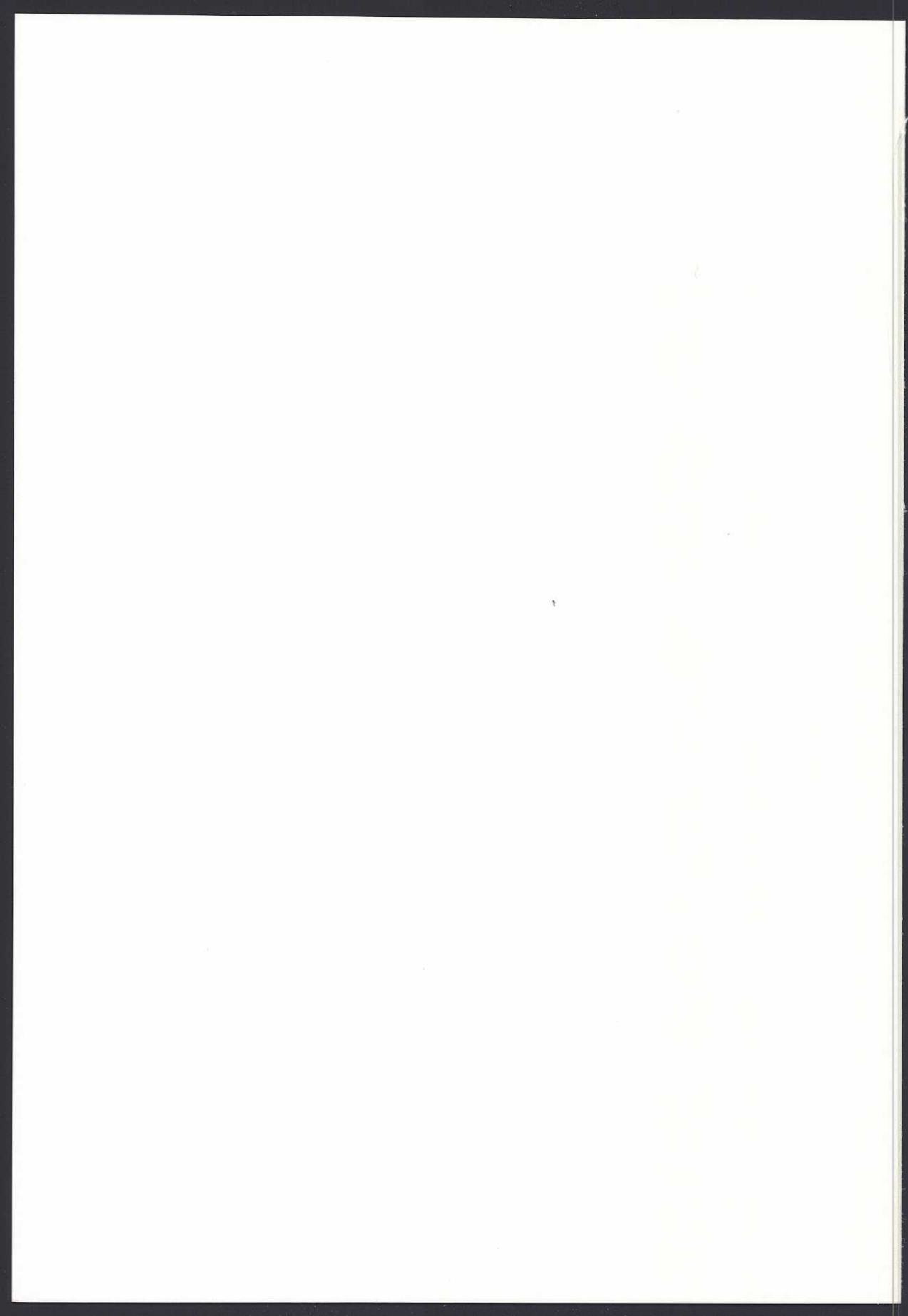


# **USING LANGUAGE IN SOCIAL ACTIVITIES AT HOME**

*a study of interaction between caregivers and children with and without disabilities*

**Ulrika Ferm**

**GOTHENBURG MONOGRAPHS IN LINGUISTICS 31**



## **Using Language in Social Activities at Home**



GOTHENBURG MONOGRAPHS IN LINGUISTICS 31

# Using Language in Social Activities at Home

A Study of Interaction between Caregivers and  
Children with and without Disabilities

Ulrika Ferm



Department of Linguistics  
Göteborg University, Sweden  
2006

This volume is a revised version of the dissertation publicly defended May 5, 2006 for the degree of Doctor of Philosophy

© 2006 Ulrika Ferm  
ISBN 91-975752-4-0  
Printed in Sweden  
Intellecta DocuSys, Göteborg 2006

# Abstract

Doctoral dissertation in general linguistics at Göteborg University, Sweden, 2006

Title: *Using Language in Social Activities at Home: A Study of Interaction between Caregivers and Children with and without Disabilities.*

Author: Ulrika Ferm. Language: English. Department: Department of Linguistics, Göteborg University, Box 200, SE-405 30 Göteborg, Sweden. Series: Gothenburg Monographs in Linguistics 31. ISBN 91-975752-4-0.

The study examines interactions between young school age children with and without disabilities and their caregivers in social activities at home. The purpose of the study is to investigate the relationship between activities and interaction in dyads of caregivers and children with severe restrictions in speech and motor functions, to study the dyads' use of communication aids and to reflect upon possibilities for development of the children's language, cognition and self-identity. Two focus dyads including children with severe impairments and caregivers and two comparison dyads including children without impairments and caregivers participate in the study. The material comprises 38 video recordings of focus and comparison dyads interacting in five activity types, mealtime, game, drawing, teeth brushing and story reading. Different sub-sets of data are involved in four sub-studies that explore how the dyads handle activities, communicate and fulfill different interaction goals. Both quantitative and qualitative methods are used.

The communication of the focus dyads is mostly unaided and is in all respects, except concerning the fulfillment of goals relating to immediate needs and intimacy, more restricted than communication in the comparison dyads. There is cooperation and success within the focus dyads with respect to the perceptually salient, but communication rarely extends beyond the here and now. In this regard, use of Blissymbolics makes a difference. In particular, the focus dyads are disadvantaged in relation to the activities (mealtime, drawing and teeth brushing) that offer the comparison dyads the best opportunities to engage in extended discourse. The focus children function within developmental zones that do not match their cognitive capabilities. Focus caregivers guide their children concerning existing functions but offer little guidance towards more challenging communication. Focus children, in contrast to comparison children, have few means to guide their own participation. Use of Blissymbolics enables communication that may not be possible using natural communication modes only. However, in some activities it may not be relevant to use a communication aid. The present analyses suggest that apart from integrating communication aids with naturally occurring activities, dyads like the present focus dyads need to construct activities that primarily focus on communication.

Keywords: child-caregiver interaction, home, severe speech and physical impairments, disability, augmentative and alternative communication (AAC), Blissymbolics, activity types, communicative content, conversational topics, person reference, interaction patterns, interaction goals





## Acknowledgments

Special thanks to the children and caregivers for their generous participation and for accepting the kind of intrusion to private life that this kind of research inevitably involves.

I thank my advisor Professor Elisabeth Ahlsén, Department of Linguistics, Göteborg University, for much support over the years. I also am thankful for support from my co-advisor Professor Eva Björck-Åkesson, Department of Social Sciences, Mälardalen University.

Thanks to Ulla Blomqvist, Department of Mathematics, Chalmers Lindholmen, for assistance with numbers and for friendly meetings, Gloria Soto, College of Education, San Francisco, for valuable comments on the work in the early stages of writing, Shirley Nicholson and Marie Müller for help with literature and Genie Perdin for proofreading the manuscript. I am indebted for other reasons to Leif Grönqvist, Björn Harström, Eva Holmqvist, Göran Horneman, Lage Persson, Bitte Rydeman, Lotta Saldert, Bodil Tholén, Alli-Marie Tuominen Eriksson, Birgit Wastenson and Jan Öh.

I have appreciated participating in lectures and seminars at the department and thank Magnus, Staffan, Nataliya, Cajsa, Anneli, Elin, Helene, Måns, Anki, Sylvana, Jonas, Ylva, Ulla, Sören, Åsa, Sally Boyd and others, for interesting discussions and support in general. Thanks to Jens Allwood for introducing me to pragmatics, and to Torbjörn Lager for nourishing talks in the corridor!

I thank Gunilla Thunberg for a long and stimulating AAC-partnership and for being a warm and inspiring friend, in private and at work.

Many thanks to the DART folks for welcoming me back, Katarina Mühlenbock for being so considerate and Elisabeth Martinsen for supporting me in my PhD plans from the beginning.

For talks and walks, which I could not have done without, I thank Ingrid Behrns, Marie Dahl, Stina Ericsson and Margareta Malm.

Other close friends and family have also contributed to this work. My mother in particular has supported me in various ways. For this, I am grateful.

Örjan, Samuel and Hilda, you are the most important. I have learnt that it is not always very interesting (put mildly) to stand by my side and that, waiting is quite a tiring activity; it may have seemed like an eternity. In the future, there will be less *I will be ready soon*, more fruitful dinner table conversations and more time for different social activities. I thank you for coping with the situation and for your understanding and love!

The work was funded by the Faculty of Arts, Göteborg University, the Swedish Foundation for Health Care Sciences and Allergy Research (Vårdalstiftelsen), and the Committee for Mental and Physical Disabilities in Region Västra Götaland (FoU Handikappkommittén). The study also received financial support from The Helge Ax:son Johnson's Foundation, Wilhelm and Martina Lundgren's Fund for Science, and the Solstickan Foundation.



## **Publication information**

The monograph consists of four sub-studies. One of the sub-studies has been published in *Augmentative and Alternative Communication (AAC)*, the official journal of the International Society for Augmentative and Alternative Communication (ISAAC). A modified version of the paper is included in the thesis with kind permission from Taylor & Francis Ltd.

The AAC reference to the sub-study on *Conversational Topics at Mealtime* is:

Ferm, U., Ahlsén, E., & Björck-Åkesson, E. (2005). Conversational Topics Between a Child with Complex Communication Needs and her Caregiver at Mealtime. *Augmentative and Alternative Communication*, 21, 19-40.

# Table of Contents

<b>1 Overview of Thesis .....</b>	<b>1</b>
1.1 Introduction .....	1
1.2 General Purposes .....	4
1.3 Data and Sub-Studies .....	4
1.4 Augmentative and Alternative Communication .....	5
1.5 International Classification of Functioning, Disability and Health .....	7
1.6 Terminological Considerations .....	9
1.7 Outline of the Remainder of the Thesis .....	10
<b>2 Background .....</b>	<b>12</b>
2.1 Theoretical Points of Departure .....	12
2.2 Social Activity – A Natural Basis for the Study of Interaction .....	18
2.2.1 Activity-based communication analysis .....	21
2.3 Interaction Phenomena Focused on in the Study .....	23
2.3.1 Interaction goals .....	23
2.3.2 Communicative content .....	29
2.3.2.1 Content of young children's interactions .....	30
2.3.2.2 Some notes on the analysis of communicative content.....	34
2.3.2.3 Content of interactions involving preschool and young school age children without disabilities .....	38
2.3.2.4 Content of interactions involving children who use AAC..	40
2.3.3 Patterns of interaction .....	48
2.4 Interaction between Children and Caregivers in Social Activities at Home....	51
2.4.1 Social activities examined in the study .....	54
2.5 Analyzing Interaction .....	63
<b>3 Specific Purposes and Research Questions .....</b>	<b>67</b>
3.1 Conversational Topics at Mealtime .....	67
3.2 Mealtimes and Patterns of Interaction .....	67
3.3 Referring to People in Different Activities .....	68
3.4 Content and Goals in Naturalistic Communication with Blissymbolics .....	68
<b>4 Methods .....</b>	<b>70</b>
4.1 General Procedures .....	70
4.1.1 Set up of study .....	70
4.1.1.1 Ethical considerations .....	75
4.1.2 Participants – Dyads .....	75
4.1.2.1 Focus dyad 1 – FD1 .....	76
4.1.2.2 Comparison dyad 1 – CD1 .....	78
4.1.2.3 Focus dyad 2 – FD2 .....	79
4.1.2.4 Comparison dyad 2 – CD2 .....	82

	4.1.2.5	Comments .....	83
4.1.3		Material – Interaction samples .....	84
4.1.4		Transcription .....	85
4.1.5		Data analysis .....	87
4.1.6		Statistical methods .....	88
4.2		Specific Procedures .....	88
	4.2.1	Conversational topics at mealtime .....	88
		4.2.1.1 Participants and material .....	88
		4.2.1.2 Data analysis .....	88
		4.2.1.3 Statistical method .....	91
		4.2.1.4 Interobserver agreement .....	91
	4.2.2	Mealtimes and patterns of interaction .....	92
		4.2.2.1 Participants and material .....	92
		4.2.2.2 Data analysis .....	93
		4.2.2.3 Statistical method .....	94
		4.2.2.4 Interobserver agreement .....	95
	4.2.3	Referring to people in different activities .....	95
		4.2.3.1 Participants and material .....	95
		4.2.3.2 Data analysis .....	97
		4.2.3.3 Statistical method .....	102
		4.2.3.4 Interobserver agreement .....	103
	4.2.4	Content and goals in naturalistic communication with Blissymbolics .....	105
		4.2.4.1 Participants and material .....	105
		4.2.4.2 Data analysis .....	106
		4.2.4.3 Interobserver agreement .....	109

## **5 Results ..... 112**

5.1		Conversational Topics at Mealtime .....	112
	5.1.1	Influencing contextual background factors .....	112
		5.1.1.1 Collective factors .....	112
		5.1.1.2 Individual factors .....	113
	5.1.2	Influenced linguistic factors .....	114
		5.1.2.1 General linguistic features .....	114
		5.1.2.2 Focus child's tokens, types and meanings .....	115
		5.1.2.3 Conversational topics .....	115
	5.1.3	Summary .....	127
5.2		Mealtimes and Patterns of Interaction .....	128
	5.2.1	Influencing contextual background factors .....	128
	5.2.2	Influenced linguistic factors .....	128
		5.2.2.1 Frequency of pauses and overlaps .....	129
		5.2.2.2 Pauses and overlaps in interaction .....	132
	5.2.3	Summary .....	139
5.3		Referring to People in Different Activities .....	139
	5.3.1	Activities .....	140
		5.3.1.1 Mealtime .....	140
		5.3.1.2 Game .....	140
		5.3.1.3 Drawing .....	141

	5.3.1.4	Teeth brushing .....	142
	5.3.1.5	Story reading .....	143
5.3.2		Person reference .....	144
	5.3.2.1	Frequency of person reference .....	144
	5.3.2.2	Categories of person reference .....	146
	5.3.2.3	Reference to present and non-present person .....	152
5.3.3		Summary .....	157
5.4		Content and Goals in Naturalistic Communication with Blissymbolics .....	158
5.4.1		The situations of Bliss-board usage.....	159
	5.4.1.1	Bliss-board communication in relation to the game activity .....	159
	5.4.1.2	Bliss-board communication at mealtime .....	159
5.4.2		Characteristics of Bliss-board sequences .....	160
	5.4.2.1	General linguistic features .....	160
	5.4.2.2	Episodes in Bliss-board sequences .....	161
	5.4.2.3	Types of Bliss-words in Bliss-word episodes .....	162
	5.4.2.4	Content of Bliss-word episodes .....	163
5.4.3		Bliss-word episodes versus episodes that did not involve Bliss-words .....	163
	5.4.3.1	Communication about past actions and events .....	164
	5.4.3.2	Communication about future actions and events .....	176
	5.4.3.3	Communication about the state of the mind and body .....	189
	5.4.3.4	World and language .....	196
5.4.4		Summary .....	212

## **6 Discussion ..... 213**

6.1		Mealtime Communication .....	213
	6.1.1	Conversational topics at mealtime .....	213
		6.1.1.1 Answering the research questions .....	213
	6.1.2	Mealtimes and patterns of interaction .....	216
		6.1.2.1 Answering the research questions .....	216
	6.1.3	Summary .....	218
6.2		Referring to People in Different Activities.....	219
	6.2.1	Answering the research questions .....	219
	6.2.2	Relations between activity types and person reference .....	221
	6.2.3	Person reference in the focus dyad .....	229
	6.2.4	Summary .....	232
6.3		Content and Goals in Naturalistic Communication with Blissymbolics .....	233
	6.3.1	Answering the research questions .....	233
	6.3.2	Achievements in Bliss-board communication .....	240
	6.3.3	Summary .....	241
6.4		Clinical Implications .....	242
6.5		Study Limitations .....	250
6.6		General Discussion .....	255
	6.6.1	The focus dyads' situation .....	255
	6.6.2	The relationship between social activities and interaction .....	263
	6.6.3	Use and function of communication aids at home .....	267

<b>7 Contributions of Thesis and Future Research .....</b>	<b>271</b>
7.1 Results in Relation to Previous Work .....	271
7.2 Main Contributions of the Study .....	272
7.3 Future Research .....	275

## References

## Appendices

### A Participants – Dyads

- A1: Characteristics of study participants; focus dyad 1 and comparison dyad 1
- A2: Characteristics of study participants; focus dyad 2 and comparison dyad 2

### B Material – Interaction samples

- B: Corpus data: Specifications of lengths (min: sec), numbers of contributions and numbers of tokens for the activity samples in the study

### C The Chi-square test

- C: The uses of the Chi-square test in the study

### D Meanings, types and tokens for the focus child in FD1 at mealtime

- D1: Specification of interpreted meanings, types and tokens for the focus child in FD1a
- D2: Specification of interpreted meanings, types and tokens for the focus child in FD1b

### E Person reference in FD1 and CD1 in five different activities

- E1: Sequences of speech including person references coded as cited in focus dyad 1 (FD1) and in comparison dyad 1 (CD1)
- E2: Words identified as person references in telephone conversations in focus dyad 1 (FD1) and in comparison dyad 1 (CD1)
- E3: Combinations of words referring to person in the activity samples of focus dyad 1 (FD1) and comparison dyad 1 (CD1)
- E4: Words used to refer to person in focus dyad 1 (FD1); ranked from most to least common
- E5: Words used to refer to person in comparison dyad 1 (CD1); ranked from most to least common
- E6: Words used to refer to person in different categories in focus dyad 1 (FD1)
- E7: Words used to refer to person in different categories in comparison dyad 1 (CD1)
- E8: Words used to refer to person in the activities of focus dyad 1 (FD1) and comparison dyad 1 (CD1)
- E9: Person reference in relation to four groups of categories; present person, non-present person, unspecific and other, across dyads (FD1 & CD1) and activities



E10: Referring to person during drawing; examples from focus dyad 1 (FD1) and comparison dyad 1 (CD1)

**F Bliss-word episodes and episodes that did not involve Bliss-words**

F: Examples of episodes that did not involve Bliss-words in focus dyad 2 (FD2) and focus dyad 1 (FD1)

## List of Tables

Table 1.1	Overview of sub-studies .....	5
Table 4.1	Procedural framework of study .....	70
Table 4.2	Number of topics and topic segments identified by the first observer and the independent observer across samples .....	92
Table 4.3	Length (min: sec) of interaction samples in FD1 and CD1 .....	96
Table 4.4	Contributions and tokens coded for person reference by the independent observer and $\kappa$ -values representing extent of agreement between observers for assignments 1 and 2.....	104
Table 4.5	Number of episodes identified by the first observer and the independent observer across samples .....	110
Table 5.1	Frequency of general linguistic features, topics and topic segments across samples in FD1 and CD1 .....	116
Table 5.2	Types of topics in FD1: frequency of topics, topic segments and lengths; responsibility for initiation of topic segments across samples .....	117
Table 5.3	Types of topics in CD1: frequency of topics, topic segments and lengths; responsibility for initiation of topic segments across samples .....	118
Table 5.4	Frequency of pauses and overlaps across samples in FD1 and CD1 .....	130
Table 5.5	Length of interaction, number and percent of tokens and person references across activity samples in FD1 and CD1 .....	145
Table 5.6	Frequency of person reference across categories and activities in FD1.....	147
Table 5.7	Frequency of person reference across categories and activities in CD1 ....	148
Table 5.8	The three most common categories of person reference in each activity type for FD1 and CD1 .....	151
Table 5.9	Linguistic features of Bliss-board sequences in FD2 .....	161
Table 5.10	Number of episodes about past actions and events in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2 .....	166
Table 5.11	Number of episodes about future actions and events in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2 .....	181
Table 5.12	Number of episodes about the state of the mind and body in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2 .....	196
Table 5.13	Number of episodes coded as world and language in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2 .....	202

# List of Figures

Figure 2.1	The social activity: A simplified picture of the relationship between social activity and interaction for children and caregivers, based on the framework for an activity-based communication analysis (Allwood, 2000) and adapted from Ahlsén (1995) .....	24
Figure 5.1	Number of contributions involved in topic segments related to the ongoing activity and other areas in the focus dyad and in the comparison dyad's interaction samples .....	126
Figure 5.2	Total number of person references in the activities of FD1 and CD1.....	144
Figure 5.3	Reference to present and non-present person, unspecific reference and other reference in the mealtime activity for FD1 and CD1.....	153
Figure 5.4	Reference to present and non-present person, unspecific reference and other reference in the game activity for FD1 and CD1.....	154
Figure 5.5	Reference to present and non-present person, unspecific reference and other reference in the drawing activity for FD1 and CD1.....	155
Figure 5.6	Reference to present and non-present person, unspecific reference and other reference in the teeth brushing activity for FD1 and CD1.....	156
Figure 5.7	Reference to present and non-present person, unspecific reference and other reference in the story reading activity for FD1 and CD1.....	157

# List of Examples

Example 5.1:	<i>Ongoing activity (FD1a)</i> .....	119
Example 5.2:	<i>Food at school today (FD1b)</i> .....	121
Example 5.3:	<i>Movie (FD1b)</i> .....	123
Example 5.4:	Discourse excerpt from FD1b.....	133
Example 5.5:	Discourse excerpt from FD1a.....	134
Example 5.6:	Discourse excerpt from CD1a.....	134
Example 5.7:	Discourse excerpt from CD1a.....	135
Example 5.8:	Discourse excerpt from CD1a.....	135
Example 5.9:	Discourse excerpt from CD1b.....	135
Example 5.10:	Discourse excerpt from FD1a.....	136
Example 5.11:	Discourse excerpt from FD1a.....	137
Example 5.12:	Discourse excerpt from FD1a.....	138
Example 5.13:	Discourse excerpt from CD1a.....	138
Example 5.14:	<i>What did you do at the after-school centre today?</i> (FD2; mealtime-Bliss).....	164
Example 5.15:	<i>What did you do today?</i> (FD2; game-Bliss, no use of Bliss-words).....	167
Example 5.16:	<i>Who attended the party and what type of cake was it?</i> (FD2; mealtime-unaided).....	169
Example 5.17:	<i>Was it good at school today? (FD2; mealtime-unaided)</i> .....	171
Example 5.18:	<i>What did you do in your home-groups at school?</i> (CD1; drawing).....	173
Example 5.19:	<i>Coming to school after having been to the dentist.</i> (CD2; mealtime).....	174
Example 5.20:	<i>Look what happened to me! (CD2; drawing)</i> .....	175
Example 5.21:	<i>What did you do? (CD2; drawing)</i> .....	176
Example 5.22:	<i>What are you going to do tomorrow? (FD2; mealtime-Bliss)</i> .....	177
Example 5.23:	<i>I want to watch a television program.</i> (FD2; mealtime-unaided).....	182
Example 5.24:	<i>What would you like to do at an airport?</i> (FD2; story reading-unaided).....	183
Example 5.25:	<i>Are you going to learn to swim this summer?</i> (FD1; story reading-unaided).....	184
Example 5.26:	<i>Buying presents for your friends. (CD1; drawing)</i> .....	185
Example 5.27:	<i>What am I going to bring to eat for the trip tomorrow?</i> CD2; drawing).....	186
Example 5.28:	<i>I am going to watch this specific television program.</i> (CD2; drawing).....	188
Example 5.29:	<i>Can you give me some salve later? (CD2; teeth brushing)</i> .....	188
Example 5.30:	<i>What mood are you in? (FD2; game-Bliss)</i> .....	190
Example 5.31:	<i>What mood is Tilde in now? (FD2; mealtime-Bliss)</i> .....	195
Example 5.32:	<i>Are your legs cold? (CD2; story reading)</i> .....	196
Example 5.33:	<i>How is the ice cream? (FD2; mealtime-Bliss)</i> .....	198
Example 5.34:	<i>What is it? (FD2; mealtime-Bliss)</i> .....	200

Example 5.35:	<i>Do you know what baldheaded means?</i> (FD2; game-Bliss, unaided part of sample).....	203
Example 5.36:	<i>Do you know what a watchmaker is?</i> (FD2; story reading-unaided).....	203
Example 5.37:	<i>Do you know what a toyshop is?</i> (FD2; story reading-unaided).....	204
Example 5.38:	<i>This is what a lawyer is.</i> (FD2; story reading-unaided).....	204
Example 5.39:	<i>This is what a plumber is.</i> (FD2; story reading-unaided).....	205
Example 5.40:	<i>What kind of car is it and what does it look like?</i> (CD1; mealtime).....	207
Example 5.41:	<i>Rhyming.</i> (CD1; mealtime).....	208
Example 5.42:	<i>What is a washcloth?</i> (CD1; story reading).....	209
Example 5.43:	<i>What is the name for it?</i> (CD2; mealtime).....	210
Example 5.44:	<i>The size of the Panasonic and what is Panasonic?</i> (CD2; mealtime).....	210
Example 5.45:	<i>Were you video recorded as a child?</i> (CD2; drawing).....	211

# Chapter 1

## Overview of Thesis

### 1.1 Introduction

Hasan (2000) claimed that, “participation in talk with others” is “an unavoidable aspect of human life.” (p. 28). This is so only for those people in society who have the ability to talk. For some individuals, talk with other people and participation in social life in general is hindered by disabilities. Children who have severe speech and physical impairments are especially disadvantaged. These children may have good comprehension of spoken language but severely restricted abilities to use vocal language to express themselves and to interact physically with their environment; they depend on others for fulfillment of different communicative goals and thus are at great risk for failing to acquire important developmental building blocks. The focus of this thesis is the communication situation of these children and those who care about them.

The claim made in the thesis is that it is not possible for humans to avoid some kind of involvement in the many different situations that make up daily life. This claim and three other assumptions form the underlying motivation for the work. The first assumption is that all children, regardless of health condition, have the same basic needs for social interaction. The second assumption is that interaction reveals the most relevant information concerning language. Therefore, to a larger extent than has been the case so far, the actual interactions in which children with disabilities are engaged ought to be the focus of attention for research relating to augmentative and alternative communication. The third assumption is that understanding the activity, as performed in the natural environment, is a prerequisite for understanding the opportunities and constraints associated with interaction and therefore, a prerequisite for successful support of caregivers and children with disabilities.

I address the relationship between language use and activity through analyses of interactions between young school age children and caregivers in different social activities at home. Both children with disabilities and children without disabilities participate in the study. The latter were involved in the study for descriptive and comparative purposes rather than normative ones. Six and seven-year-olds were targeted because, as pointed out by Vygotsky (1987), school age has a primary position in a child’s development and is,

“characterized by the richness and complexity of the processes that occur in the development of the child’s word.” (p. 323).

Young school age children are at an interesting point in life both linguistically and dynamically. The foundations for language use and development have been established. Six-year-olds have comprehension vocabularies of approximately 14000 words and word forms (Clark, 1993). They have learnt not only the basic rules of communication but also the more advanced principles that govern face-to-face interaction (Ninio & Snow, 1996). Social cognition has been established to the degree that children of this age are interested in and can take the behaviors, emotions and intentions of others into consideration (Brown & Dunn, 1996; Carpendale & Lewis, 2004; Dunn, 1994). These children have basic knowledge of how to make themselves heard and know how to contribute in relevant ways in every day interaction and play (Blum-Kulka, Huck-Taglicht & Avni, 2004; Ninio & Snow, 1996). At the same time, children in this age group are only in the beginning of a life long process of development. According to Clark, estimates indicate that from ages six to seventeen, children’s vocabularies grow with approximately 3000 words a year, a process that parallels developments in thinking, social and pragmatic functions. Consequently, the primary challenge for children of this age is not to learn new words and their meanings but to learn to communicate effectively in accordance with what is expected in their culture (Ninio & Snow, 1996); social and pragmatic advancements in turn lead to developments in concept and word. With regard to formal learning of language, it is around this age that children are introduced to more structured meta-linguistic exercises, reading and writing. Other changes typical for young school age children are increased physical independence and extended social networks. Both at home and at school, children of this age become more independent in relation to different activities, build new relationships, and learn new interactive rules (Snow & Blum-Kulka, 2002; White & Siegel, 1984). As children extend their social arenas, external expectations concerning language use also change. Such changes in expectations stimulate further development in children.

Because of the major functions that words play in young school age children’s development, children that have severe speech and physical impairments are faced with great difficulties. Words are prerequisites for effective social participation. Participation in different social situations is a prerequisite for learning social and pragmatic skills and, social experiences and involvement in extended discourse are prerequisites for continued

developments in language and cognition, and personal identity. The activity patterns of caregivers and children with severe impairments are greatly influenced by the physical and communicative demands of daily life (Light & Kelford Smith, 1993; Marvin, 1994<sup>1</sup>). In the Light and Kelford Smith study, caregivers of children who used augmentative communication ranked communication but also daily needs such as children's independence in mobility, feeding and toileting as more important than, for example, reading and writing, and making friends. As pointed out by the authors, such ratings of basic routines as important might have reflected parents' perceptions of children's needs as well as their own needs to be relieved of the burdens associated with caring for a child with severe impairments. The studies by Light and Kelford Smith and by Marvin showed that participation of children with severe impairments in different activities at home is restricted, and indicated that for these children participation in talk and extended discourse may not be an assured aspect of daily life.

Physical and communicative independence are fundamentals of young school age children's living. Participation in talk on so-called decontextualized topics in particular is important for children's autonomy and is crucial for children's development in receptive and expressive language and thinking, as well as construction of self-identity and social-cultural identity (Dunn, 1994; Carpendale & Lewis 2004; Falkman, 2005; Garfield, Peterson & Perry, 2001; Nevat-Gal, 2002; Ochs, Taylor, Rudolph & Smith, 1992; Rogoff, 1990; Rogoff & Lave, 1984; Vygotsky, 1978, 1986). In this study, I examine what words are used in interactions between caregivers and children with and without severe speech and physical impairments. I analyze and exemplify the relationship between communication and activity and discuss how the interaction phenomena observed can influence development of young school age children with severe impairments. The themes of the thesis are *activity influence*, *interaction goals*, *communicative content*, *interaction patterns* and *strategies*, *use and function of communication aids*, and *home* as an arena for children's development.

---

<sup>1</sup> Both studies focused literacy but are informative as regards the total activity situation of caregivers and children with disabilities at home.



## **1.2 General Purposes**

The main purpose of the study is to enhance the understanding of how severely restricted functions in speech, major mobility, and fine motor skills may influence a child's physical and communicative experiences in daily living and by extension, a child's development of concepts and language, communication skills and personal and social identity. The study aims to contribute new insights concerning the relationship between social activities and interaction for children with severe impairments and their caregivers, identify communication opportunities, constraints and strategies of activities performed in the home environment and exemplify and explain how physical aspects, structures and goals of activities relate to communicative content, patterns of interaction, and interaction goals. A related general purpose of the study is to investigate the use and function of aided communication in the particular activities focused on in the study. In addressing these purposes, communicative and physical actions by children and caregivers are treated as interdependent and related to other factors of the activity in which they occur (cf. Allwood, 1976, 2000; Linell, 1998; von Tetzchner & Grove, 2003). The dyad and its dynamics are in focus, rather than isolated actions performed by the individual child and the caregiver.

## **1.3 Data and Sub-Studies**

The empirical data used in the study comprise 38 video recordings of four dyads of children and caregivers interacting in five different social activities in the naturalistic context of home. Background data include information provided by each dyad through logbooks and interviews. Two dyads, which form the focus of this study, consist of children with severe speech and physical impairments and their caregivers. The other two dyads, the comparison dyads, include children without speech and physical impairments and their caregivers. Data from the comparison dyads are used to illustrate how the focus dyads meet the challenges posed by the children's disabilities; how they perform different activities and communicate in different ways. The five activity types examined in the study are mealtime, game play, picture drawing, teeth brushing, and story reading. The general purposes of the thesis are addressed in relation to four sub-studies, all of which are conducted within the framework of an activity-based communication analysis (Allwood, 1976, 2000). Both quantitative and qualitative methods are applied. The specific purposes and research questions posed for

each sub-study are specified in Chapter 3. Table 1.1 gives an overview of the four sub-studies.

Table 1.1 Overview of sub-studies

Sub-study	Focus phenomena	Dyads involved	Activity types studied	No. of interaction samples examined
1	Conversational topics Interaction goals	Focus dyad 1 Comparison dyad 1	Mealtime	4
2	Patterns of interaction Interaction goals	Focus dyad 1 Comparison dyad 1	Mealtime	4
3	Person reference Interaction goals	Focus dyad 1 Comparison dyad 1	Mealtime Game Drawing Teeth brushing Story reading	20
4	Content and goals in Bliss-board communication versus unaided and natural communication	Focus dyad 1 Focus dyad 2 Comparison dyad 1 Comparison dyad 2	Mealtime Game Drawing Teeth brushing Story reading	38

## 1.4 Augmentative and Alternative Communication

A child who cannot rely on spoken words in interaction with other people needs complementary methods for communication. Augmentative and alternative communication (AAC) is the umbrella term for the different methods used to enhance a person's possibility to produce, and sometimes to understand, messages in interaction with other people. It is extremely rare that a person does not use her voice and body at all while communicating. From this perspective, augmentative and alternative communication is about complementing already existing communicative functions<sup>2</sup>. The degree to which communication needs to be augmented for comprehension, production, or both, and whether augmentative

<sup>2</sup> The word alternative is unfortunate in that it signals a spoken language bias. An individual's means of communication can never be an alternative for that person but only in relation to the norm of conventional speech. Further, for a specific individual, a communication aid can serve as an alternative with respect to some communicative functions but not to other functions.

communication forms are to be used temporarily or permanently vary between individuals (Martinsen & von Tetzchner, 1996). Further, even if two individuals have similar communication profiles on the surface, on a fine-grained level, no two persons have the same personalities and life situations and, therefore, do not have identical communication needs. Aided communication systems need to be individualized. Common for augmentative communication interventions involving children is the goal to create systems that are effective for everyday interaction, support development and enable formation of personal relationships.

An AAC system is comprised of some or all of the following components. First, there are the signs that a person uses to transmit and/or to understand information (e.g., graphic signs such as pictures, photographs, Blissymbolics, written words and numbers, as well as spoken words, manual signs and gestures). Second, there are the objects and aids that a person uses to communicate. A communication aid can for example be a book or a board on which graphic signs are placed. In using this type of communication aid, the individual needs a second person, often the communication partner, to verbalize the meaning of the graphic signs selected by the individual. There are also communication aids that build on digitized or synthetic speech in which graphic signs are displayed and organized in different ways (e.g., Light et al., 2004; Porter, 2003)<sup>3</sup>. In using a speech-generating aid, the individual is less dependent on a second person in the production of messages. Third, the strategies used by a person to facilitate communication are parts of that person's augmentative communication system. Fourth, the techniques a person uses to communicate and/or to operate the communication aid (e.g., signing, pointing, light pointing or scanning) are parts of that person's communication system<sup>4</sup>.

The graphic sign system used by the focus children in this study is Blissymbolics, the communication aid used in face-to-face interaction is the Bliss-board. Blissymbolics, originally developed by Charles K. Bliss (1897-1985), is a logographic sign system that consists of approximately 4000 Bliss-words that are created out of a number of basic Bliss-characters. Bliss-characters and words can be combined to make new words and utterances

---

<sup>3</sup> Augmentative and alternative communication includes both low and high technology; a person can have both low and high technological aids.

<sup>4</sup> This description of augmentative and alternative communication systems originates from Beukelman and Mirenda (2005) whose text, in turn, built on a paper published by the American Speech-Language-Hearing Association.

(Blissymbolics Communication International, BCI, 2006). In the thesis, I comply with the fundamental rules of Blissymbolics (BCI, 2006) and use the term Bliss-word for the graphic Bliss-sign.

A child's communication aid is worth nothing unless it is used. A major task in intervention is to investigate the child's conditions for interaction, to identify and organize appropriate vocabulary in the child's communication aid and to promote the child's use of the aid so that personal needs are satisfied and development is supported<sup>5</sup>. It is my experience with this task and the many challenges, obstacles and pleasures therein that initially motivated me to carry out this study.

## **1.5 International Classification of Functioning, Disability and Health**

With the increasing use of the International Classification of Functioning, Disability and Health for adults (ICF), and for children and youth (ICF-CY) important steps are taken towards a view of disability, not as a static condition in an individual, but as a process that depends on a combination of factors that for each individual vary with time, place and task. With a focus on activity and participation how, and to what degree, a person takes part in social life is important (Socialstyrelsen, 2003; World Health Organization, WHO, 2001, 2006). Consequently, communication becomes a focal point for describing an individual's level of functioning. The ICF provides practitioners and researchers with a common language to describe and understand health and health-related conditions. A description of how this study relates to the different components that make up the two parts of *functioning* and *disability*, and *contextual factors* in ICF is warranted.

The study consists of analyses and descriptions of health conditions of children with and without severe speech and physical impairments in relation to their interaction with caregivers in different activities at home, placing particular emphasis on communication. The study is in accordance with a main idea of ICF, that the health condition of a child depends on interplay between individual and environmental factors and that this interplay is central to the child's development (cf. Simeonsson et al., 2003). In the study, interaction is

---

<sup>5</sup> An AAC intervention should extend beyond assessment of individual capabilities and system design; it should involve the person who is to use the system as well as those with whom this person lives and has close relationships (Björck-Åkesson, Granlund & Olsson, 1996; Zachrisson, Rydeman & Björck-Åkesson, 2002).

seen as a process between the child and the caregiver on the one hand and between the dyad and the activity on the other hand. Interaction is the real life situation in which it is possible to examine how an individual functions in relation to the tasks and goals of a given situation in light of the force of influencing factors such as body functions. The relationship between *body structures* and *functions* (i.e., the basic means with which children and caregivers can act and interact) and what children and caregivers actually do and communicate about is focused in the thesis.

According to ICF, *activity* refers to a person's execution of specific tasks and actions and *participation* refers to a person's involvement in a life situation. Activity and participation represent two different aspects of a person's health condition<sup>6</sup>. Still, activity and participation make up one component in ICF, the idea being that each aspect shall be considered along the two dimensions of capacity and performance; what a person can do in a standard environment versus what a person does in daily life (Socialstyrelsen, 2003). It is not possible to describe a person's involvement in life without taking his or her own experiences, thoughts, and feelings into consideration (Björck-Åkesson & Granlund, 2004). Participation, in particular, is a process between the individual and the environment and can only be evaluated by the individual herself (see also Almqvist, Eriksson & Granlund, 2004). Nordenfelt (2004) discussed the fact that activity and participation represent two action categories that are not clearly separated in ICF. All actions, and thereby all activity, as defined in ICF, depend on and occur in relation to clusters of circumstances. Actions never occur in a vacuum; there are no context free environments and, from this perspective, no decontextualized skills (see also Rogoff & Lave, 1984). Actions always relate to some kind of involvement in a life situation. According to Nordenfelt, the definitions of activity and participation in ICF, "place complicated restrictions on our possibilities to use its concepts." (p. 57; author's translation). Still, in the application of ICF, and in any other work on functioning and disability, it is important to distinguish between what is meant by activity and participation in ICF, and to have a clear idea of what aspect is in focus in each particular evaluation or description (Björck-Åkesson & Granlund, 2004).

Since actions in relation to different types of activities are examined in this study, not actions in general, it is possible to say that the study examines involvement, and to a more

---

<sup>6</sup> An individual can for example experience participation even if she cannot perform the actions required in a specific situation.

restricted extent, participation in relation to real life situations (Björck-Åkesson & Granlund, 2004). However, it should be clear that what is studied is participation as observed by the analyst and not as experienced by the children and caregivers. The word activity is used differently in this study than in ICF. In the thesis, activity refers exclusively to different types of social activities (see Chapter 2; Section 2.2). The *environmental factors* part of ICF is emphasized in the study. Goals and structures of activities, including the existence and use of communication aids, and the influences of these factors on children and caregivers' communication are discussed. Finally, individual features and personality traits such as motivation, attitude and will are discussed in different places in the thesis.

## 1.6 Terminological Considerations

In writing the thesis, I have reflected over the use of some specific words. Following a decision by the executive committee of the International Society for Augmentative and Alternative Communication (ISAAC), Iacono (2002) proposed some changes in terminology relating to AAC. One proposal was that the term *complex communication needs* should replace terms that refer to body structures and functions (e.g., severe speech and physical impairments). An objection to this change in terminology is that for persons who are not working in the field, as well as for persons who are well acquainted with the field of disability, the term *complex communication needs* reveals little information about whom and what is being focused. The term is not explicit and could be confusing. For anyone who is acquainted with pragmatics the question may even arise as to whose communication needs are not complex. Both complexity and simplicity are main features of any communication. Further, on the contrary to what we want, the term complex communication needs suggests that there is a static relationship between a child's needs and her interactions with the surroundings. The needs of a child with severe impairments, as the needs of a child without disabilities, may be more or less complex depending on for example the difficulty of tasks and depending on whether or not the child has access to her communication aid. The term *complex communication needs* is not used in this thesis. Instead, the term *impairment* is used frequently, in the background and in all other situations where I want to point to the fact that the children in the study have *severe speech and physical impairments*, that is, where it is relevant to focus body structures and functions.

Throughout the thesis, I also use the term *disability* to refer to children's restrictions in performance of communicative and physical actions in different activities. Moreover, the words *severe impairments* and *disability* are used to refer to children whose possibilities for action are influenced by severe restrictions in both speech and mobility, and in fine motor skills. I have refrained from using words such as *disabled*, *impaired* and *nonspeaking* but the latter occurs in relation to presentations of others' research.

*Interaction* and *communication* extend far beyond the use of vocally produced words. The reason for the frequent use of the word *interaction* in the thesis is that this term readily includes vocal communication, any kind of aided communication, and communication with the body, but also other physical actions that may be performed by caregivers and children. As used here, *interaction* include all kinds of communicative and physical actions that, from the perspectives of production, understanding and sharing of information, and fulfillment of physical goals, may have a value within the activities the dyads are carrying out. To me, however, the terms *interaction* and *communication* are largely synonymous and therefore are often used interchangeably in the text. In line with discussions in research on language and gesture, the term *body communication* is used instead of the more ambiguous term *nonverbal communication* (e.g., Ahlsén, 1991; Kendon, 2000; Månsson, 2003). *Conversation*, then, is the language outcome of *interaction* and *communication* and concerns a dyad's use of spoken words and word approximations, *body communication* and *Bliss-words* to share information. The concept of *activity* (i.e., *activity type* and *social activity*) as applied in the present work is described in Chapter 2 (Sections 2.2, 2.2.1 & 2.4). The term *physical action* refers to physical movements by children and caregivers and are considered in all analyses with respect to body functions, tasks, goals and opportunities of the activities in which *interaction* takes place.

## **1.7 Outline of the Remainder of the Thesis**

The remainder of the thesis is organized as follows. Chapter 2, *background*, includes the theoretical framework of the thesis and summarizes previous work of relevance for the study. The *specific purposes and research questions* for each sub-study are specified in Chapter 3. Chapter 4, *methods*, outlines the procedures that pertain to all four sub-studies as well as the procedures used for each sub-study. The *results* of the sub-studies are presented

in Chapter 5. Results are often presented through excerpts of discourse which, in order to make sense, require comments. Hence, to varying degrees, the results also include discussion. In Chapter 6, *discussion*, the research questions are answered and the results of each sub-study are thoroughly discussed, sometimes in relation to interaction data. Clinical implications and study limitations are presented. The results are synthesized and the general purposes are revisited in a *general discussion* (6.6). Finally, in Chapter 7, *contributions of thesis and future research*, the major findings of the study are summarized along with suggestions for future work.



## Chapter 2

### Background

#### 2.1 Theoretical Points of Departure

The thesis draws on theories that acknowledge the relationships that exist between humans, language and context. Some of the theories that are a foundation for this work belong to the tradition of child language and psychology; others are theories that are less commonly associated with the study of the child. All are theories that have made me reflect on social interaction and the situation of children with severe impairments and their close partners in new ways. The foundational ideas for the study are the following.

From infancy, the child-caregiver relationship is interactional in structure. The child and caregiver adapt to each other, co-construct meaning and establish foundations for emotional and cognitive development, learning language and social skills. The infant has an understanding of the physical world and the prerequisite skills for immediate participation. By extracting and integrating physical, linguistic and social information from environmental experiences, the child learns about intentions and pragmatic goals (Bornstein, 1989; Grimm, 1995; Ninio & Snow, 1996; Snow, 1977). Language is founded in the child's experiences of participating in the structured world; meaning construction is regulated through her interactions in social contexts (Tomasello, 2001). There is reason to believe that there are bi-directional influences between linguistic and nonlinguistic cognitive development and it is relevant to consider not only how cognitive development constrains and supports language acquisition, but also in what ways language has a regulatory and transformative role in cognitive development (Bowerman & Levinson, 2001; Tomasello, 2001; Vygotsky, 1986). As language develops and a child's interactions with the world broaden, language stimulates both its own development and development of cognition. Whether mediated through natural speech or by other linguistic means, words are functionally multidimensional. They are the means by which a child can construe, organize, maintain and stimulate concepts and thinking. At the same time, words are social devices that the child can use to inform others and comprehend the world, thereby creating an identity and a self. As the child gets older, concepts and word meanings will continue to change as a result of dynamic processes established in, and developed through, the child's physical and social interactions with the world (Allwood, 1999; Johnson, 1987; Lakoff, 1988; Vygotsky, 1978,

1986). The role social interaction comes to play in the child's development depends on both the active role of the child and on how interaction partners behave independently as well as in response to the child (Rogoff, 1990; Wells, 1980). All children belong to some culture, regardless of where it takes place and how it unfolds, interaction is always a social and cultural process. Therefore, a meaningful study of the child cannot be of the child in isolation but of the child in relation to the factors that she encounters and must relate to in daily social life (Rogoff, 1990; Tomasello, 2000).

The points outlined above are largely consistent with Vygotsky's socio-cultural theory of development of thought and language in humans (Vygotsky, 1978, 1986, 1987). The three parts of Vygotsky that I have found useful for this study are the following. First, Vygotsky was determined concerning the primary social character of language. All higher mental functions are social in origin; they are rooted in the child's social experiences. Second, Vygotsky argued that the word and the child's practical handling of the world are both important for development of the child's thought and language. Both of these arguments are especially relevant considering children whose interactions with the world are limited by restrictions in both word and physical action. According to Vygotsky (1978), development depends on both elementary processes and higher psychological functions; the former are biologically rooted, the latter are socio-cultural in origin. The way tools and signs conjunct to direct behavior is specific to humans. A child's first uses of words are social; they are tools for mastering and organizing actions. Successively, word usage is internalized and differentiated. Symbols become tools for thought and language comes to play a central role in directing thinking. Through childhood and adolescence, the relations between the child's mental operations, the word and the world, is dynamic: "There remains a constant interaction between outer and inner operations, one form effortlessly and frequently changing into the other and back again." (Vygotsky, 1986, p. 87-88). The third part of Vygotsky that I have found valuable with respect to analysis of interactions between caregivers and children with and without disabilities concerns the developmental role he assigns greater expertise and instruction. Because development is a function of the child's ability to participate in and master increasingly difficult tasks relating to words and actions, the structuring of activities and language by more skilled partners becomes crucial. The reasoning behind Vygotsky's concept of the Zone of Proximal Development (ZPD) is this:

What the child can do in cooperation today he can do alone tomorrow. Therefore the only good kind of instruction is that which marches ahead of development and leads it; it must be aimed not so much at the ripe as at the ripening functions .... instruction must be oriented toward the future, not the past. (Vygotsky, 1986, p. 188-189)

By interacting together with others within his ZPD, the child is able to solve problems that are above the level of what he manages on his own. This, argued Vygotsky (1986), is what stimulates development of higher mental processes. It was stated in the introduction that Vygotsky considered school age to be of primary relevance to child development. According to Vygotsky, concept formation is a process that starts early and is refined during adolescence. A child understanding many words at an early age does not mean that he thinks in the same way as older children and adults do. Rather, conceptual development depends on what the child has the chance to practice. If the child is not provided with challenges, Vygotsky held, "his thinking fails to reach the highest stages, or reaches them with great delay." (1986, p. 108). The early interactions of children like the focus children of this study, for example, may suffice for development of language and thinking up to a certain point. However, continued development in thinking and language requires that the child's daily experiences, within and outside the home, are altered in structure. From around ages six or seven and onwards, children without disabilities, in contrast to children with severe impairments, become increasingly independent and operate in activities and environments in ways that are more complex (e.g., Snow & Blum-Kulka, 2002; White & Siegel, 1984). According to Vygotskian arguments, it is from this point on that children with severe impairments risk lagging behind peers in development or develop differently because of few challenges in daily interactions.

Several researchers have acknowledged the potential of applying Vygotskian theory to understanding the developmental situation of children who use AAC (e.g., Bedrosian, 1997; Letto, Bedrosian & Skarakis-Doyle, 1994; Renner, 2003; Soto & von Tetzchner, 2003; von Tetzchner & Grove, 2003). One of few clinical applications is the longitudinal intervention study by Letto et al. in which Vygotskian ideas, together with a model of normal language acquisition, served as the framework for investigating the language development of a child with severe impairments. Letto et al. found that the concept of the ZPD was useful for describing the nuances in the child's acquisition process in relation to adult guidance and for identifying the child's potential for communicative development. Renner gave a detailed

account of the applicability of Vygotsky's theory to child development and intervention issues in AAC. Amongst many things, Renner discussed the fact that children who use augmentative communication do not use the form of communication that is the main form of their culture and accordingly lack natural social models for their own form of communication. Renner also pointed to the fact that children with severe impairment who use AAC are at particular risk of not being confronted with situations that stimulate increasingly advanced social and communicative functions. For example, an important question is, "whether the vocabulary items provided for them will structure the world in a way that is appropriate for them and the social activities in which they participate, and whether the items they have give access to new social actions" (Renner, 2003, p. 75).

Bruner's notion (e.g., 1978, 1983), of how children learn to *use* language in interaction with caregivers is largely consistent with the Vygotskian perspective of the influence of interpersonal socio-cultural relations on children's development. According to Bruner, children's language acquisition depends on interplay with innate capacities of children and caregivers' very natural manners of heading towards more advanced functions in conversation (cf. Vygotsky's ZPD). The Language Acquisition Support System is not a purely linguistic system but also comprises parents' means for passing on and guiding children into culture (Bruner, 1983). Vygotsky's socio-cultural theory of development also is behind the notion of learning through guided participation (e.g., Rogoff, 1990; Rogoff & Lave, 1984) and is central to some of the work on situated activity and learning (Chaiklin & Lave, 1996). Rogoff (1990) emphasized the child's own attempts and capacities to understand the world and to solve problems in relation to daily informal tasks and discourse. Ochs et al. (1992) in a study of children's scientific language and thinking at home expressed similar views. Expansion on the Vygotskian theory by Rogoff and by Ochs et al., have been important to me in the carrying out of this study.

The fact that from the beginning of life children are members of social and cultural worlds that consist of structured routines and activities, which are primary arenas for development, is also a main feature of Tomasello's (2001) social-pragmatic approach to word learning (see also Tomasello, 2000). According to Tomasello (2001), children learn words, "in the same basic way they learn other cultural skills and conventions: in the flow of naturally occurring social interaction in which both they and their interlocutors have various pragmatic goals towards the world and towards one another." (p. 136). Similar ideas

concerning the importance of social interaction to children's development are behind Carpendale and Lewis's (2004) account of how children develop social understanding. Knowledge is social first and internalized later, the child's development of understanding of objects, people and language is a function of her interactions with other people in different social and physical situations (Carpendale & Lewis, 2004; see also Garfield et al. 2001). That humans are cultural beings whose communication and other actions are influenced by participation in social life is a fundamental principle for Allwood's theory of an activity-based approach to pragmatics (1976, 2000) and, accordingly, a main principle behind the model for activity-based communication analysis, which is the framework adopted for the examination of child-caregiver interactions in this study (cf. 2.2.1).

Another theory that has stimulated my thinking throughout writing this thesis is cognitive semantics (e.g., Johnson, 1987; Lakoff, 1988). Central to cognitive semantics is the notion of embodiment and the idea that the organization of linguistic and non-linguistic information is a result of body experiences. A main argument behind the theory is that humans strive to make the world comprehensible and accomplish this task by means of constructing image schemas; concepts are structured and realized through cognitive and bodily-based schemata. Schematic structures are dynamic, constantly active and sensitive to new bodily-based information. Individuals work with embodied schematic structures in metaphoric ways. Understanding of metaphorical structures, in turn, is the basis for the creation of relations between word meanings and for the ability to handle inferences in language<sup>7</sup>. If it is true that concepts are used and organized in the ways suggested by cognitive semanticists, the consequences for children who are restricted in their ability to interact with the environment may be more complex than has been evidenced by research so

---

<sup>7</sup> For example, Johnson (1987) said, "let us consider briefly an ordinary instance of image-schematic structure emerging from our experience of physical containment. Our encounter with containment and boundedness is one of the most pervasive features of our bodily experience. We are intimately aware of our bodies as three-dimensional containers into which we put certain things (food, water, air) and out of which other things emerge (food and water wastes, air, blood, etc.). From the beginning, we experience constant physical containment in our surroundings (those things that envelop us). We move in and out of rooms, clothes, vehicles, and numerous kinds of bounded spaces. We manipulate objects, placing them in containers (cups, boxes, cans, bags, etc.). In each of these cases there are repeatable spatial and temporal organizations. In other words, there are typical schemata for physical containment." (p. 21).

far and, as a result, more difficult to investigate than we would like<sup>8</sup>. This work is not an investigation of children's mental structuring of concepts as such; to a larger degree than may have been the tradition within cognitive linguistics, I am concerned with how a given interaction situation enables and restricts the child's possibilities for development. Yet, from a theoretical point of view, the study incorporates the idea that concepts are also individual constructs that depend on mental operations performed by the human brain and body. From a Vygotskian perspective, these operations, and the child's gaining of knowledge in general, relate to her actions and interactions with the social and cultural world<sup>9</sup>. In my view and in relation to this investigation in particular, socio-cultural theory and cognitive linguistics are complementary. The former is the point of departure for my analysis and the latter has contributed to my reflections about the developmental circumstances of the children that participate in the study. This perspective is in line with a proposal by Sinha and Jensen de López (2000) to extend the notion of embodiment to include not only the human body but also culture. Sinha and Jensen de López argued, "an adequate account of semantic development in early first language acquisition requires a theory and methodology that synthesize the insights of cognitive and cultural linguistics with a Vygotskian socio-cultural approach to human development." (p. 17).

Finally, this is a study of language use; my interests are clearly within the domains of pragmatics. The theories by Wittgenstein (1953/1967), Austin (1962/1976) and Grice (e.g., 1989) are incorporated in the model for activity-based communication analysis (Allwood, 1976, 2000) and have of course influenced this work. As shall be seen, I have built much of the reasoning about how children develop social and pragmatic functions in and through interaction on the work by Ninio and Snow (1996). As regards the study of children and caregivers' interaction at home I have found motivation and developed many of my ideas in relation to work by Aukrust (e.g., 1992), Perlmann (1984), Ochs et al. (e.g., 1992), Blum-

---

<sup>8</sup> Johnson (1987) also gave an example of a balance schema, which is suggestive as regards the situation of children with severe impairments. Balance is described as a foundation of human experiences and body balance as the basis for coordination and cohesion of our experiences. Image schemas for balance are developed from basic experiences and memories of balance; how we comprehend objects, actions, events and emotions, and their relations, as more or less balanced. Thus, the subjective meaning of the word balance has its origin in what we have done with our bodies and how we have made use of our body experiences in our minds.

<sup>9</sup> Vygotsky did not neglect the role of the individual and the subjective but emphasized the social and cultural determination of acquisition and development of consciousness, thought and language (cf. Sinha, 1988).

Kulka and Snow (e.g., 2002), and associates. Their approaches to child language and socialization are comprehensive and relevant to the investigation and understanding of the interactional and developmental possibilities of children who have severe impairments.

## **2.2 Social Activity – A Natural Basis for the Study of Interaction**

For several reasons, social activity, defined as any activity that includes at least two persons, is a natural basis for the study of communication. Humans are social beings. The human need for social coordination is confirmed by the way we organize ourselves into activities and in how we employ language to manage such social organization. Social activities can be variously conventionalized with regard to expectations, behaviors and attitudes, but at least on some level, are goal oriented. Goal orientation requires participants to perform coordinated actions and typically to strive for relevant communicative procedures and content; social activities depend on collaboration and require communication to varying degrees (Allwood, 1995; Clark, 1996; Rogoff, 1990). The goals and structures of a given activity constrain and frame interaction and constitute the platform upon which participants act, understand and make themselves understood (Duranti & Goodwin, 1992; Goodwin, 1995, 2000; Linell, 1998; Mey, 2001). Different types of activities stimulate communication in different ways and differ regarding the role communication plays, for instance, if communication is a primary or a subsidiary goal, what can be talked about and how (cf. Clark, 1996; Linell, 1998). For example, children's activities at school involve rules that differ from those that apply to children's activities at home (Snow & Blum-Kulka, 2002).

Social activities comprise socio-cultural values and tools and, by requiring physical and communicative actions by children and caregivers, are major influences on children's learning and development. Participation in social activities implies change in knowledge (Lave, 1996). Activities are opportunities for caregivers and children to talk, listen and observe and for caregivers to regulate children's communication and behavior. Activities stimulate reflective thinking and are the most natural ways for children to learn about social expectations and rules and, hence, to develop language, thinking, pragmatic skills and social identity (Blum-Kulka & Snow, 2002; Brown & Gordon, 1987; Hérot, 2002). Although these are often not thought of as learning situations, caregivers following cultural conventions do structure activities to enhance children's participation and development (Bruner, 1978;

Ninio & Snow, 1996; Rogoff, 1990; Rogoff & Gardner, 1984). As pointed out by Rogoff (1990) children are not passive learners but rather take an active part in structuring activities and in guiding their own development. In these processes, language plays a central role.

Research into typical child language development and interaction involving children with special needs, indicates that interaction strategies and communicative content are closely related to activity factors such as task, materials and speaking partner style (e.g., Andrews, 1980; Aukrust, 1992; Davidson & Snow, 1996; Harris, 1982; Hjelmquist & Dahlgren Sandberg, 1996; Hoff-Ginsberg, 1991; Keenan & Schieffelin; 1976; Light, Collier & Parnes 1985a,b,c; Rowland & Schweigert, 1993; Smith, 2003). In a study by Yont, Snow, and Vernon-Feagans (2003), both caregivers and children without disabilities as young as 12 months demonstrated variations in communicative functions, vocabulary and syntax across different activities. As regards future child-language studies, Yont et al. called for more consideration of the situation in which communication occurs. Such consideration is also warranted for research into interactions involving children with disabilities. In order to understand the degree to which different activities stimulate communication and to understand the premises for development, it is necessary to examine closely the components of the activities in which children with disabilities are engaged (cf. Beukelman & Mirenda, 2005; Björck-Åkesson et al., 1996; Calculator, 1997; Kraat, 1985; Light, 1988, 1997; Martinsen & von Tetzchner, 1996; Rowland & Schweigert, 1993; Smith, 1994; Soto & von Tetzchner, 2003; von Tetzchner & Grove, 2003; von Tetzchner et al., 1996)<sup>10</sup>.

For children with severe speech and physical impairments and their caregivers, an important factor influencing interaction is the use of augmentative communication. Some aided communication systems in particular are based on theoretical assumptions that concern the relationship between social activities, interactive goals and communicative content (e.g., Higginbotham, Wilkins, Leshner & Moulton, 1999; Todman, Rankin & File, 1999; Todman & Alm, 2003). Also, graphic sign displays are often developed in relation to activities; many researchers have focused conversational content from a vocabulary perspective, studying types and occurrences of isolated words, small talk, and topics (e.g.,

---

<sup>10</sup> Any appropriate AAC intervention goes beyond the specific abilities of the child and includes environmental issues. See for example, Beukelman & Mirenda's participation model (2005), Björck-Åkesson, Brodin & Fälth's (1997) model of early family oriented intervention, Björck-Åkesson et al.'s (1996) model for collaborative problem solving, and von Tetzchner et al.'s (1996) discussion on a comprehensive model of augmentative and alternative communication.



Balandin & Iacono, 1998a; King, Spoeneman, Stuart & Beukelman, 1995; Marvin, Beukelman & Bilyeu, 1994a; Porter, 2003; Stuart, Beukelman & King, 1997; Stuart, Vanderhoof & Beukelman, 1993). This research has in turn led to important attempts to create resources, and exploration of methods for constructing functional and personal vocabularies to be used in different activities. In particular, there has been a focus on (a) issues related to vocabulary prediction and selection and (b) factors that have the potential to influence vocabulary use and need within specific conversational contexts (e.g., Baker, Hill & Devylder, 2000; Balandin & Iacono, 1998a, 1998b; Beukelman, McGinnis & Morrow, 1991; Fried-Oken & More, 1992; Marvin, Beukelman, Brockhaus & Kast, 1994b; Stuart et al., 1997; Todman, Elder & Alm, 1995; Yorkston, Smith & Beukelman, 1990). The focus on different contexts in most AAC studies on interaction and conversational content reflects a macro-analytical view, a situation also seen in studies into typical child language development (cf. Yont et al., 2003). With some exceptions (e.g., Light, Binger & Kelford Smith, 1994) different environments have been examined more than particular activities. From a child developmental perspective, different environments (e.g., home versus school) result in different social activities that serve to enable or restrict communication in different ways. A specific type of activity can also occur in different environments and with different people; these factors may influence the performance of the activity in different ways (McDermott, 1996).

Several researchers (aforementioned) interested in interaction and AAC have argued for the need to consider context. Yet, reviews of the literature and other sources<sup>11</sup> reveal that true interaction based analysis is rare within the field of AAC. Further, studies may have

---

<sup>11</sup> For example, in June 2005, the list of research on the home page of BCI (2005) contained 45 references organized into eight main subject areas: learning or acquisition of Blissymbols, Blissymbolics and specific populations, psycholinguistic characteristics of Blissymbols, surveys on Blissymbol use, Blissymbolics and literacy, Blissymbolics and language development, Blissymbolics and communicative competence, and reviews of Bliss research. Interaction was not a main subject area and the area entitled communicative competence included only two references, one of which was an unpublished conference paper, the other was published in 1989. The words, interaction, conversation and discourse did not occur in any of the 45 titles presented on the list. The word communication occurred in eight titles but in six cases in the following phrases "integrating Blissymbols into the communication board," "augmentative communication systems," "as a means of communication," "alternate system of communication," "three communication symbol systems," and "BLISS-Symbol-Kommunikationsmethode." Different forms of the word *use* (e.g., "using Blissymbols") occurred in five titles but seemed often to concern use in relation to specific communicative functions more than from a general interactional perspective.

included different activities but in the treatment of data, little attention has been paid to the activities as such. In addition, the words context, environment, setting, situation and activity have sometimes been used in rather loose ways<sup>12</sup>. At times, these words seem to have been used almost interchangeably for anything or something beyond that which has been studied. This perhaps reflects a context deficit approach, however unintentional, implying that the person is separable from the context within which she acts (cf. McDermott, 1996). Context has also been discussed from comprehensive, albeit rather general, perspectives (e.g., Light, 1997)<sup>13</sup>. Overall, there are few analyses of the everyday conditions of children who use AAC; thus, there is a gap in our knowledge of how these children can make use of daily practices in learning and development. This study approaches context through the social activity and aims to present detailed analyses of interactions between children and caregivers at home. Social activities of the home environment are discussed further in Section 2.4.

### **2.2.1 Activity-based communication analysis**

The idea that context plays a central role in the production and understanding of meaning was a major point in Wittgenstein's (1953/1967) investigations and is a theme that recurs in many theories of communication. Both Allwood (1976, 1995, 2000) and Levinson (1979) have expanded explicitly on Wittgenstein's ideas of language-games.

In the framework for activity-based communication analysis Allwood (1976, 2000) suggested that a comprehensive understanding of communication involves specification of the factors that influence it. People function as social and cultural agents in relation to the roles they play in different social activities, and perform different acts associated with sending and receiving information. Assumptions behind the framework include (a) that all people belong to, and have a background and a history in, culture and language, and (b) that all human activity involves a network of factors that depend on and result in complex physical, biological, psychological and social relations within and between people. The

---

<sup>12</sup> This is by no means unique for research relating to AAC and is understandable considering the many existing approaches to context (cf. Akman & Bazzanella, 2003; Duranti & Goodwin, 1992; Linell, 1998). Nevertheless, exploring context is particularly relevant in research on augmentative communication and, therefore, in such research, the meaning of the term context needs to be explained.

<sup>13</sup> Light (1997) described the physical, functional, language, social, and cultural contexts that make up the language-learning environment of children who use aided communication systems.

activity is seen as, “the basic organizing contextual aspect of social reality that influences interaction” (Martinovsky, 2000, p. 7). Allwood (2000) specified Wittgenstein’s (1953/1967) ideas of meaning and suggested that meaning is determined by use in relation to three different contexts: perceptual, social activity, and activated background information. Context, then, is everything included in and surrounding a specific interaction: the social activity and its history, and the physical, psychological, social and cultural characteristics of those participating in the activity. These contextual possibilities and constraints are intricately related to other contextual factors that influence the pursuit of the activity, such as the time and setting, the goals, roles, procedures and instruments that are needed for activity realization. According to Allwood, it is essential to consider both factors that influence interactions during an activity and the different aspects of language and communication influenced in and by the activity itself. As is shown in Figure 2.1, influencing factors are considered from both collective and individual perspectives, thereby acknowledging that social-conventional and individual practices are an inseparable whole (cf. Rogoff, 1990), and that interaction is the place in which these practices meet.

Collective factors are often conventionalized in relation to a specific type of social activity and concern all participants; they represent history and the participants’ points of departure for interaction. Collective influencing factors include the main goal of the activity, which contributes to the identity of the activity and specifies the main reasons for its pursuit (Allwood, 1984), the general role configurations, common procedures and structures, sub-goals, instruments, objects, and general physical and psychological circumstances associated with a particular type of activity. Individual influencing factors represent what is brought into the activity by each participant and include (but are not limited to) background knowledge and experiences, values and attitudes, communicative and physical capabilities and communication aids, that in different ways determine and specify participants’ communication goals and roles. With regard to both comprehension and production, different activities influence communication in different ways, for example, concerning general and specific vocabulary, communicative content, grammar, phonology, types and sequences of communicative actions, turn taking, and feedback.

From an interaction perspective, factors here described as being influenced (i.e., different linguistic features) also exert influence within the activity (e.g., a communicative contribution is the context for preceding and succeeding contributions). However, since one

purpose of this study is to specify and compare in detail the characteristics of different types of activities for persons with different possibilities, it is important to begin by examining the influencing factors that pertain to and are directly observable in relation to each specific activity type. These factors are mainly non-linguistic. Thereafter, it has been possible to treat, separately and in combination, a variety of influenced linguistic and non-linguistic factors (i.e., physical actions), their interdependent relationships and their potential influencing properties. The interaction-based analyses of the study will demonstrate how influenced factors also influence and that there are few clear-cut relations in these matters (cf. Figure 2.1).

The framework for activity-based communication analysis has much in common with Levinson's (1979) notion of activity types. According to Levinson an activity type is, "any culturally recognized activity," whether it includes speech or not, "whose focal members are goal-defined, socially constituted, bounded, events with *constraints* on participants, setting, and so on, but above all on the kinds of allowable contributions." (p. 69). This study is particularly interested in how different activities stimulate and restrict communicative and physical actions for dyads of caregivers and children with and without disabilities. The activity-based communication analysis supports use of real interaction data and allows consideration to be taken of all parts of context that are relevant in the study of interactions that include augmentative communication (cf. Light, 1997).

## **2.3 Interaction Phenomena Focused on in the Study**

This section presents the interaction phenomena focused on in the study, interaction goals, communicative content and patterns of interaction, and describe their relevance with regard to caregivers and children who use augmentative communication.

### **2.3.1 Interaction goals**

The question of how communication functions and for what purposes language is used is of great importance in relation to augmentative communication. Questions concerning which interaction goals need to be fulfilled, when, and how are central in augmentative communication intervention and need to be formulated explicitly and returned to repeatedly, in the case of a specific intervention, often all through a person's life.

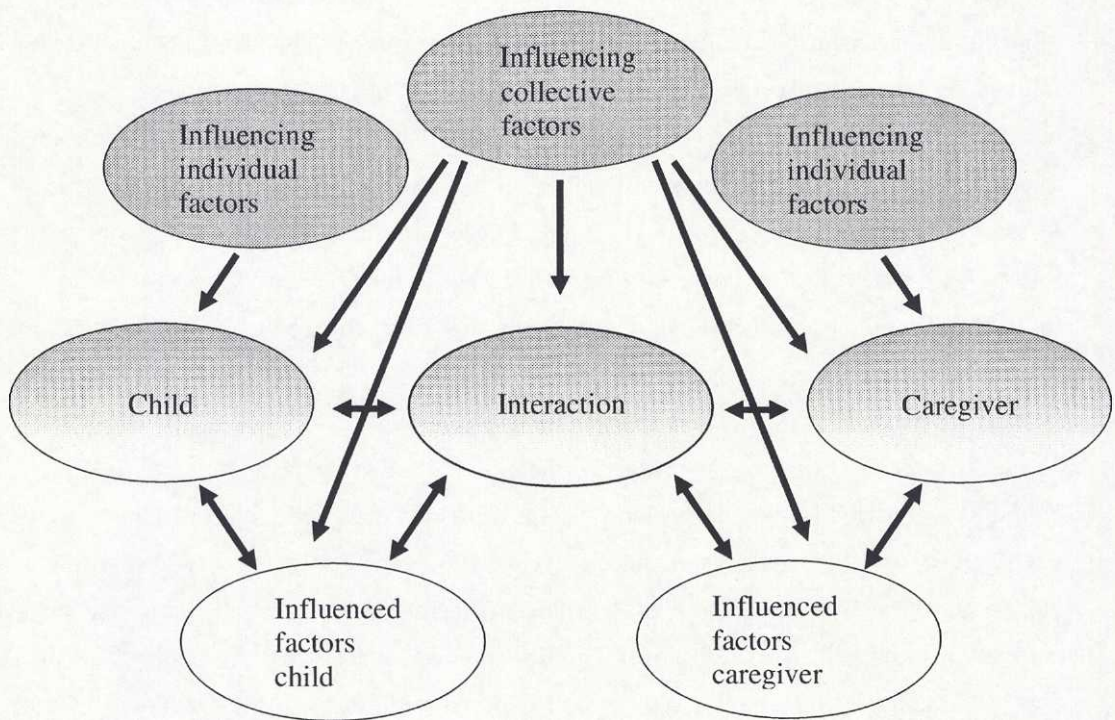


Figure 2.1 The social activity: A simplified picture of the relationship between social activity and interaction for children and caregivers, based on the framework for an activity-based communication analysis (Allwood, 2000) and adapted from Ahlsén (1995)

### *The basic goal of understanding*

Comprehension is a goal in interaction that is so basic that we often have no reason to consider it at all in terms of being a goal<sup>14</sup>. For caregivers and children with severe speech and physical impairments, whose means for interaction are of a partly different nature than those for typical interaction, reaching understanding in interaction may become a central goal. In these interactions, gestures, word approximations and vocalizations which require little physical effort and are expedient are often the preferred modes of communication (e.g.,

<sup>14</sup> A goal that precedes and is a prerequisite for understanding is joint attention (Ninio & Snow, 1996).

Culp, 1982; Falkman, Dahlgren Sandberg & Hjelmquist, 2002; Harris, 1982; Light et al., 1985c; Smith, 1994). Even when a communication aid is used, several communication modes are often combined; whether aided or unaided, these interactions tend to involve high degrees of multimodality. Combinations of sometimes ambiguous graphic sign selections, vocal behaviors and body movement on the part of children may result in adjustments different from that of typical interaction. Slow or few responses or unclear relations between expressive output and meaning restrict the communication process and complicate understanding. More than is the case in interactions involving children without disabilities, caregivers and children with severe impairments depend on each other for the fulfillment of different communication goals. In particular, the very basic goal of reaching understanding must somehow be taken care of in interaction.

Communicative understanding depends on the degree to which incoming linguistic information is connected with stored information in meaningful ways. Different levels of factual, normative and emotional information as well as needs, personal goals and motives of interlocutors are involved in the process on these different levels (Allwood & Abelar, 1984). Through intentional action or unintentional behavior, a person may indicate information, which means that she transmits information and/or is available for interpretation. An indicator is given content through the mind and the eye of the person who observes it and carries no information other than this. A sender may also intentionally display behavior with the purpose of affecting the receiver in some way, or may signal behavior that is intended to be recognized as display and to be understood by the receiver. There is no absolute relationship between sender intention, conventional content and receiver apprehension. Sender content is what is intended to be signaled or displayed, conventional content is the meaning tied to a symbol by conventions; apprehended content is the content a receiver ties to a sign or a behavior (Allwood, 1976). Thus, to reach understanding the child and caregiver must interpret each other's behaviors and actions in ways that are in accordance with the partner's intentions. In this process, it is not enough for the child and caregiver to master linguistic tools and to have knowledge of linguistic conventions. They both must utilize background knowledge and integrate this knowledge with features of the interaction situation (cf. Allwood & Abelar, 1984). Abstract background knowledge as well as more specific background knowledge about each other's

communication behaviors is a result of integration of earlier experiences and of previous successes and failures in interaction.

The goal of reaching understanding in interaction is a truly shared responsibility. Why, then, do interlocutors often understand each other quite well and why is it that persons, even those with different languages and cultural backgrounds and different expressive modes of communication, often reach a basic degree of understanding? A basis for reaching understanding in interaction is cooperation. An interlocutor's willingness to cooperate makes her, as far as is ever possible, trust the communication partner, to consider the partner as relevant and ethical and, hence, consider the partner's contribution as being cooperative. In general, the willingness of interlocutors to cooperate so that the goal of understanding can be reached is strong. For example, even when a person flouts the assumptions (i.e., the maxims) on which cooperation in communication are built, interlocutors often understand each other well (Allwood, 1976; Grice, 1989).

There is reason to believe that a majority of the interactions that take place between caregivers and children with severe impairments, as well as between caregivers and children without impairments, build on a considerable degree of cooperation and willingness to understand<sup>15</sup> (e.g., Bruner, 1978; Grimm, 1995; Ninio & Snow, 1996; Rogoff, 1990; Snow, 1977; Zake, 1997). However, the more a child's communication repertoire deviates from convention, the more energy the child and the caregiver need to invest in reaching the goal of understanding, and the greater is the chance for insufficient understanding between the child and the caregiver and for over-interpretation of the child's communication on behalf of the caregiver. Difficulties in understanding may also influence interaction so that caregivers take the lead and children follow; thereby, over time, children may learn to participate passively during interaction (e.g., Basil 1992). The goal of reaching understanding in interaction and the strategies used to reach this goal are issues that we will have reason to consider further in relation to the interaction analyses of this study.

---

<sup>15</sup> It is also true that interaction between caregivers and children with speech and physical impairments is particularly vulnerable to violation of the informal rules that guide cooperation and understanding.

### *Goals from an overall interaction purpose level*

Understanding is a basic goal in interaction but for what reasons do we at all engage in interaction? Brown and Yule (1983) made a division between transactional and interactional goals, and pointed to the fact that there are no strict borders between the two. Both types of goals may be reflected in the same utterance and in the same interaction situation. From an overall purpose level, however, transactional goals relate to the expression of factual information (i.e., are message oriented) and interactional goals relate to the expression of personal attitudes and issues that concern the establishment of social relations (i.e., are listener oriented). Transactional goals relate to change of something in the outside world and interactional goals relate to change of something in the inner worlds of the interlocutors (Cheepen, 1988). According to Cheepen, transactional encounters are characterized by fixed roles between participants and by pre-determined topics and structures, which, of course, vary with type of activity. On the contrary, interactions that have interpersonal relations as a main goal include no fixed role-relations; in fact, interlocutors may even work against such roles and strive for equality. In everyday interaction, interpersonal use of language is more common than that in which the actual message is focused. Whether the activities performed between children and caregivers at home mainly include transactional or interactional goals or both is an issue that I will return to in the discussion (Chapter 6).

In a detailed summary of work done on interaction and AAC, Light (1988) expressed a need for studies focusing on the relationship between content to be included in communication aids and different goals of interaction. According to Light, a person's need to engage in communication can be related to four main goals: to express needs and wants, to transfer information about personal ideas and experiences, to experience social closeness, and to be able to conform to social etiquette. Each goal brings about different requirements on the communication system, vocabulary, and on communication aid use and therefore needs to be treated in detail in intervention. Further, each goal may be more or less important during different times in a person's life. Yet, the unpredictability of everyday life implies that, basically, a person must always be able to fulfill each goal, in transactional and in interactional encounters. Goals that are mainly transactional in nature, of which the content is easy for professionals to predict and provide for in a communication aid, in other words expression of needs and wants, tend to receive much attention in the construction of communication systems. According to Light, goals relating to information transfer (which I



will call information sharing) and social closeness tend to receive much less attention. The content of messages relating to such goals is also more variable, less predictable, and therefore more difficult to incorporate into a person's communication system than content relating to basic needs. There has been progress in the field since the publication of the paper by Light; interaction goals relating to the sharing of ideas with others in conversation receive more attention today than before (e.g., Brekke & von Tetzchner, 2003; Waller & O'Mara, 2003). However, many of the difficulties involved in support of a child's ability to expand on her own and others' thoughts and experiences still prevail and must be reconsidered along with developments in methods and technology. As pointed out by Ferm, Amberntson and Thunberg (2001), many augmentative communication products and applications are developed to be used in English speaking countries. Thus, non-English-speaking countries face additional challenges relating to translation and localization of software.

Todman and Alm (2003) presented a model for how communication devices need to be constructed to comply with the varying transactional and interactional goals of interpersonal communication. Two methods for augmented message production, phrase creation (using words and phrases utterances are created by the person during interaction) and phrase selection (pre stored utterances are selected by the person during interaction) were considered with regard to the degree to which each method relates to different pragmatic features of face-to-face interaction<sup>16,17</sup> and to the overall purposes of different interactions. Phrase creation enhances a person's ability to communicate in ways that suit each specific situation and to express unique content. Phrase selection enables a person to contribute quickly, maintain flow, share control, stay in touch within the situation (e.g., feedback), and to use repair strategies effectively. Todman and Alm showed how different message construction approaches and their potential connections with various pragmatic features might influence: (a) short-term interaction goals such as impression, enjoyment and projection of personality; (b) medium-term interaction goals such as relationships, self-esteem, status, participation in activities and independence, and (c) long-term interaction goals such as quality of life and self-fulfillment (p. 529). Considering interaction goals in relation to time is relevant from a child developmental perspective; the issues raised by

---

<sup>16</sup> Micro level interaction goals; authors comment.

<sup>17</sup> Ultimately, a device should include both options.

Todman and Alm, are useful not only with regard to analysis of aided interactions but also with regard to the general inspection of the quality of interactions between caregivers and children with severe impairments. What communication goals do these interactions stimulate and what goals are achieved?

To the degree that it is possible to talk about personal interaction goals, these are nonetheless social phenomena. As such, they must be considered not only with respect to personal goal fulfillment but also with respect to how a child with disabilities is perceived by others. From a Vygotskian point of view, this is not so much a question of the child's deficits and competencies as of the child's position in society, her point of departure for interaction and development (Vygotsky, 1993). To handle the communication demands and goals of daily interaction a child who communicates by augmented means needs linguistic knowledge and knowledge about the social rules of conversation. She also needs knowledge about how to operate her communication aid and about how to communicate in the most efficient way in order to reach her own goals and the goals defined by the situation (Light, 1989).<sup>18</sup> Goal fulfillment and learning different communication skills are primary aims of many training programs directed towards augmented speakers and their communication partners (e.g., Basil, 1992; Bruno & Dribbon, 1998; Light & Binger, 1998; Light, Binger, Agate & Ramsay, 1999; Rowland & Schweigert, 1993). This thesis investigates interaction goals from two interrelated perspectives, activity and communication, thereby acknowledging that goals vary with situation, with structures and demands of activities and with respect to individual participants.

### **2.3.2 Communicative content**

Words are central in language, because not only are they the basic means for transferring and understanding meaning and making others act, but also because they are the means by which a child can generalize about other words, learn language, understand self and others, and the world at large. A child's uses of first word are situation-bound. Usage relates to the interaction situation and familiar communicative and physical routines, concerns the observable, self, and the goals of the interchange taking place. However, words soon become generalized and more flexible (Clark, 1993; Ninio & Snow, 1996) and already at

---

<sup>18</sup> Referred to by Light (1989) as linguistic, operational, social and strategic competencies.

age two, the child masters many of the functions necessary for participating in the two main communicative uses of word, discussion and action negotiation, according to Ninio and Snow.

### **2.3.2.1 Content of young children's interactions**

Discussion includes statements, questions and answers on specific topics (Ninio & Snow, 1996). The first statements, questions and answers used by the child are expressions of ideas about objects, persons, actions or events that the child and the caregiver focus on jointly (cf. Keenan & Schieffelin, 1976). Addressing the non-observable is cognitively and linguistically more difficult and is a later achievement; the first such topics to be introduced in discussions are concrete, build on shared background knowledge and in other ways are close to the situation (e.g., concern a physically close object). From an early age, the child is a target for many different types of questions. The child is also able to answer questions before she begins to request and ask for information herself. Another pattern pertains to statements, which are less obligatory. According to Ninio and Snow, the child produces statements on her own before she is able to respond to and comment on the caregiver's statements.

The first action negotiations performed by the child serve to secure joint attention with regard to a specific activity. Around 14 months, the child starts to use words to change ongoing activities. In relation to daily routines, such negotiations are directed towards the child's own and adult behaviors, whole activities and individual actions. Already at this stage, the child's desire for participation and independent acting are expressed. The child participates in initiating activities and is able not only to request that an activity is continued or ended but, also, to ask questions and provide necessary information for a desired action to take place. In a third stage, around 18 months, the child becomes more nuanced in regulating actions in relation to time (e.g., now, wait), place (e.g., there), and role (e.g., my turn, your turn). Gradually, the child begins to reason about why she wants or does not want a specific action or activity to take place and from a content point of view, turns towards the more distanced and begins to negotiate about future activities (Ninio & Snow, 1996).

In early discussion and action negotiation, questions and answers are important means for understanding and learning, and for regulating discourse and activity in relation to various topics and goals. According to Ninio and Snow (1996), questions and answers

develop in the following summarized order: *what*, *who* and *where* questions are answered before *which*, *how many*, *how* and *why* questions. *What* questions are asked before *where*, *yes/no* and *who* questions; *why* questions are acquired late, after the child is able to answer many different types of questions. Around 18 months, the child in Halliday's (1975) study used *what* questions to initiate conversations on different topics.

Identification of people exists before the first words are uttered and referring to people is an important function from the very beginning of the child's development in cognition, language and self; young children use words for many things other than specific objects, including words and names for specific people (Clark, 1993; Comparini, 2001; Deutsch, Wagner, Burchardt, Schulz & Nakath, 2001; Nelson, Hampson & Shaw, 1993). However, the child's referring to a given person by means of using words is not without difficulties. Whilst proper names are concrete, evident and easy to use when learnt, due to the change of perspective depending on who is talking, pronouns are more difficult to use. Thus, in interaction, young children and adults refer to self and present other by using both proper names and first and second person pronouns (Budwig, 1989; Tanz, 1980). In early discussion and action negotiation, words that refer to people such as *Lisa*, *I*, *me*, *myself*, *mine*, *alone* (cf. *själv* in Swedish), *mommy*, *daddy*, *you* and *your* occur in relation to requests for attention, claiming objects and their belonging, comments on behaviors and other personal features and in relation to requests for individual actions and activities. The fact that young children may refer to self by using specific pronouns more for certain roles than for others shows that personal reference may serve important functions in young children's interaction. The young children in the study by Budwig, for example, often used *me* and *my* in situations where language aimed to change something in the environment and *I* for situations where they had a less influencing role and mainly expressed feelings and intents.

*Early communication centers on the interaction situation but soon becomes more distanced*

The child's movement from the here-and-now to the more distanced is a central part of language development and, accordingly, has received much attention. Development seems to follow this order:

perceptually present external objects and events are talked about earlier than perceptually present but internal events; internal events are discussed earlier than immediately preceding or recent events, which in turn are discussed before invisible or absent objects, events in the distant past and future, or hypothetical or abstract states of affairs. (Ninio & Snow, 1996, p. 93)

Ninio and Snow reported that introduction of the non-present to discourse by the adult was closely related to the child's behavior, a pattern that was not observed to the same degree in relation to other functions. For example, mothers would comment on objects and request clarification from the child before the child was able to use such functions (e.g., provide clarification), but would not initiate discussions on non-present topics until the child showed the ability to participate in such talk.

Successful topic introduction and establishment depends on the degree to which the child and caregiver are able to collaborate in reference identification and in determining, "the semantic relations obtaining between referents in the discourse topic." (Keenan & Schieffelin, 1976 p. 350). Identification of reference to something that is not physically present is a heavy process that depends on shared background knowledge and memory and, according to Keenan and Schieffelin, children younger than three years have severe problems introducing and keeping topics concerning other than the here-and-now going. Foster (1986) distinguished between conversational topics that concerned the immediate physical space and environment and topics that were removed from the situation; she found that the latter occurred in the end of the second year. Data indicated that some of the children (aged 1 to 30 months) in the study might have experienced a need to engage in talk about the non-present before they were able to introduce such talk effectively. Aukrust (1992) challenged the recurrent finding and common opinion concerning the very low frequency of distanced topics in conversations between young children and adults. A considerable number of the utterances produced by the two year olds in Aukrust's study concerned there-and-then (*der-og-da*). Aukrust also showed that within both here-and-now

and there-and-then content spheres, two year olds participated in talk about both routine and non-routine issues.

Halliday's (1975) description of first functions in early language development is also indicative of the child's movement from the immediate to the more distanced and abstract. The instrumental, regulatory, interactional and personal functions refer to how the child uses language to satisfy the most obvious and personal needs in the interaction situation. By means of using language in heuristic and imaginative ways, the child is able to investigate the physical world in more elaborate ways, play with language, and create a world of her own; these functions evolve from about 12 months and represent a step towards the non-perceivable. In Halliday's scheme and terminology, the informative language function is the last to occur. The child in his study started to use language in content-specific adult-directed ways around 22 months. By the time the child masters the, "I've got something to tell you' function." (Halliday, 1975, p. 21), a new world of interactional possibilities emerges.

I have given a fairly detailed picture of early-acquired language functions and have focused what Ninio and Snow (1996) called discussion and action negotiation because functioning within these systems is central to the child's continued use of language in different activities and, hence, to development. Furthermore, while reflecting on the results of this study, which involves children of ages six and seven, it is relevant to keep the approximate developmental orders and ages of these types of communication in mind. In particular, it is interesting that despite a restricted expressive vocabulary, around the age of two years, many children participate in talk about the immediate as well as the more distanced; having used language to regulate the activities in which they participate for quite some time.

### ***The child becomes a more skilled conversationalist***

From age two and onwards, considerable developments take place in vocabulary, utterance length and structure, and cognition. The child becomes less dependent on gestures for introducing topics and turns into a more effective communicator by degrees, becoming more skilled in acting according to others' intentions while adapting to more advanced social-pragmatic conventions. From ages four and five and on the child becomes more confident in combining utterances into coherent speech, in operating on discourse units above the level of the word and utterance, and in managing talk about causal relations and

emotions (Brown & Dunn, 1996; Karmiloff-Smith, 1986; Ninio & Snow, 1996; Nordqvist, 2001). The child also becomes better at clarifying herself and at signaling insufficient understanding. In conversation, the child may change focus between the present, and the non-present and more abstract, following and directing the speaking partner accordingly.

In the view of Vygotsky, these advancements in the child's use of language are effects of previous social experiences and reorganization in thinking and, at the same time, are foundations for further developments in interaction skills and higher mental functions. Concerning conversational content, Ninio and Snow (1996) stated that, "increasing participation in the decontextualized talk coded as discussion of nonpresent topics serves as a crucial context for the continued acquisition of such linguistic structures." (p. 155). Involvement in decontextualized talk is also a main way for the child to contribute to and secure herself a role as a member of the language community and culture in which she lives.

### **2.3.2.2 Some notes on the analysis of communicative content**

What children talk about is an issue that has been approached from many different perspectives and there are no definite but only approximate ages and large individual variations concerning children's participation in communication on different topics. What is talked about also varies with activity (see further Section 2.4). For example, Beals and Snow (2002) found that children as young as three years knew quite a lot about story telling around the dinner table. The summaries of different analyses and results below and in Sections 2.3.2.3 and 2.3.2.4, build on studies that involved children of varying ages, dyadic and multiparty discourse, and child-adult as well as child-child interactions.

Studies of conversational topics in child-adult discourse have often used definitions similar to the one provided by Keenan and Schieffelin (1976) who suggested that "a discourse topic is a proposition (or set of propositions) expressing a concern (or set of concerns) the speaker is addressing." (p. 342-343)<sup>19</sup>. Often, entire discourses have been divided into topics and the aim has mostly been to code talk with regard to its distance from

---

<sup>19</sup> Mentis and Prutting's (1991) analysis of topics in the conversations of a head-injured adult also built on this definition: "Topic was defined as a clause or noun phrase that identified the question of immediate concern and that provided a global description of the content of a sequence of utterances. The topic of any sequence of discourse was required to describe what the speakers were talking about and identify the central concern being addressed...The sequence of utterances that could be subsumed under any topic label was termed a topic sequence." (Mentis & Prutting, 1991, p. 585).

the interaction situation, building on concepts such as time, space and level of abstraction. Sometimes topics have been labeled according to a main area of concern (e.g., talk about birthday party). Focusing only those parts of interaction that are about issues other than immediate concerns (i.e., here-and-now), talk has also been coded into somewhat superior topic categories such as nature phenomena, life processes or interpersonal relations (Matre, 1997). In other studies of topics, talk has been analyzed on an utterance level according to different frames of reference such as time, person and content/idea, each including different topic categories, for example, future, self, clothing (e.g., Marvin et al., 1994b). Although features such as topic maintenance and shading have been examined, with important exceptions (e.g., Keenan & Schieffelin), many of the studies that only have coded interactions into topics have been quantitative in nature. Results have often been presented and discussed in terms of numbers of different topics introduced rather than with respect to what is going on in interaction and why. Children and caregivers have been treated more as individual contributors to discourse than as mutually dependent actors.

Some studies I have come across are more interaction-oriented than those concerning conversational topics per se; these are analyses that have approached content of children's daily discourse from the perspective of communicative genres, and studies that have combined analyses of conversational topics with analyses of communicative projects, speech acts and genres (e.g., Blum-Kulka et al., 2004; Matre, 1997). These studies have focused on extended discourse ("the product of conversation in which perspective becomes a central issue" (Ninio & Snow, 1996, p. 170)) such as stories, narratives<sup>20</sup> and explanations, and have examined the pragmatic, psychological and social functions of these types of language use across cultures and activities. Topic has been the feature demarcating the narrative. For example, in the work by Beals and Snow (1994), "The narrative began where the topic of the narrative was introduced and ended when the topic changed." (p. 335). Yet, many narrative studies lack definition of topic. Talk removed from the here-and-now (narratives often concern past events or ideas about future events) as well as talk relating to the situation (e.g., explanations can concern actions and events that take place here and now) has been the focus of the studies. Specific narrative topics (e.g., preschool) and features of different topics (e.g., problem solving and theory building) have been detailed

---

<sup>20</sup> I will use the words story and narrative, story telling and narration interchangeably.



(e.g., Aukrust, 2002; Ochs, Smith & Taylor, 1996; Ochs et al., 1992). Still other studies have examined content with regard to the function of specific expressions in discourse rather than topics or genres, while acknowledging that such expressions could occur in different topics and genres (e.g., Nevat-Gal, 2002).

Another interaction-oriented approach to content is topical episode analysis, developed by Linell and Korolija (e.g., Korolija, 1998; Korolija & Linell, 1996; Linell & Korolija, 1995). Linell and Korolija went beyond the *aboutness* principle dominating many topic studies. Topics, according to Linell (1998) are,

actors' *activities* of using *discourse and contexts* to build islands of coherence and intersubjectivity in and through the interactions, in the *acts* of referring, predicating, and connecting thoughts (idea units) with one another in a discourse with a common floor, i.e. an interaction with a single shared focus of attention.  
(p. 182)

Topical episodes, then, are units of interaction above the level of words and utterances with "thematic and/or action unity," a "core event structure," and "a beginning and an end," (Korolija, 1998, p. 43). Topical episode analysis is about how talk on different topics is made coherent in discourse through interlocutors' drawing on different contextual resources, co-text, situation and abstract background knowledge. There are no definite relationships between topics and episodes. Although episodes often consist of a main topic, topics are not constant phenomena. Episodes can include sub-episodes and can be poly-topical.

There are difficulties involved in analyzing utterances and sequences of utterances into topics and in coding topics according to time, space and degree of concreteness (cf. Brown & Yule, 1983; Linell, 1998). Further, there are no clear-cut relationships between genres or between genres and topics. A topic can be tied to the situation while remaining abstract, that is, the topic can be both close to and distanced from the situation. In addition, even if the analyst finds linguistic evidence for a certain frame of time, from the interlocutors' perspectives, narratives seldom relate to time in definite ways. A main purpose for talking about the past is often to better understand the present (Ochs & Capps, 1996)<sup>21</sup> and as stated by Ochs (1994), "Each verbal *recollection* of past events may lead interlocutors to

---

<sup>21</sup> With different purposes in mind, researchers also have used different guidelines for coding conversational content along time and space dimensions, which make comparisons of results difficult.

*anticipate* ramifications of those events in the future.” (p. 107). Moreover, children and adults tell things without relating events (i.e., without producing narratives, often referred to as semi-narratives; e.g., Aukrust, 2002; Aukrust & Snow, 1998), narratives can include explanations (i.e., talk that make explicit, “some logical connection between objects, events, concepts, or conclusions, or a request for such a connection.” (Beals & Snow, 1994, p. 337)), and according to Beals and Snow, explanations can be delivered by means of relating events, taking on a narrative form. Narratives, independent of structure and form, can be seen as explanations in and of themselves; to tell a story is to explain something (Ochs et al., 1992). Following Keenan and Schieffelin’s notion of discourse topic, narratives are particularly prone to be poly-topical.

Despite the difficulties involved, all studies that have dealt in some way with the interaction that evolves in and around telling have contributed important information concerning the content and co-constructive nature of children’s daily talk. Time and space are features that reflect distance of language from the interaction situation and, if used in combination with features such as person, idea or theme, help to depict what conversations are about as well as how caregivers and children free themselves from immediate concerns. Telling, in any form and on any matter, organizes and creates relations between the past, the present and the future, invites others’ perspectives and is an opportunity for the child to structure thinking and to understand factual relations, emotions, attitudes, and her own and others’ identities. Even the shortest and smallest piece of telling is an opportunity for self-understanding on at least some issue, “selves evolve in the time frame of a single telling as well as in the course of the many tellings that eventually compose a life.” (Ochs & Capps, 1996, p. 23). Children with severe speech and physical impairments, who are largely dependent on AAC and on other people, have needs similar to those of children without disabilities; they have the right, to tell about themselves and others in relation to different times and places, and engage in other types of decontextualized talk. It is these children’s possibilities to engage in such discourse with caregivers at home that is the focus in this study. In Sections 2.3.2.3 and 2.3.2.4 below, I present findings from previous work on communicative content that are relevant to the understanding of the communication situation of children with severe impairments.

### **2.3.2.3 Content of interactions involving preschool and young school age children without disabilities**

A great deal of the daily talk that preschool and young school age children without disabilities engage in is concrete and bound to the situation (Brinton & Fujiki, 1984, Marvin et al., 1994b; Matre, 1997; Perlmann, 1984; Wanska & Bedrosian, 1986). However, children of these ages also have a need to talk about minor and neutral incidents of daily life and to share with others more spectacular lived or fictive experiences and thoughts (Matre, 1997; Preece, 1987). Daily talk between preschool and young school age children and adults often concerns what the child, the caregiver or someone else has experienced in the past; talk about the future is less common but exists (e.g., Beals & Snow 2002; Ochs & Capps, 1996). Over half of the narratives (in 131 recordings of approximately 40 minutes each) produced by three children in the study by Preece were personal anecdotes about what had happened to the child in the past. Talk about past events often concerns the day's happenings (Aukrust, 2002; Perlmann, 1984) and often centers on the child, regardless of topic. Approximately half of the mealtime conversations in the study by Perlmann, which involved children of ages 2 to 5, were about self and other people, places and things in relation to yesterday, the same day and the future. On average, three quarters of the conversations on different topics in Perlmann's study focused the child. However, topics in Perlmann's study also concerned what had happened to other family members, that is, children also were told about others' experiences. Perlmann found that abstract talk focusing, for example, on functions of objects in the world was less frequent and unevenly spread over families, occurring in some families but not at all in others. The children in the study by Matre (aged 5 to 8) talked with the adult about incidents of the past but also talked about more abstract and philosophical topics such as life and death, and consequences of different actions and events. A main characteristic of the conversations studied by Matre and by Preece was topic variability and range. The finding by Brinton and Fujiki that dyads of five-year-olds could introduce and reintroduce as many as 50 conversational topics in 15 minutes also points to the potential for large variability of content in discourse of children of this age. Brinton and Fujiki also discussed the fact that functions such as topic introduction and maintenance relate not only to age and linguistic maturity but also to individual style.

Caregivers have important roles in learning and providing their children with opportunities to talk about what the children think, have done and want to do. Everyday

scripted and well-known events and facts as well as details of recent events that are unknown to either the child or the parent need to be discussed. Questions are primary means for caregivers and children to introduce new topics and to get information on the topics that are focused so that issues and problems can be detailed and solved (e.g., Aukrust, 2002; Beals & Snow, 2002; Blum-Kulka, 2002; Davidson & Snow, 1996; Georgakopoulou, 2002; Matre, 1997; McCabe & Peterson, 1991; Ochs et al., 1996; Ochs et al., 1992). However, caregivers need to be aware of the number and types of questions they ask. Too many questions or too few questions may have similar negative impact on children's telling (McCabe & Peterson, 1991). McCabe and Peterson suggested that clarification questions by caregivers (e.g., what and who-questions) were important for development of children's ability to tell their own stories. McCabe and Peterson also showed that with increasing age (at 31 months in comparison to at 25 months) children were more interested in talking with their caregivers about un-shared experiences than about shared experiences.

As regards narratives and explanations, and topics of daily discourse, differences in both culture and types of activities exist (cf. Sections 2.2 & 2.4). For example, Aukrust and Snow (1998) and Aukrust (2002), in studies of dyadic and multiparty family meals (involving children around age 3), found that Norwegian children participated in story telling, requested stories and were told others' stories more often than American children were. While explanations in Norwegian families mostly concerned social practices and conventions, explanations in American families primarily focused on reasons for behaviors, internal states and explorations of the physical world. Narratives in Norwegian families were often about recent past events at preschool and in the distant world<sup>22</sup>. Narratives in American families mostly concerned recent past events in the outside distant world and immediate future events at home and in the outside world. Narratives and semi-narratives about preschool were significantly more common in Norwegian families than in American families. Apart from talking about what had happened at preschool and why, the Norwegian families referred to people frequently. Both people who were present in the interaction situation and those who were not present (e.g., persons at school) were referred to through pronouns, proper names, nicknames, and roles. Different individuals were referred to in topics focusing on who had worked and been at preschool and who had been involved in

---

<sup>22</sup> Narratives were coded into one of three "space-categories": home, preschool and distant outside world.

play and other events. People of everyday activities were identified and specific issues relating to these individuals were described, explained and evaluated. Others besides Aukrust and Snow have discussed how children and adults refer to people in conversation (e.g., Beals & Snow, 2002; Liberg, Espmark, Wiksten & Bütler, 1997; Ochs et al., 1992; Preece, 1987). The children in Beals and Snow's study referred to people in both neutral and more engaging narratives, talking about themselves and talking about the actions of others. In Preece's study, stories that related what had happened to someone else were the second most common types of narrative. Similarly, in the stories by five-year-old children and adults observed by Ochs et al., a non-present non-family member was often the protagonist whose behaviors and actions were examined and evaluated. In an investigation of family conversations (involving children aged 1 to 9) Liberg et al. also found that who was referred to related to what issues were told and how. In simpler presentations of observations and experiences, it was the child alone or the child and some other person that were focused on and referred to. In more complex and detailed telling of events, the protagonist of the story was often a third, non-present, person. The four and five year olds in the study by Marvin et al. (1994b) referred to self, friends and we both at home and at school. Reference to self was the most common type of person reference in Marvin et al.'s data, reference to family members occurred in the homes of all children that participated in the study. The way children and adults refer to self and present other and to non-present persons is an indicator of what is going on in interaction and of how life is outside home. Humans think and need to reason about the motives of their own and others' behaviors and sayings; we need to express in words our thoughts about others and our relationships to close persons and acquaintances that are more distant (e.g., Goldfield & Snow, 1992; Nordqvist, 2001; Rogoff, 1990; Schegloff, 1996; White & Siegel, 1984). As social and developing beings, children need not only to interact with other people but also to talk about self and others.

#### **2.3.2.4 Content of interactions involving children who use AAC**

Children with severe speech and physical impairments experience reduced opportunities for elaborative use of language (cf. Light, 1997), have restricted means to use gestures, intonation and other body communication to convey intent (e.g., Light et al., 1985b) and are particularly vulnerable to the fact that many language activities involve more than the

production of the correct words in a precise manner. Narratives, for example, “are not usually monomodal, but rather they integrate two or more communicative modes. Visual representation, gesture, facial expression, and physical activity, for example, can be combined with talk, song, or writing to convey a tale.” (Ochs & Capps, 1996, p. 20). The fact that children with severe impairments depend on others for the fulfillment of different interaction goals makes the guidance they get from others especially important (cf. Rogoff, 1990, Vygotsky, 1986).

The consistently conveyed view is that conversations between children with severe impairments and adults are often task oriented and otherwise restricted in content. However, a review of the literature shows that this view derives from studies that have examined content in relation to interaction features such as initiations and responses, communication rate and mode, questions and answers, and other more specific communicative acts and functions<sup>23</sup>. Little work has been done on content from a discourse level perspective, few systematic analyses have been made of precisely what caregivers and children with severe speech and physical impairments talk about at home<sup>24</sup>. Few studies, if any, have investigated to what degree children with severe impairments tell stories at home and even less is known about the degree to which children with severe speech and physical impairments, when interacting at home, are told other peoples’ stories. In 1985, Kraat stated, “No formal studies have specifically examined the topics introduced by pre-spellers or how they are established and negotiated.” (p. 76). Given the relevance of the issue to theory and practice in augmentative communication, remarkably little work has been done on the subject since Kraat’s publication. Interest in the relationship between interaction, conversational content, use of communication aids and children’s development appears, however, to be increasing (e.g., Brekke & von Tetzchner, 2003; Hjelmquist & Dahlgren Sandberg, 1996; Smith, 2003; Soto & Seligman-Wine, 2003; von Tetzchner & Martinsen, 1996; Waller et al., 2001; Waller & O’Mara, 2003). What children with severe impairments

---

<sup>23</sup> Content has also been examined from the perspective of vocabulary (cf. 2.2). That is, addressing issues relating to vocabulary in aided communication systems, studies have been designed to categorize words and topics in adults with disabilities and in adults and children without disabilities, and have examined word types in children with disabilities.

<sup>24</sup> In working with this study, I have also become well aware of the fact that several studies of interactions involving children who use AAC referred to in the literature are papers presented at conferences and other independent studies that have not been published in peer-reviewed journals (cf. Light, 1988). Presumably, there are interesting results that are only partially accessible (cf. Kraat, 1985).

and caregivers talk about at home when they choose to not use the aid has to my knowledge, not been examined in research<sup>25</sup>.

Analyses of interactions between children and adolescents with disabilities and their parents or other adult partners have shown that adults tend to control topic initiation and the development of discourse (e.g., Basil, 1992; Björck-Åkesson, 1992; Culp, 1982; Harris, 1982; Hjelmquist & Dahlgren Sandberg, 1996; Kraat, 1985; Light et al., 1985a,b; Pennington & McConachie, 1999; von Tetzchner & Martinsen, 1996; Waller & O'Mara, 2003). Physical difficulties of indicating graphic signs on, for example, a communication board and difficulties of selecting signs that match what one wants to say (from a limited number of vocabulary items) restrict a child's possibilities to introduce different topics and a dyad's chance to talk about issues other than the most concrete. Topic initiation and development is also complicated by the fact that children with severe speech and physical impairments may be forced to use words, gestures and facial expressions in ways that are not typical for natural interaction. In aided communication, for example, referring expressions can be used for pointing to the specific referents, giving clues about other referents or indicating a major change in communication activities. One example of this would be going from referent construction in relation to an established topic to the initiation of a new topic (Collins, 1996; see also Brekke & von Tetzchner, 2003). When communication is unaided, topic initiation and maintenance depend on the degree of mutually focused attention between the child and the caregiver, on the child's ability to refer in explicit ways, and on the caregiver's willingness and ability to locate referents within and outside the situation (cf. Keenan & Schieffelin, 1976). The difficulties of establishing topics in aided as well as in unaided communication may lead caregivers, whose basic goals are to understand their children, to direct conversations to focus on that which is interpretable (cf. Light et al., 1985b; von Tetzchner & Martinsen, 1996), that is, the most concrete and familiar topics. In these interactions in particular, speaking partner content and style have

---

<sup>25</sup> Wexler, Blau, Leslie and Dore (1983) examined conversations (on prepared topics) in interactions between nonspeaking and speaking persons (professionals) using and not using communication aids. Use of a communication aid led to increased number of initiations and increased production of complex statements, answers and acknowledgments by nonspeaking persons. Overall, the nonspeaking persons had larger control in interaction when a communication aid was used than when communication was unaided.

great influence on the overall content and development of discourse (Light et al., 1985a,b,c; Pennington & McConachie, 1999; Smith, 2003).

Interactions between children with disabilities and adults typically include a large number of questions and answers (Andrews, 1980; Basil, 1992; Björck-Åkesson, 1992; Colquhoun, 1982; Culp, 1982; Falkman et al., 2002; Harris, 1982; Light et al., 1985b, Pennington & McConachie, 1999; von Tetzchner & Martinsen, 1996; Waller & O'Mara, 2003). The tendency is that adults ask and children answer; children and adolescents who depend on augmentative communication rarely ask for information and may not introduce their own personal topics even when they have the vocabulary and are linguistically capable of doing so (e.g., Culp, 1982; Hjelmquist & Dahlgren Sandberg, 1996; Pennington & McConachie, 1999, 2001; Waller & O'Mara, 2003)<sup>26,27</sup>. Adults ask questions to get information that they do not have but also often ask about things that they already know<sup>28</sup>. The questions that adults ask typically serve to maintain flow in interaction, to solicit acknowledgements (i.e., elicit feedback) and clarifications (i.e., to increase understanding) and to fill silences; communication items are about the ongoing communication and are strictly bound to the situation. Adults also ask questions in order to test and direct the child's understanding and knowledge on different issues (Light et al., 1985b; von Tetzchner & Martinsen, 1996). These questions are very different from the kinds of elaborative open questions used by parents of children without disabilities in attempts to elicit narratives (cf. McCabe & Peterson, 1991). Finally, as for adults and young children without disabilities, questions are the primary means used by adult partners to introduce, establish and develop different conversational topics. Topics often relate to the objects, actions and tasks of the situation and more specifically to the use and function of the communication aid (e.g., Light et al., 1985b,c; Smith, 2003). When interacting with children who use AAC, the most

---

<sup>26</sup> The infrequent use of questions by persons who use augmentative communication systems, and the observation that aided communicators often have insufficient socio-relational skills, have led researchers to develop specific training programs intended at enhancing question asking skills and, more specifically, aided communicators' skills in asking questions that focus on the speaking partner's interests and experiences (Light et al., 1999).

<sup>27</sup> Not even in a structured interaction situation such as the referential communication task did the adolescents in Hjelmquist and Dahlgren Sandberg's (1996) study ask for the information they would have needed to solve the task in the best possible way.

<sup>28</sup> Adults and children without disabilities also talk about the familiar and already known (e.g., Aukrust, 2002). However, they usually do this in the form of extended discourse (e.g., story telling) rather than a question-answer format; the contribution of information to discourse is more symmetrical than is the case in the kind of interactions discussed here.



common types of questions that adults ask are yes/no questions. From the perspective of topic development and story telling yes/no questions, unless being used to expand on the content of the child's utterances, can be devastating because inherent in their form and function is the suggestion that the child gives the information requested and, indeed, nothing more. The only thing the child has to do in order to fulfill the duty brought about by this type of question is to communicate a yes or a no. Accordingly, the child's reply becomes short and concise and the adult is given, or left with (depending on what perspective one takes), the responsibility to also determine the content of the continued interaction.

Different observations exist concerning how caregivers handle and respond to children's utterances and actions. Culp (1982) found that caregivers would clarify but seldom expand upon their children's utterances. However, Smith (2003) showed in a detailed interaction analysis that a mother and a father both expanded on the utterances produced by their daughter but in very different ways. The mother concentrated on form rather than on content. The father showed more interest in the content conveyed by the child and was keen on helping her developing her messages, enhancing the child's production of more ideas relating to the topic at hand. The caregivers in the study by Björck-Åkesson (1992) were often observed commenting on their children's actions. Such comments by caregivers helped to maintain flow within the interaction while focusing on the interaction situation at hand. Similarly, von Tetzchner and Martinsen (1996) found that caregivers would verbalize the meanings of the graphic signs selected by the children and thereafter make comments based on the meanings of the signs indicated by the children, a strategy that is similar to labeling activities between caregivers and very young children without disabilities.

Many of the interaction strategies adopted by adults in interaction with children who have severe impairments and use AAC are necessary (e.g., to determine topic reference in the first place). However, using yes/no questions and focusing on form instead of content limit a child's chances to act independently during interaction, to use her communication aid to ask for information or to tell something personal on whatever matter (e.g., Colquhoun, 1982; Smith, 2003). Both Harris (1982) and Basil (1992) demonstrated that when adults used open questions, which required more than a yes or a no from the child but which could have the form of a two choice alternative, the information solicited was more complex and stimulated children's use of communication aids to develop topics. Unfortunately, other

than from a communication function perspective, neither the study by Harris, nor the study by Basil, told more exactly, what these topics were.

*A more nuanced picture of the content of interactions involving children who use AAC*

The idea that interactions involving children who use AAC are restricted in content and focus mainly on the present situation is of course only partially true. Moreover, the observation by Harris (1982), that “general interest conversations, passing the time of the day, and exchanges of humor or anecdotes” (p. 32) are rare in interactions between children with disabilities and adults, cannot be generalized<sup>29</sup>. Several researchers have pointed at individual variations and have discussed the fact that different factors, and different factors for different individuals, may have contributed to adult-dominated interactions that were narrow in content (e.g., Björck-Åkesson, 1992; Kraat, 1985; Light et al., 1985c; von Tetzchner & Martinsen, 1996).

Today, it is known that a child with severe impairments who has a communication aid with a suitable vocabulary and the functions necessary for participation in extended discourse can participate actively in various types of interactions and language activities. Although sometimes indicating one graphic sign only and leaving the responsibility for topic development to the speaking partner, children that interact with partners that are interested in what they are saying will initiate and change topics and, with assistance from speaking partners, are able to maintain conversations on different topics over several turns (von Tetzchner & Martinsen, 1996; Smith, 2003). Under optimal conditions, children using communication aids can tell stories that relate both their own and others’ past and future events, emotions and thoughts. They can direct their speaking partners and can gain control over topics by, for example, disregarding an adult utterance during the production of their own messages and by using social interactional markers like, “please wait” (Brekke & von Tetzchner, 2003; Ferm et al., 2001; Soto & Seligman-Wine, 2003; Waller et al., 2001; Waller & O’Mara, 2003). However, a comparatively assertive child using a communication board, in contrast to a child using conventional speech, still is very much in the hands of the speaking partner. We must not forget that, in reality, a child who communicates through

---

<sup>29</sup> Harris (1982) examined interactions between teachers and children at school, a setting that has its own specific interactive rules (cf. Snow & Blum-Kulka, 2002).

graphic signs on a communication board cannot use words that the partner does not want her to use and cannot talk about that which the speaking partner does not want to talk about.

Caregivers and children with disabilities have needs similar to those of caregivers and children without disabilities: to refer to oneself and partner, to talk about one's own and others' experiences and to talk about what other people say, think and do. Communication aids often include names for different people (e.g., Brekke & von Tetzchner, 2003; McCord & Soto, 2004) and the AAC literature includes a few interesting observations concerning children's practices for referring to people by augmented means. References to other people (e.g., *mother, grandfather, woman, boy*) were part of the graphic sign messages produced by the boy described by Soto and Seligman-Wine (2003) as he conversed with his teacher about things that she did not know. Conversations and stories in interactions between another adult and a child who used a narrative based communication aid with a speech synthesizer included several references to self by the child and references to the child by the adult, evidencing that general interest type of information sharing was taking place (Waller & O'Mara, 2003). The development over time of a narrative system for a child in the study by Waller et al. (2001) evidenced the importance of words referring to people. Between week 14 and week 32, 16 items for referring to people had been added to the child's system and by week 43 another 7 items that could be used for referring to people had been added, and 2 such items had been deleted. Further, a note by Brekke and von Tetzchner demonstrates that a child can refer to self by using body communication; the authors described how a child interacting with a father referred to self by looking at the door to his own room. Relating the results of their analysis of topics in preschool children without disabilities to vocabulary in augmentative communication systems Marvin et al. (1994b) suggested that children using communication aids must have the possibility to refer to people in flexible ways. In particular, the vocabulary category of *self* should not only include items to express identity (i.e., proper names or a picture of the child) but also other words that can be used to refer to oneself in different states, for example, *I, me* and *mine*. I comply with the proposals by Marvin et al. and will develop the subject more in the discussion of my results (cf. Chapter 6; 6.2).

Hjelmquist and Dahlgren Sandberg (1996) suggested that free interaction, in which communication is a main goal, could be especially demanding for children with disabilities. The adolescent Bliss users in their study were significantly more proficient in structuring

and developing communication around predetermined topics and tasks than in introducing and developing topics in free conversations<sup>30</sup>. Their results are interesting because they indicate that what the adolescents lacked were not basic skills in interaction but the ability to engage in what daily discourse is often about; to talk about what ever comes to one's mind, about self and others, about the speaking partner, about personal thoughts, feelings and experiences<sup>31</sup>. Aided communicators' lack of engagement in discourse, demonstrated so clearly in the comparison of activities in Hjelmquist and Dahlgren Sandberg's study, has often been referred to as passivity, learned helplessness and socio-relational insufficiency. Explanations to this behavior have focused children's restricted participation in social life in general and children's experiences participating in interactions that have been dominated by adult partners. These explanations are probably correct. However, the word passivity has been used in rather indistinct ways, at times almost as if passivity was a personal characteristic common to persons with severe impairments rather than something that depends on this person's interactions with other people. Many children and adolescents who communicate by augmented means are not passive at all; some even are active in structuring and guiding their own communication situation and development (Ferm et al., 2001; Soto & Seligman-Wine, 2003).

The children in this study have all reached the age when children without disabilities get support from caregivers for talking about the personal and the common, the immediate and the more distanced and hypothetical. In the present study, I examine what caregivers and children with and without disabilities communicate about when they perform different social activities at home. I aim to discuss how caregiver guidance can differ depending on activity type and depending on the physical and communicative abilities of the child. I also aim to complement prevailing explanations concerning the engagement in discourse by children who use AAC, with a discussion about how the *type* of content shared between a caregiver and a child with disability may affect the child's development and learning of interaction skills. By approaching content from different perspectives (cf. Chapter 4; 4.2.1,

---

<sup>30</sup> Similar results were reported by for example Light et al. (1985b), and Pennington and McConachie (1999), with the important difference that the free interaction in their studies were play activities.

<sup>31</sup> In this respect, the note by Falkman (2005), that the parents to the children in her study reported that their children talked more about objects, people and activities than about feelings and thoughts, is interesting.

4.2.3 & 4.2.4), I look at what caregivers and children talk about, how they refer to people and how they use questions in relation to different goals and conversations in different activities. I reflect on the results of the analyses with regard to the use and function of communication aids at home.

### **2.3.3 Patterns of interaction**

Learning how to contribute relevant information quickly (but not faster than is expected) in conversations on different topics and in activities that embed different goals and rules is an important part of children's pragmatic development. Apart from having to learn how to produce their own messages, children need to learn to become good enough listeners, to consider the actions and intents of the speaking partner, to get into conversation and not lose their turn (Ninio & Snow, 1996).

Linguistically, face-to-face interaction is based on the interdependent functional subsystems of interlocutors' own communication management functions, interactive communication management functions and main message functions (Allwood, Nivre & Ahlsén, 1993). Own communication management functions include the means by which a speaker manages her own contributions to the discourse (e.g., planning, editing, self-repair); interactive functions concern how interlocutors manage interaction flow (e.g., turn taking, sequencing and feedback)<sup>32</sup>. Variations in own and interactive management functions are reflected in time patterns and degrees of communicative simultaneity. Therefore, pauses and overlaps are suitable means by which to study patterns of interaction.

A review of the literature reveals that pauses and overlaps often are treated in descriptions of turn taking mechanisms (e.g., Bedrosian, Wanska, Sykes, Smith & Dalton 1988; Buzolich & Wiemann, 1988; Duncan, 1972; Light et al., 1985a; Newman & Pratt, 1990; Sacks, Schegloff & Jefferson, 1974; Welkowitz, Bond, Feldman & Tota, 1990). However, time patterns, as manifested through pauses and overlaps, also relate to other functions than turn management; time patterns in interaction may relate to activity factors and to other factors that are not possible to observe at the local level of the turn. According to Garman (1990), there are three commonly recognized main functions of pauses:

---

<sup>32</sup> Main message functions is "that which is contained in an utterance when those parts that are devoted to speech management or interactive functions have been subtracted." (Allwood et al., 1993, p. 3).

physiological, cognitive and communicative. Silent pauses can be listener-oriented, speaker-based or both speaker-based and listener-friendly. Listener-orientation applies to clarifying pauses, while speaker-based pauses usually reflect speaker difficulties with, for example, finding words. Speaker-based and listener-friendly pauses may, for example, mark, “the beginning and end of a speaker’s afterthought” (p. 117). Pauses are also symbolic devices that may signal problems or discomfort following the speaking partner’s contribution (Levinson, 1983). Overlaps also relate to functions other than those that research has dealt with most often (i.e., turn regulation and violations of informal turn rules: interruption). Overlaps may serve functions such as giving attention, affirmation, acceptance or reaffirmation. An overlap can also function as a reminder, an excuse, continuation or disagreement (Allwood & Björnberg, 2000). As pointed out by Ninio and Snow (1996) pauses and overlaps are very natural phenomena in face-to-face interaction, learning how to interrupt is also a skill the child must acquire.

In interaction, we find two types of silences: the intrapersonal pause, which is silence delimited by one speaker’s vocalizations, and the interpersonal switching pause, where there is a change in floor between speakers. Experimental work in the field of AAC has focused on pauses for two main interrelated reasons. First, pauses are observable interaction phenomena, the patterns of which say something about degree of symmetry between interlocutors or, as is often the case in augmented interactions, degree of asymmetry between interlocutors. Second, pauses are indicative of effectiveness and influence of device use on interaction; the time it takes a person to initiate and produce a message by means of using a communication aid influences the total interaction outcome.

Interactional asymmetries between caregivers and children with disabilities have been observed with regard to turn taking behaviors (Basil, 1992; Björck-Åkesson, 1992; Harris, 1982; Hjelmquist & Dahlgren Sandberg, 1996; Kraat, 1985; Light et al., 1985a; Pennington & McConachie, 2001). From the perspective of participation in interaction and development of language and social and pragmatic skills, it is important that children with disabilities acquire abilities and get opportunities to contribute to discourse in independent and symmetrical ways. In their comprehensive study of interaction between children and caregivers, Light et al. (1985a) showed that pauses regulated turn taking but also that pause length was related to the kinds of turns that occurred, “The median speaker switching pause prior to a child response was 0.65 s; the median pause prior to a child initiation was 1.64 s.”

(p. 79), indicating that the children needed more time to introduce something new into the discourse than to respond to a caregiver's oblige. However, in the play situations studied by Light and her colleagues, pauses of greater length than 1.64 s were uncommon. In cases of pauses longer than one second, the caregivers often began talking, indicating that they might have reacted to pauses as communicative breakdowns. The children did not always take advantage of their turn opportunities, but still managed to share the contextual focus with their caregivers during pauses. According to Light et al., the children's forfeiting of turn opportunities, as indicated by pauses of greater length than 1 s, might have been related to the physical and cognitive demands experienced by the children in the situation. Given their limitations, children were often not given sufficient time to contribute in other ways than by responding. One important implication of the studies by Light et al. and Harris is that there are reasons for caregivers and other adults to be cautious about their own interaction strategies and give children the extended time they might need for increased participation and more symmetry in interaction. Basil, and Pennington and McConachie gave similar suggestions. The rates at which persons who use communication aids contribute, take their turns and thereby reduce the length of pauses in interaction, are important for the fulfillment of personal interaction goals but have also been shown to influence others' perceptions of the person's conversational competence (Todman, 2000; Todman & Rzepecka, 2003).

Communicative contributions that are non-sequential are overlapping. According to Levinson (1983), less than about 5% of the total speech stream is overlapped. In a study by Gallagher and Craig (1982), the average frequency of overlaps in child-child interaction ranged from 10-16%. Tolson (1991), who studied the effect of family structure on mealtime interactions, found that simultaneous communication accounted for 13% of the conversation time in the sample and, in the Gothenburg Spoken Language Corpus (GSLC), which includes several activity types, as much as 30% of the total speech stream can include simultaneous communication (Allwood, Björnberg, Grönqvist, Ahlsén & Ottesjö, 2000). Thus, existing findings indicate that the degree of simultaneous communication in interaction varies with activity type and speaking partner constellation and presumably also with content. Further, asymmetries in role status may influence degree of simultaneous communication in interaction. In the study by Bedrosian et al. (1988) mothers interrupted more often than their children did and were less likely to yield to overlaps than were the children. However, the mothers in the study by Bedrosian et al. did observe turn taking rules

in that their overlaps most often did not extend over more than one turn. Both mothers and children maintained the topic of the overlap in the subsequent discourse. Gallagher and Craig found that initial overlaps (children start talking at the same time: double start) were more common than internal overlaps (one child starts to talk while another child is talking: interruption). The higher frequency of initial than internal overlaps in the study by Gallagher and Craig, than in the study by Bedrosian et al. may be, according to the latter, indicative of status differences; child-child interactions are status wise more equal than child-caregiver interactions. Departing from reports in the literature and by contributing with interaction-based analyses performed within an activity framework, this study seeks to extend on existing knowledge concerning interactions between caregivers and children who use AAC (e.g., Light et al., 1985a; Pennington & McConachie, 1999). Interaction patterns, as analyzed through patterns of pauses and overlaps, are examined in relation to goals and structures of one specific activity type, mealtime.

## **2.4 Interaction between Children and Caregivers in Social Activities at Home**

In the preceding sections of this chapter, it has become evident that although research in AAC has mostly focused on language outcomes as such and less on the activity and the relationships between activity factors and language, different situations, settings, constellations of interlocutors, communication aids and tasks have been examined. However, the communication partner has often been a professional and the setting environment educational or clinical. The language examined has often constituted talk elicited in relation to predetermined tasks and topics. Alternatively, settings and tasks have been adapted to resemble those of the home environment; caregivers have been invited to interact with their children as they would do at home. As early as 1985, Kraat pointed to the need for studies concentrating on aided interactions outside laboratory milieus. Although this need has been met to a certain extent, homes have not become common settings for studies on interaction between caregivers and children with severe impairments without an observer or trainer present. Research on interactions between caregivers and children without disabilities, however, has frequently focused the home environment and its different activities.



### ***Home, family and social activities***

For most children, home, and interaction with close family members, is the most important social encounter in daily life. The family unit is a system that children necessarily are parts of, while home is a natural place for care, nurture, learning and development (Rogoff, 1990). At home, children have the opportunity to interact with people who know them well and who understand their interests and communication. The fact that home embeds activities that children must attend encourages children's active and passive participation. The child's first years' activities at home mainly relate to care and play, activities that children, to varying degrees, need help from caregivers to perform. However, a feature of typical development is the remarkable pace at which children become capable of performing different aspects of activities themselves. What is more, as soon as children master certain physical and communicative acts on their own they typically are eager to continue to perform these acts independently and to conquer new arenas for independent acting in the same activities and in others within and outside the home. The social lives of children and adolescents with disabilities often are less varied than the social lives of children without disabilities (e.g., Brown & Gordon, 1987; Light & Kelford Smith, 1993). In fact, the social lives of young school age children with disabilities may consist mainly of the activities the children participate in at home, at school and at after-school centers, and of clinical appointments with specialists. Therefore, two related purposes in augmentative communication intervention are increasing children's participation in community-based activities and insuring that the communication the children experience in the environments in which they spend most of their time is rich and varied in such ways that stimulate development in cognition, language and personal and social identity.

### ***Limited use of communication aids at home***

For children with severe speech and physical impairments true participation in daily social life implies access to communication aids. In intervention, caregivers and children are often encouraged to integrate the performance of naturally occurring activities with the use of aided communication systems. Yet, research and reports from clinical practices indicate that communication aids are often used only partially at home. First, within specific interactions communication aids are used for certain communicative purposes and not for others, for example, for clarification and for conveying specific information but usually not for

replying yes and no and other words and intents that are expressed faster and successfully by unaided means. Second, communication aids are used in some activities but not in others (i.e., the aid is not brought into the activity at all and is therefore not a communication option). Hence, the involvement of communication aids in daily living is not a straightforward matter but depends on the characteristics of the system, on caregivers' conscious and deliberate planning, willingness and skills in aid use, as well as on children's interest and skills in using the aid<sup>33</sup>. Within families, the responsibility for bringing the aid, for making sure that it functions and for implementing its use in different activities often rests upon one parent more than on the other (Angelo, 2000). The literature also suggests that communication aids may be treated as learning systems rather than as systems that enable children to express their own ideas. For example, von Tetzchner (1996) reported professionals saying that children "should be relieved from the 'work' of communicating when at home." (p. 199). Caregivers are often well aware of their children's restrictions and capabilities in communication and may experience that they understand their children without using a communication aid<sup>34</sup>. These factors may contribute to limited use of communication aids between caregivers and children at home (e.g., Bailey & Shane, 1983; Culp, 1982; Engwis & Sweeney, 1996; Goldbart & Marshall, 2004; Light, 1997; Light et al., 1994; Light et al., 1985c; McCord & Soto, 2004; Smith, 1994; Zake, 1997; von Tetzchner, 1996). Even though communication aids may count for only a small part of a child's total communication system they are not less important. As stated by Smith (1994):

The fact that unaided communication modes function at least as efficiently (and frequently more efficiently) for certain communication functions should not obscure the fact that other more complex communication functions are not adequately served without access to a formal symbolic language code. (p. 236)

Parents want to understand their children and some parents to children with disabilities think of their children's communication aids as being very important (Smith, 1994). A relevant AAC intervention hypothesis is that most parents want to (a) learn about their

---

<sup>33</sup> Smith (1994) suggested that choice of communication mode related to internal, conversational and external factors, which, in turn, had different impact on different individuals in different situations.

<sup>34</sup> Caregivers, in particular, are sensitive to children's communication and often understand even the smallest gestures and sounds; this way of communicating is both natural and practical in everyday living but may impede children's development and independent functioning later in life (cf. Sweeney, 1996).

children's communication systems and (b) participate in the planning of their children's communication (e.g., Allaire, Gressard, Blackman & Hostler, 1991; Angelo, Jones & Kokoska, 1995; Goldbart & Marshall, 2004). Some of the parents in the study by Goldbart and Marshall felt that they had received too little information about augmentative communication practices in general and about their own children's systems in particular. If a caregiver feels unsure in using an aid and in providing the technical support that may be needed to assist the child in its use, the child's possibilities for independent communication at home are negatively influenced. Caregivers know their children better than anyone else but cannot be expected to know what professionals spend years trying to learn. Researchers focusing on family issues in augmentative communication converge in pointing out that professionals must be sensitive to parents' needs and wants, beliefs and knowledge about their own children's communication and life at home. Parents should be part of, not incidental to intervention (Björck-Åkesson et al., 1997; Björck-Åkesson et al., 1996; Engwis & Sweeney, 1996; Goldbart & Marshall, 2004; Huer & Lloyd, 1990; McCord & Soto, 2004; Zachrisson et al., 2002; Sweeney, 1996). Moreover, studies examining interaction and the use of communication aids in families should look more into the dynamics of the interaction situation than at individual contributions made by children versus adults.

#### **2.4.1 Social activities examined in the study**

Based on information provided by caregivers and children in interviews and logbooks, mealtime, game, drawing, teeth brushing and story reading activities were pinpointed as areas of focus in the study (see further Chapter 4; 4.1.1).

##### ***Mealtime***

The structure of the mealtime activity varies across cultures (Aukrust & Snow, 1998; Pan, Perlmann, & Snow, 2000; Georgakopoulou, 2002; Tulviste, 2000). In Western European and North American cultures, one of the main characteristics of the mealtime activity, which is also an important foundation for communication, is that it is a necessary and frequent daily activity, in which adults and children often are gathered in the same place for a certain amount of time and for a natural and common purpose. Mealtime has also frequently been studied with regard to typical language development, family structure and

socialization. As pointed out by Aukrust and Snow (1998), “Meals seem to create culturally specific discourse environments in which children can both listen to adult talk and participate in collaboratively produced discourse.” (p. 222). Ochs et al. (1996) referred to mealtime as an opportunity space, “a potential forum for generating both knowledge and social order/disorder (e.g., in elaborating and resolving problems and conflicts) through interaction with other family members.” (p. 95-96). Beals (1997) found that during mealtimes, children are exposed to a variety of words, “that would not be expected to be found in the vocabulary of a young child,” (p. 678) and are also provided with different kinds of support and information for learning their meanings. Apart from including quite an amount of regulatory speech and behavioral directives in particular (e.g., Tulviste, 2001) topics and narratives of mealtime interactions relate to people, places, and things of the immediate situation as well as of the immediate past and future (Beals & Snow, 2002; Davidson & Snow, 1996; Perlmann, 1984). By allowing for story telling and explanations, talk about emotions and issues beyond the most immediate, mealtime plays a significant role in development of self-identity and language, problem solving and theory building, basic and more advanced discourse skills and analytical thinking (e.g., Aukrust & Snow, 1998; Beals, 1993; Blum-Kulka, 2002; Erickson, 1990; Hérot, 2002; Ochs et al., 1996; Ochs et al., 1992). As many activities at home, mealtime is also an opportunity for intimacy and playful use of language (e.g., Aukrust, 2002).

Clinical experience and research suggest that for caregivers and children with severe impairments the mealtime activity comprises special requirements that may affect communication in different ways. Although the basis in turn taking structure afforded by the mealtime activity may enhance development of interaction skills, for children with severe impairments, mealtimes are time consuming and offer communicative possibilities that differ from those for children without disabilities (cf. Bailey, Harms & Clifford, 1983; Evans Morris, 1981; Light & Kelford Smith, 1993). Mealtime assistance, nutrition and safety issues often become the focus of interactions and, for children with special needs, mealtime involves more helper behaviors on behalf of caregivers than do, for example, free play activities (Pino, 2000). Poor major mobility and involuntary movements on behalf of the child may prevent participation in terms of both communication and physical action. Due to the high physical and sensory demands placed on the child at mealtime, communication signals may be inconsistent or vague and difficult to interpret. There are

examples of caregivers to children with disabilities who have reported that mealtime is an activity that includes a lot of communication (Miller & Kraat, 1984). Yet, it is a common view that high demands on handling of objects and physical actions at mealtime may affect interaction patterns and communication possibilities regarding, for example, use of communication aids and conversations on different topics. Mealtime has been shown to assist development in children without disabilities. Therefore, if we wish to consider the child whose communication must be supported, mealtime, in which caregivers and children with disabilities spend much time, is a relevant activity to study. The question is to what degree a meal involving a caregiver and a child with severe impairments is compatible with different kinds of communication?

### *Game*

Picture, dice and board games represent the kind of play that young school age children and caregivers engage in together at home. Whilst mealtime is a necessary daily activity, playing a game is a voluntary activity. Games are structured and ritualized activities (Davidson & Snow, 1996) that are governed by procedures and rules that participants must obey and, therefore, may be cognitively demanding. The relationship between the game activity and the language used in it is close, typically. The communication that evolves is often bound to the actual playing; communication may even be equivalent to playing (cf. Ninio & Snow, 1996). Accordingly, there are reasons to believe that game time is a type of activity that does not stimulate communication about issues other than those that relate to the structures and goals of the game. However, this may be a simplified picture of the game activity. Different types of games may affect communication in different ways (cf. Davidson & Snow, 1996) and different players may have different possibilities to play different games leading, in turn, to different communicative outcomes. Tulviste (2001) compared puzzle solving<sup>35</sup> and mealtime interactions of caregivers and six-year-olds. Caregivers used more behavioral directives and conversation eliciting language at mealtime than in puzzle solving and more attentional directives during puzzle solving than at mealtime. Children who talked a lot received more attention directing language from

---

<sup>35</sup> Puzzle solving is an activity type that does not necessarily embed the structural features of rule-governed games. Yet, similarly to playing a game, doing a puzzle is an activity in which a caregiver and a child get together and center on one specific task. I refer to the study for explanatory purposes.

caregivers (i.e., not more conversation eliciting talk) and the children spoke more when doing puzzles than when eating (i.e., produced a larger number of words per minute and longer utterances in the puzzle activity than at mealtime). Interestingly, Tulviste noted that the type of questions caregivers asked differed in the two activities. Questions during puzzle solving were mostly open-ended while questions during meals were mostly of the yes/no type. Davidson and Snow's data included child-caregiver play around different tasks as well as structured games. Davidson and Snow did not code dyadic play for topics focusing on people, places and things, but they did code these interactions for knowledge topics and found that the dyadic interactions included talk that focused on how things function in the world. Hence, different types of play and games may allow for communication other than that which is often reported in the literature (i.e., the enactment of moves). Furthermore, games may not be completely inferior to other activities that have been shown to stimulate communication (cf. Tulviste).

The structural features of the game activity make it an exemplary communication activity for children who use AAC and an easy activity for AAC professionals to work with. The vocabulary a child who uses a communication aid must have access to in order to be able to play a game is predictable. For these reasons, children's communication aids may include vocabulary that allows playing different types of games. I know of no study, however, that has examined actual play interactions between caregivers and young school age children with severe impairments. Do they use their communication aids when they play and if they do, for what purposes? What do they talk about when they play and how is game communication best supported?

### ***Drawing***

Not all social activities at home are equally strong in terms of organization around a central main goal. Rather, much of everyday communication between children and caregivers occurs in relation to activities that incorporate different types of goals. Children and caregivers can be in the same room and do partly different things but still observe what the other person is doing and, although not focusing on the same objects and tasks, communicate with each other (e.g., Dunn, Wooding & Hermann, 1977).

One such non-routine activity in this study is drawing. The child draws a picture and the caregiver alternates between focusing on the child and other tasks. Involving several

different goals, the drawing activity can be said to be loose in structure, at least, joint attention with respect to a specific task is not a primary goal (cf. game playing). On the one hand, the fact that children and caregivers are partly engaged in different activities may lead to little communication. For example, drawing has been shown to involve a considerable amount of egocentric speech by children (cf. Piaget, 1926/1959; Vygotsky, 1986). On the other hand, the fact that the drawing activity has a relatively free structure may stimulate communication. Other findings suggest that drawing minimizes the child's self-consciousness. To draw a picture even has been a task in studies of children's narrative skills (McCabe & Peterson, 1991). Matre (1997), in trying out activities suitable for examining children's conversations, provided support for both hypotheses concerning children's talk during drawing. Matre found that although drawing stimulated children's communication, at times, it also stimulated children's talking to themselves.

Due to physical restrictions, children with severe impairments have large difficulties using traditional drawing materials (e.g., pencils, crayons and paper) and may need much assistance to be able to draw (Marvin, 1994). Light & Kelford Smith (1993) reported that although the homes of children with disabilities contained as much drawing material as the homes of children without disabilities, and although the children with disabilities enjoyed drawing, they participated in drawing activities much less frequently than children without disabilities. Approximately half of the parents in the study by Marvin reported that their children participated in drawing and writing activities on a weekly basis and 35% of the children did some drawing or writing each day. The parents in the study by Marvin reported that apart from providing physical assistance they supported their children during writing and drawing by commenting and encouraging their work and by answering questions posed by the children; they communicated with their children when the children wrote and drew. Thus, although a child's physical restrictions complicate drawing and make use of communication aids difficult, this does not rule out a caregiver's willingness to communicate with her child when the child draws. In the study, I examine what caregivers and children with disabilities talk about when they perform a type of activity such as drawing as compared to caregivers and children without disabilities.

### *Teeth brushing*

Some activities are performed every day, not necessarily because children and caregivers want to, but because they have to be done. These activities are routines that relate to care in the strictest sense; they represent typical experiences of children's life at home and provide important frames for children's participation in coherent and extended discourse (cf. Foster, 1986; Hoff-Ginsberg, 1991). Separately, routines do not demand much time. Taken together however, and for caregivers and children with severe impairments especially, routines are time consuming and may occupy a large proportion of the total interaction time of the day. Thus, routines play an important role in children and caregivers' lives and, hence, in children's development (Rogoff, 1990). Studies of routine activities have mostly been concerned with young children (mealtime being an important exception). Although the social and communicative value of routine activities may decrease with children's increasing independence, most routines do not disappear because children get more autonomous. Above all, some children, independently of increasing age, will continue to depend on their caregivers for the fulfillment of basic daily needs.

A routine activity examined in the study, apart from mealtime, is teeth brushing. No previous studies of child-caregiver interaction that I know of have focused interaction in relation to teeth brushing activities. The activity, however, has much in common with other daily routines in the home environment. Although routine activities recur in much the same format and are more structured than for example free play, they often are freer in structure than rule-based games (cf. Aukrust, 1996). Routine activities are typically not cognitively demanding. On the one hand, relatively free structures and small demands on cognitive effort have been found to stimulate communication on a wide variety of issues and concerns (cf. mealtime). Hasan (2000) for example, demonstrated how communication about things seemingly totally unrelated to the ongoing activity facilitated the pursuit of routines between caregivers and young children. On the other hand, routines are routines, and the fact that they simply must be done may lead to little communication in which content is restricted. Hoff-Ginsberg (1991) examined interaction between caregivers and young children and found that dressing (together with mealtime) included a larger number of conversation eliciting utterances on behalf of caregivers than play and story reading. At the same time, dressing was the activity that was most restricted in lexical diversity. Another aspect of the matter is that many routines are physically oriented to such a degree that language may



concern the fulfillment of practical goals only (Wells, 1985). Physical task orientation may lead to language that demands a low level of abstraction from the child (Sorsby & Martlew, 1991).

Supposedly, the role communication comes to play in the teeth brushing activity for a child with severe impairments depends on the physical prerequisites of the child and on the amount of assistance a caregiver needs to provide. However, we do not know more specifically how the communication of a caregiver and a child with disabilities in a routine activity such as brushing teeth differs from the communication of a caregiver and a child without disability in the same activity. What can we learn from studying the teeth brushing activity about how to best support the communication of children with severe impairments and their caregivers in similar basic routines at home?

### *Story reading*

Story reading, together with toy play and mealtimes, are the child-caregiver activities that have received most attention in the literature on child language. In many cultures reading, in particular bedtime stories, is a common, ritualized and frequently recurring activity (Heath, 1986; Light & Kelford Smith, 1993). It differs from many other daily activities by not relating to physical care but to the fulfillment of interpersonal goals such as closeness and amusement; for some parents and children more than for others it relates to language teaching. It represents young children's primary contact with written material and has been related to reading and writing development as well as to children's development of vocabulary, world knowledge and oral narrative skills. It is important to language and communication because it is a language activity in itself and because it allows children and caregivers to concentrate on one specific object and task (Dunn et al., 1977; Moerk, 1985; Snow & Goldfield, 1983).

From early on, book reading occurs in the form of a structured dialogue within which the child is exposed to familiar as well as novel words and expressions, is asked questions and is given the opportunity to label and to participate in more advanced communication (Ninio & Bruner, 1978; Snow & Goldfield, 1983). The activity is unique in being structured, concrete and abstract at the same time. It focuses non-real objects and events and in this sense is imaginary. Yet, through pictures and text, the objects, events and their related concepts, are readily available for examination (Moerk, 1985). With regard to

communicative content, story reading activities are restrictive. Whether parents adapt an informal reading style and concentrate on the content of the story or focus on print, in general, the sub-goals of the activity and the storyline (e.g., to point, read, ask, answer and discuss) influence what else can be talked about and how much each participant can talk. Yont et al. (2003) for example, found that young children produced longer utterances during free toy play activities than during story reading. Nonetheless, caregivers' speech to children during reading (apart from the actual reading) has been found to stimulate children's reasoning and use of decontextualized language (Sorsby & Martlew, 1991). Hoff-Ginsberg (1991), compared mealtime, dressing, book reading and play, and found that, "Reading stood out as the most different of the four settings studied. Mothers' child-directed speech during reading had the greatest lexical diversity, the greatest syntactic complexity, and the highest rate of topic-continuing replies." (p.793). Thus, story reading at home, stimulates language development and children's reflective thinking. For young school age children reading together with a parent at home forms a bridge between home and school cultures. The books read at home and the form reading takes change naturally with children's growing linguistic skills. The common path is from picture books, with descriptive styles and highly interactive reading with many interruptions to books comprising complex texts which are linguistically more demanding, focusing on meaning understanding and child performance, defined by clear reader and listener roles (Moerk, 1985; Reese & Cox, 1999; Sorsby & Martlew, 1991).

Acquiring skills in reading and writing implies increased chances for flexible and independent communication and involvement in the many situations in society that are associated with printed material. For this reason, and because story reading is a highly interactive activity in the child's natural environment that is relevant for language development in children without disabilities, story reading and other literacy activities are frequently discussed in the field of AAC. Light and Kelford Smith (1993) pointed at some literacy factors that were different in the homes of children with and without disabilities. The children with disabilities in the study by Light and Kelford Smith requested literacy activities less often than children without disabilities did and very seldom initiated reading independently. Parents of children with disabilities asked their children to label pictures less frequently than did parents of children without disabilities and although the former did try to engage their children in communication about pictures, they did so in ways that demanded

little communication by the children. Few children with disabilities had access to their communication aids during story reading and, in general, did not ask questions during story reading. A comparison of the home environments of children with single and multiple disabilities by Marvin (1994) confirmed that children with severe speech and physical impairments might be particularly disadvantaged regarding the possibility to participate actively in story reading activities. During story reading, children with multiple disabilities were not positioned beside their parents to the same extent as children with single disabilities (meaning they did not have equivalent access to the books) and they asked and answered questions relating to the book less frequently than children with single disabilities. Moreover, parents to children with multiple disabilities had lower expectations concerning their children's development in reading and writing. Light et al. (1994) examined story readings involving children with disabilities and caregivers and found first, that none of the five child-caregiver dyads examined used their communication aids during reading and second, that in all dyads communication focused on the stories read. Caregivers dominated dialogue and produced a larger number of different communicative acts than the children; children participated less actively than caregivers did. Overall, the reading interactions were synchronous but asymmetrical. There were variations in reading styles between the dyads. Some caregivers asked their children open questions and talked with their children about the story, relating the story to the children's own experiences. None of the children, however, asked any questions themselves. A comparison by Dahlgren Sandberg (1998) of the literacy experiences at home of non-speaking Bliss-using children, children with mental retardation, and children without disabilities warrants for caution in attributing too extensive a role to the home in children's development of reading and writing. As regards literacy issues, there were few differences in the homes of the three groups examined; comparisons within groups showed that there also were few differences in the homes of reading and non-reading Bliss users.

We do not know to what degree literacy experiences at home influence the development of reading and writing in children with disabilities. However, it is well recognized that a supportive home, in relation to literacy as well as to other skills, is favorable. At least two studies have shown that non-speaking readers have positive literacy experiences from home. Many of the literate adults with severe impairments in the study by Koppenhaver, Evans & Yoder (1991) came from homes where reading was important,

where people read for their own pleasure, where children were expected to learn to read and write and where children were read to on a regular basis. Similarly, Smith (1992), in a description of the language profiles and lives of two non-speaking young school age children with good reading abilities showed that apart from good comprehension of spoken language and hand functions sufficient for pointing and turning pages of books, both children came from homes that valued books and reading. Both children, who were highly interested in reading, had experienced, “successful reading within a pleasurable and enjoyable context.” (Smith, p. 64).

Mealtime, game, drawing, teeth brushing and story reading are typical activities in the home environments of young school age children. The activities differ in goals and structures, in cognitive, physical and communicative demands and accordingly, in the type of communication they stimulate. I examine how these activities, which fill important functions in the lives of children without disabilities, enable and restrict communication for children with severe speech and physical impairments in interaction with caregivers. I assume that an activity-based interactional approach can add to existing knowledge concerning what factors to consider in the support of the communication of caregivers and children with disabilities at home.

## **2.5 Analyzing Interaction**

The interactions examined in the study are naturalistic in the sense that they originate from activities of the home environment and in the sense that no attempts have been made to structure the interactions or to solicit specific linguistic information (cf. Tsui, 1994; see also the social pragmatic model presented by Turnbull & Carpendale, 1999)<sup>36,37</sup>. How, then, is naturalistic face-to-face interaction best analyzed?

The literature on interaction analysis presents many traditions but is confusing concerning providing an overall picture. The term conversation analysis, for example, is sometimes used to cover all kinds of analyses of face-to-face interaction and conversation,

---

<sup>36</sup> See further Chapter 4; 4.1.1.

<sup>37</sup> This is not to say that structured interactions are not natural or that the interaction data used in this study represent naturally occurring communication because strictly speaking, apart from the use of Blissymbolics in one of the sub-studies, it does not. Although no observer was present during the dyads' activities, the dyads knew that they participated in a study and were aware of being video recorded.

regardless of whether or not classical conversation analysis (CA) is applied (Sacks et al., 1974). Alternatively, there is classical conversation analysis and there is the rest: discourse analysis (Levinson, 1983; see also Norrby, 1996). The fact that what is called conversation analysis is not always CA and that discourse, which can refer to spoken and written material, are both used in such inconsistent ways is unfortunate. Both Levinson (1983) and Mey (2001) treated discourse analysis and conversation analysis as two different analytical frameworks. Mey, however, argued that discourse analysis includes conversation analysis and rejected the view held by some researchers that discourse analysis is merely the study of grammar and speech acts in conversation. Linell (1998) provided a comprehensive overview of different approaches to the study of interaction and pointed out that the borders between different traditions are loosening up. Many conversation analysts, for example, have begun to use a wider notion of context than that which is made relevant by interlocutors in interaction. The approach used by Linell is that of dialogism which draws on social-constructionist views and interdisciplinary dialogue analysis. Dialogue, says Linell, "exhibits a *double dialogicality*; it is 'dialogical' both in the contexts of in situ interaction and within the sociocultural practices established over long traditions of indulging in such interactions. Therefore, we need an interdisciplinary and eclectic approach to dialogue." (p. 54). As far as I can see, dialogism has much in common with the theory behind the model for activity-based communication analysis (cf. Allwood, 2000).

This study is a discourse analysis project and I have deliberately avoided the more specific terminology (cf. Linell, 1998). The study concerns the use of language (body communication included) in spoken interaction; the approach is functional, and interaction is seen as a part of the larger socio-cultural context of human activity and life (Allwood, 2000; Brown & Yule, 1983; Linell, 1998; Schiffrin, Tannen & Hamilton, 2001; Tsui, 1994; Vygotsky, 1978). The fact that research traditions are often blended and that some fundamentals are not exclusive to a particular methodological approach is also reflected in this study, which shares many of the principles advocated by conversation analysis. As pointed out by Müller and Soto (2001) conversation analysis, which focuses on issues such as turn allocation and conversation breakdown and repair, and acknowledges the role of body communication, can be especially useful to the analysis of augmented interactions. In particular, the application of conversation analysis to the analysis of interactions between aided and non-aided speakers can decrease the risk for unintentional researcher biases and

contribute to better evaluation of augmented communicators' abilities. However, it is also easy to see how the conversation analyst, focusing the local levels of interaction, risks missing factors that are important to understanding augmented interactions. For these types of interaction especially, there are reasons to connect language phenomena with factors of the physical as well as the more distanced context.

The connections between this study and conversation analysis can be summarized as follows. Interaction occurring in natural environments has been analyzed, in the initial part of data treatment, transcripts and video recordings have been approached without preconceived notions about what to look for and what to find. In the continued data-driven analysis, those phenomena for which there is evidence in the data (i.e., what is actually done and communicated by the children and the caregivers) have received primary attention and data have been treated with caution. The study complies with the idea that conversational phenomena arise in and through interaction and that body communication and spoken words are worthy of equal attention. Intuition on behalf of the analyst about the degree of correctness of language use, which sometimes guides analyses performed within a discourse analysis framework (Levinson, 1983), has been avoided, the study is not normative.

Treatment of data in the present study also differs from traditional conversation analysis on a number of points. I am interested in figuring out what is going on in each specific interaction situation, specified in terms of activity types. The concern, in most of the analyses, has been to find out what happens above the level of the isolated word and turn, that is, beyond issues relating to basic structural organization. For example, during analysis of interaction patterns at mealtime I have, on the whole, been more concerned with the total interaction outcome and its significance for the dyad, than with finding patterns of regularities in short sequences of interaction. The analyses are mainly descriptive. However, the descriptions depend on combinations of qualitative and quantitative examinations of data; independent observer analyses have been conducted (cf. Turnbull & Carpendale, 1999). Importantly, I do not believe that it is possible for an outside observer to be completely objective and to disregard prior ideas and expectations in approaching data<sup>38</sup>. In

---

<sup>38</sup> For this purpose to be fulfilled the observer would have to be a person who had no life experience, who did research without motives (i.e., lacking a theoretical and methodological framework) and who had no knowledge of earlier research findings. In my view, no such researcher exists. Biases are present already at the stages of data collection and transcription (cf. Müller &

fact, I do not even think that this is always desirable. Another major assumption made here that contradicts with classical conversation analysis is the idea that interaction is to be examined and understood in relation to the type of activity within which it takes place. I regard context as dynamic but cannot accept the idea that context is mainly constructed by interlocutors here and now. In my view, context is determined with respect to type of activity on the one hand<sup>39</sup>, and developed within the activity interaction situation on the other, depending on what activity factors are acted upon by the interlocutors, of course. The interlocutors' experiences and background, and the goals of the interaction situation, are part of the activity and can be relevant to interaction independent of what happens on the micro level. Background knowledge and experience can be relevant in ways that are not reflected in data. In order for analysts, like me, to understand what a specific interaction is about, "we must look further than the co-text of utterance and take the whole of the language scene into our view." (Mey, 2001, p. 135).

---

Soto, 2001) and do not vanish because the stage of data analysis is reached. In my opinion, this problem should be addressed.

<sup>39</sup> Activities are socio-culturally constructed, they have a history and a future, and belong to a larger context than that of the immediate situation (see e.g., Lave, 1996, for a discussion on activity theory and phenomenological social theory).

## **Chapter 3**

### **Specific Purposes and Research Questions**

The general purposes of the study (cf. Chapter 1; Section 1.2) are dealt with in relation to four sub-studies. This chapter presents the purposes and research questions posed for each sub-study.

#### **3.1 Conversational Topics at Mealtime**

There were two purposes of this sub-study: (a) to investigate the conversational content of natural interactions between a child with disabilities and her caregiver at mealtime, and (b) to describe the relationship between the contextual characteristics of the mealtime activity and the content shared within the activities. These purposes were addressed via a focus dyad (FD1) comprised of a child with disabilities and her caregiver, and a comparison dyad (CD1) comprised of a child without disabilities and her caregiver. The research questions were: (a) What are the influencing contextual factors of the mealtime activity? (b) What are the conversational topics? (c) How long are the topics and how many times do they occur within the mealtime activity? and (d) How and by whom are conversational topics initiated and changed? The content shared within the dyads at mealtime was illustrated through discourse excerpts and was discussed with regard to what contextual factors influenced the dyads' interactions and what interaction goals were fulfilled.

#### **3.2 Mealtimes and Patterns of Interaction**

The purpose of this sub-study was to examine how contextual background factors of the mealtime activities of focus dyad 1 (FD1) and comparison dyad 1 (CD1), as analyzed in the sub-study on conversational topics (cf. 3.1), related to the dyads' patterns of interaction. Pauses and overlaps were used as indicative of how the dyads organized their communicative contributions in relation to the mealtime activities they were carrying out. Three questions were investigated regarding patterns of interaction at mealtime (a) How frequent are pauses and overlaps in the dyads? (b) What factors are behind pauses and overlaps in the dyads? and (c) What are the consequences for the dyads of the interaction patterns observed? The dyads' patterns of interaction at mealtime were exemplified via



discourse excerpts and were discussed with regard to contextual background factors, interaction goals and conversational topics.

### **3.3 Referring to People in Different Activities**

This sub-study was designed to examine how children and caregivers referred to people in five different activities, mealtime, game, drawing, teeth brushing and story reading. The frequency and type of person reference in a dyad including a child with disabilities and her caregiver (FD1) were compared to the frequency and type of person reference in a dyad including a child without disabilities and her caregiver (CD1). The analysis concerned which individuals were pointed out by use of particular words as well as why and when those people were referred to in the dyads' different activities. Throughout the thesis, the term person reference denotes words or word approximations that are used to refer to people in interaction (see further Chapter 4, 4.2.3.2; *Identification of person reference*). Three research questions were addressed concerning the dyads carrying out of the different activities (a) To what extent do the dyads refer to people? (b) What types of person references are used? and (c) To what extent do the dyads refer to present versus non present people? The dyads' practices for referring to people were related to the possibilities and restrictions observed for the dyads in the activities. Person reference was exemplified and discussed in relation to different interaction and activity goals.

### **3.4 Content and Goals in Naturalistic Communication with Blissymbolics**

Two sequences of Bliss-board communication that occurred in the interactions of a child with disabilities and her caregiver, focus dyad 2 (FD2), have been concentrated on in this sub-study. The Bliss-board sequences comprised the only interactions in the data collected for the study as a whole that involved graphic signs and were unique in the sense of representing spontaneous use of aided communication between a child and a caregiver at home. Three features of the Bliss-board interactions were of particular interest in the analysis, the characteristics of the situations of use, the communicative content shared and the interaction strategies employed. A main objective of the study was to examine these Bliss-board sequences with regard to the activity as well as to how the child and the

caregiver used the Bliss-board to introduce and maintain conversations on different themes. A second objective of the study was to compare Bliss-board communication with communication that did not involve Bliss-words in dyads of caregivers and children with and without disabilities.

Four research questions were investigated (a) What are the characteristics of the situations in which the Bliss-board is used and to what degree is Bliss-board communication integrated with the performance of the activity? (b) What do the child and the caregiver in FD2 communicate about using Bliss-words? (c) Do themes similar to those that occur when FD2 use Bliss-words occur when FD2 do not use Bliss-words, in the unaided interactions of another dyad including a child with disabilities (FD1), and in the interactions of two dyads including children without disabilities (CD1 & CD2)? and (d) If themes similar to those of the Bliss-word communication in FD2 occur in other interactions, in what ways do these communications resemble and differ from the Bliss-word communication in FD2? Bliss-word communication on specific themes was illustrated, exemplified and compared to communication on similar themes that occurred during other types of interaction in different activities. The interaction analyses aimed to illustrate what goals FD2 achieved, and did not achieve, by means of using Blissymbolics in comparison to what FD2, FD1, CD1 and CD2 achieved, and did not achieve, during unaided communication: spoken words, word approximations and body communication.

The methods and results of each sub-study are presented in Chapters 4 and 5, respectively. The research questions outlined in this chapter are answered and discussed in Chapter 6. In addition, Chapter 6 returns to the general purposes of the thesis. Based on the observations done in the sub-studies, I discuss how severe restrictions in speech and motor functions in children can influence a child-caregiver dyad's communication and management of different activities at home and have an impact on a child's development.

# Chapter 4

## Methods

Section 4.1 of this chapter concerns the study as a whole and includes descriptions of the set up of the study, participants, material, transcription standard, data analysis, and statistical methods. The methods used for each sub-study are presented in Section 4.2.

### 4.1 General Procedures

#### 4.1.1 Set up of study

Table 4.1 presents the procedural framework of the study.

Table 4.1 Procedural framework of study

---

PROCEDURAL STEPS TAKEN IN THE STUDY
1. Selecting participants
2. Assessments
3. First interview – before video recording
4. Logbooks
5. Choosing activities to video record
6. Video recording and instructions
7. Second interview – after video recording
8. Choosing interaction samples to examine
9. Analyzing data
10. Presenting the results for the dyads

---

Apart from the assessments, which needed to be objective, the author was responsible for carrying out the different parts of the study. All contacts between the author and the dyads took place in the home of each dyad. Ethical considerations are discussed in Section 4.1.1.1.

*Selecting participants:* Two dyads of children with disabilities and their caregivers (focus dyads) were selected for participation through a regional resource centre for communication and computerized aids. The inclusion criteria for the focus children were: (a) age appropriate receptive language functions and cognitive capabilities, (b) severe

physical impairments affecting major mobility and hand function, (c) severe dysarthria affecting speech production and comprehensibility, and (d) hearing and vision within normal limits, with or without correction. In addition, the focus dyads should be confident in using some kind of aided communication system. Assessment by a speech and language pathologist, a psychologist and an occupational therapist should have been carried out during the 6 months prior to the study.

Two dyads of children without disabilities and their caregivers (comparison dyads) were selected for participation through contacts with teachers and headmasters of the schools in the same region the focus children belonged to. The comparison children were included in the study based on information provided by caregivers and school professionals. The information provided by the caregivers was personal but also depended on regular assessments carried out at medical childcare centers. Inclusion criteria for the comparison children were: (a) ages matching the focus children, (b) hearing and vision within normal limits, with or without correction, (c) no physical impairments, (d) no history of speech or language impairments, (e) age appropriate receptive language functions and cognitive capabilities. The author (speech and language pathologist) met the comparison children prior to the onset of the study and considered the information provided by caregivers and school professionals as thoroughly reliable. Further assessments of the comparison children were not considered necessary.

For all dyads, the caregiver should be a parent or the most important person for the child in the home environment. As far as possible, the dyads should resemble each other with respect to home environment and social status. Another aim was to include children that, according to opinions of caregivers and professionals, showed a large interest in communication. The dyads are presented in Section 4.1.2, where I also discuss the degree to which the inclusion criteria were followed (cf. 4.1.2.5).

*Assessments:* The focus children's speech, language, cognitive functions, communication, major mobility and fine motor skills were assessed by speech and language pathologists, occupational therapists and a psychologist, all with specialization and long experience in the assessment of children with disabilities. Speech and language pathologists had assessed both focus children for other purposes than participation in the present study within 6 months prior to the initiation of the study. These written expert opinions qualified as assessments for the study. In addition, the researcher had the focus dyads' permission to

contact the speech and language pathologists for further questions if needed. For the purpose of participation in the study, a psychologist assessed both focus children. In addition, major mobility and fine motor skills were assessed by an occupational therapist for the child in focus dyad 1. The second focus child's motor abilities were evaluated regularly by her own occupational therapists. Notes from these assessments were sufficient for the purposes of the study.

*First interview – before video recording:* A first interview with each dyad of child and caregiver was performed in order for the researcher to get an overview of the children's social networks, activities and communication. At this stage, it was not yet decided what activities or what interaction constellation to include in the study (e.g., dyadic or multiparty discourse). For the dyads, the interview provided a possibility to ask questions about the study. The interview built on predetermined questions but took the form of an open conversation with each dyad. Areas of concern were: (a) a typical day in the dyad's life, (b) social relations of the child and family, (c) activities the child participated in and liked/disliked with friends/adults, (d) activities the caregiver liked/disliked engaging in with the child, (e) use of communication aids in different activities, and (e) possibilities and limitations of the child's communication in general as well as in specific activities. Written notes were taken during each interview and the interview was summarized by the researcher the same day it took place. The interviews were an important source for determining which activities to include in the study while providing a picture of the participants' lives (cf. 4.1.2).

*Logbooks:* Given the goal of obtaining naturalistic interaction samples, it was important to find activities that were natural and common to all dyads. A review of the interviews indicated that the dyads had few activities in common. To explore this issue further, the caregivers in each dyad kept logbooks of their particular child's life during 5 days spread over 2 weeks. The dates for logbook notes were decided in collaboration with the caregivers and, at the end, were the same for all dyads. The logbooks had the form of a time schedule (7 a.m. to 23 p.m.) with specific columns for activities, places, people and communication. Scheduled time at school and after-school centers was included. In keeping the logbooks, the caregivers were asked to reconstruct the day in collaboration with the child, by following the timetable from school and by interviewing assistants and school

personnel. The logbooks rendered information about the dyads' social lives (cf. 4.1.2) and were the main background source for choosing activities to include in the study.

*Choosing activities to video record:* The analysis of the logbooks showed that the dyads had very few activities in common – mainly basic activities reflecting habitual and typical needs of children and caregivers in daily living. The following activities were common to all dyads and, in this sense, constituted natural parts of daily life for all participants: (a) to eat a meal, (b) to play a game, (c) for the child to draw in company with the caregiver, (d) to brush the child's teeth, and (e) to read a story. Each dyad agreed on being video recorded in these five activities at home. Despite careful planning, on the day of planned video recording of the drawing activity for focus dyad 2 (FD2), the caregiver of this dyad asked the researcher to not have to video record this activity. The caregiver suggested that the activity of cleaning the child's room be video recorded instead. Given the goal of collecting naturalistic data and for ethical reasons, persuading the dyad to perform the drawing activity was not a choice. The researcher accepted the caregiver's suggestion and let the dyad video record the cleaning of the child's room.

*Video recording and instructions:* Using a portable Panasonic<sup>TM</sup> M7 video camera, the children and the caregivers of focus dyad 1 and of the two comparison dyads video recorded themselves in their homes on 10 occasions over a 6 week period, carrying out each of the five activities (i.e., mealtime, game, drawing, teeth brushing and story reading) twice. During the same period and following the same procedure, focus dyad 2 video recorded themselves during mealtime, game, story reading, teeth brushing and cleaning activities twice. In the end, there were 10 video recordings of each dyad and a total of 40 interaction samples. All video recordings were done at places and times when the activities normally would take place in the child-caregiver constellation. For some dyads, different activities were video recorded on the same day (when caregivers said that this would be natural, e.g., to draw before eating). The two recordings of the same activity type were never done on the same day for any of the dyads. To secure participation (i.e., to make sure the video recording was done), the dyads informed the researcher about when they thought it was possible and natural to make a video recording of each of the five activities. At the times decided, the researcher came to each dyad's home, mounted the camera and instructed the caregiver in its use. To preclude any observer effect, the researcher was not present during any of the video recordings. Instead, each caregiver managed the video recording. No time

limits were given for the different activities. Each caregiver was asked to turn on the video camera immediately before the activity was initiated and to record what she considered to be the entire activity. Thus, in each recording situation, it was up to the caregiver to decide when the activity was finished. The dyads were told that they could stop the recording whenever they needed to or wanted to. The dyads were instructed to interact as they normally would in the different activities and to choose whatever material they wanted and needed for the realization of the activity (e.g., the book they wanted to read and the game they wanted to play). No specific instructions were given concerning communication aids. Thus, it was up to each focus dyad to decide whether to use a communication aid or not. The only instruction given about communication was that the dyads were told that how much they communicated was not of interest to the researcher. No specific instructions were given concerning the presence of other family members during the activities.

*Second interview – after video recording:* After the video recordings of each dyad (10 occasions), a second interview was conducted. For the researcher, the purpose of this interview was to complement information from the first interview and to discuss how the dyads had carried out the activities. The researcher had not commented on the focus dyads' communication during each dyad's period of video recording. Therefore, the second interview was an important opportunity to discuss the focus dyads' communication, in particular, use and lack of use of communication aids during the different activities. Depending on various areas of concern, the four interviews developed in different directions. The information provided by the dyads in the second interview is included in the descriptions of the participants (cf. 4.1.2)

*Choosing interaction samples to examine and analyzing data:* Based on the assumptions, motivations and purposes presented in Chapters 1 through 3 and in conjunction with repeated viewing of the video recordings, 38 interaction samples and five activity types were selected for further examination (the two video recordings of the room cleaning activity were excluded), see Section 4.1.3. Data were analyzed according to the specific purposes and research questions posed for each sub-study (cf. Chapters 3 and 4; 4.2.1 to 4.2.4).

*Presenting the results for the dyads:* After completion of the study, the researcher had a final meeting with each dyad, presented the results of the study and discussed ideas relating to clinical implications and future research.

#### **4.1.1.1 Ethical considerations**

Throughout work on this thesis, great consideration has been taken to ethical issues. With respect to both participation and publication, the study dyads have taken part in the study based on informed consent. The participants have been informed about the background and general purposes of the study, and about the methodological procedures to be used, orally as well as in written form. The participants have been informed about their full right to withdraw from the study at any time, without specific reasons, and without negative consequences. The focus dyads have also been informed about the fact that, apart from meaningful discussions in relation to interviews and the final meeting, their participation in the study would not bring about any personal gains concerning issues like communication support. The participants were involved in the decision about what activities to video record and decided at what times the video recordings should be done. The video recordings have been locked away while not in use and have been accessible only to the researcher, the main advisor, and persons involved in the coding of interobserver agreement. With respect to the dissemination of the results at research seminars and conferences, all participants have been asked explicitly about whether or not they accept having their video recordings shown and their decisions have been followed. During writing the thesis and in all other material that relates to the study, the participants' identities have been kept confidential. As described in Section 2.5 (*Analyzing Interaction*), data have been treated with caution in the interaction analysis. All dyads have received the thesis and copies of their own video recordings. The study plan has been revised and accepted by the research committee for ethical issues at Göteborg University.

#### **4.1.2 Participants – Dyads**

Four dyads of children and caregivers participated in the study. Two dyads included children with severe speech and physical impairments and their caregivers. These dyads are referred to as focus dyad 1 (FD1) and focus dyad 2 (FD2). Two dyads included children without impairments and their caregivers. The comparison dyads are referred to as comparison dyad 1 (CD1) and comparison dyad 2 (CD2). Each dyad, with particular focus on the children, are presented below and in Appendices A1 and A2.



#### **4.1.2.1 Focus dyad 1 – FD1**

Focus dyad 1 (FD1) included a girl, called Maria for the study, aged 6 years and 6 months, with cerebral palsy of the type spastic diplegia with dystonia and dysarthria, and her caregiver, her aunt (age 31). At the time of the study, Maria lived mainly with her aunt and uncle who, in this sense, were her primary caregivers. Maria had no siblings or cousins. She lived in a small agricultural village. Her aunt worked in public service.

#### ***Results of assessments and characteristics of communication***

The different assessments of Maria were conducted through Maria's use of a light pointer, word approximations, eye gaze and other body communication. The formal tests used for the evaluation of cognition and receptive language level were the Quick Performance Test of Intelligence (SPIQ) (Rydberg & Höghielm, 1974), on which Maria obtained a raw score of 22/60 (stanine 6), and the Swedish version of the Leiter International Performance Scale (Arthur, 1952), on which she scored 21/24 (stanine 6). The speech and language pathologist had used an informal Swedish translation of the Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 1981), the Swedish version of the Test for Reception of Grammar (TROG) (Bishop, 1983) and the Token Test (McNeil & Prescott, 1978). The assessments by the speech and language pathologist also included use of categorical pictures, sequences of pictures and Bliss-words for assessing conceptual level, logic, understanding, knowledge and capability in the use of Blissymbolics. Maria showed age-adequate abilities in word comprehension and receptive vocabulary. She used words for color, form and size correctly. Her receptive level for clauses and sentences was age appropriate. According to formal test results and informal evaluations, Maria's receptive language was age appropriate and she was well within normal variation in cognitive level for her age.

Maria depended on a wheelchair for mobility. The occupational therapist used the Grippit device (Nordenskiöld & Grimby, 1992) for assessing hand strength and the Lantz and Melén (1983) developmental test for assessing fine motor skills. Maria was stronger in her left than right hand and used it for grasping and drawing. She had a radial cross-palmar grasp with fist hand, forearm fully pronated and full arm movement. She needed help to get hold of objects and needed time to release. Movement efforts often resulted in extended legs and flexed arms. Intentional hand movements depended on seating position. In activities that required physical action, Maria depended on others to be able to participate.

All professionals involved in the different assessments of Maria commented on her participation as very attentive, concentrated and quick.

Maria was introduced to Blissymbolics at the age of 3 years. At the time of the study, she was heading toward the Swedish standard Bliss-board layout and categories (i.e., she was introduced to new symbols on a regular basis and the symbols on her board were organized according to the principles of the standard Swedish Bliss-board), but the vocabulary on her board was still mainly individualized. Maria's board included 286 colored Bliss-words, which included 38 verbs, 186 nouns, 26 pronouns and other Bliss-words for people, 20 adjectives, 8 phrases and special Bliss-words, and 8 signs for specific grammatical functions. Her board also included 10 colors, 25 letters, and numbers 1 to 12. Bliss-words on the board were accessed through Maria's use of a light pointer. Maria was confident in understanding and use of Blissymbolics and new items were introduced continuously. At school and with professionals, Maria used the Bliss-board on a regular basis in order to ask and answer questions, to tell short stories and to express immediate needs. In these situations, Maria was an enthusiastic user and she enjoyed creating new concepts by combining symbols. At the time of the study, Maria also showed a growing interest in letters. She had a separate letter-board and the BlissProcessor program (Hekstra, 1993) for writing with Bliss-words on the computer. Maria and her caregiver were competent in using Blissymbolics, but the dyad's most common mode of communication was conventional speech, gestures and facial expressions (caregiver); and word approximations, vocalizations, gestures and other body communication (Maria). The caregiver and Maria reported that on a daily living basis, Maria firmly expected the caregiver to understand her without using Blissymbolics. According to the caregiver, Bliss-board communication occurred daily in a variety of activities, but mainly when demanded by the caregiver. At home, a question-answer strategy was commonly used, as was light pointing at objects, word approximations, vocalizations, eye gaze, facial expressions and other movements involving head, arm and hand movements and upper body movements.

### ***Social network, activities and personality factors***

Significant people around Maria included her aunt and uncle, her mother, her grandparents, another uncle and his family, her personal assistants and teachers, personnel at the after-school centre and other professionals who she met regularly. Maria also visited a support

family once a month. Maria attended a regular preschool class. She had many friends at school and was a popular participant in the peer group. Together with friends, Maria played a variety of indoor and outdoor games relevant for children of her age. She did not frequently play with friends outside school and did not express a need for such contacts.

Outside school, Maria participated in different activities but always accompanied by an adult. Maria's participation depended on her assuming the role of an observer (e.g., watched when the aunt washed the car) or she was more actively involved (e.g., cooked with her aunt). Visiting her grandparents was a frequent and special activity for Maria. She also attended two scheduled recreation activities each week, horse riding and swimming. Maria enjoyed riding; horses were a common theme in play (e.g., in play with small horses on her own and in pretend play with friends at school). Activities that could be performed independently by Maria included listening to music and watching the television. In three of the five days reported of in the logbook, Maria and her caregiver had three different clinical appointments where they met with four different specialists, the orthopedist, the speech and language pathologist, the occupational therapist and the physiotherapist.

Maria was described as a charming girl who was determined and persistent in her different accomplishments. Problems reported by the caregiver regarding the performance of different activities at home related to Maria's dependency on the caregiver and difficulties involved in handling Maria's physical and communicative disabilities. Due to Maria's physical stiffness and involuntary movements, the most entertaining activity could turn into heavy work both for her and her caregiver. Another problem area concerned the fact that the dyad often had to concentrate on one task at a time. It was the caregiver's opinion that neither she nor Maria could perform a physical activity on her own and at the same time talk with each other.

#### **4.1.2.2 Comparison dyad 1 – CD1**

Comparison dyad 1 (CD1) included a girl aged 6 years and 6 months and her mother (age 36). The girl lived with her mother, father and two older brothers in a small village in a coastal area. She had no history of speech or language impairment, and according to the caregiver, her teachers and professionals at the regional medical child-care centre, her receptive language functions and cognitive capabilities were age appropriate. She had

normal hearing and vision and no physical impairments. Her mother worked in public service.

### ***Social network, activities and personality factors***

Important persons around this girl included her mother and father, and her brothers, her grandparents, her cousins and her best friend. The girl attended a regular pre-school class. She had several friends at school and often played with friends after school, in the afternoons and on weekends. The girl had three scheduled activities outside school, choir, gymnastics and Sunday school at church. On her own, or in company with friends, she enjoyed drawing, sewing, cutting paper (for arts and crafts), playing with dolls, teddy bears and Barbie. She also enjoyed dressing herself up and doing puzzles. Apart from sewing, the child could perform all her favorite indoor activities independently. She also liked outdoor games such as picking flowers, going to the playground and playing different hiding games with friends. Together, the child and the caregiver liked playing games, going for walks and going biking. The caregiver described how the child used to be a little shy, but how she during the last year had become talkative and more brave. At home, she told stories, discussed and argued with her mother. The mother's experience was that she herself often was in a responding position and that her role often was that of a listener.

### **4.1.2.3 Focus dyad 2 – FD2**

Focus dyad 2 (FD2) included a girl, here called Tilde, aged 7 years and 8 months, with cerebral palsy of the type spastic tetraplegia and dysarthria, and her mother (age 34). Tilde lived with her mother, father and older brother in a small village in a coastal area. The mother worked in medical care. Tilde used to go to a regular child-care centre but now attended first grade at a school and resource center for students with disabilities. She also participated in pre-school and after-school programs in the same place.

### ***Results of assessments and characteristics of communication***

The assessments were carried out through Tilde's use of word approximations and vocalizations and by means of her indicating pictures using eye gaze, other non-vocal body communication and a light pointer. The psychologist used two formal tests to evaluate cognition and receptive language level. On the Quick Performance Test of Intelligence

(SPIQ) (Rydberg & Höghielm, 1974), Tilde obtained a raw score of 21/60 (stanine 4), and on the Swedish version of the Leiter International Performance Scale (Arthur, 1952), she scored 21/24 (stanine 6). During the assessments, Tilde's answers were sometimes a long time in coming. Although slow, her participation was commented on as being concentrated.

A team of specialists regularly evaluated Tilde's language functions and interactions. The following description of Tilde is based on notes from clinical records and on oral information provided by persons who worked with Tilde and who knew her well. Tests that had been used by the speech and language pathologist included an informal Swedish translation of the Peabody Picture Vocabulary Test (PPVT) (Dunn & Dunn, 1981), the Swedish version of the Test for Reception of Grammar (TROG) (Bishop, 1983), two tests for assessment of linguistic awareness in children (Lagergren & Larsson, 1992; Magnusson & Nauclér, 1993), and a neurolinguistic test for investigation of children with severe language disorders (Holmberg & Sahlén, 1986). The evaluation of receptive vocabulary indicated that Tilde's comprehension of single words was just below what was considered appropriate for her age. In the case record, this particular result was commented on as different from what was expected from other assessments of Tilde's receptive language level and also from how Tilde used language in conversation. On tests for understanding of complex clauses and sentence constructions, Tilde performed within normal variation for her age. She also responded excellently to tasks assessing linguistic awareness such as rhyming, estimation of word length, synthesizing and segmentation of compound words, but had difficulties with segmentation of words into syllables. Tilde enjoyed all phoneme related exercises and performed well on assessments of phoneme discrimination, phoneme identification and phoneme deletion. Her understanding of letters was age appropriate. The common opinion amongst professionals was that Tilde functioned within normal variation in cognitive level for her age but that she both in test situations and in face-to-face interaction sometimes was slow in responding.

Tilde practiced standing and walking regularly but spent the majority of the day in her wheelchair. She had insufficient postural control and obtaining stable support for Tilde in the wheelchair was a major daily issue. Tilde was stronger in her left hand than in her right hand and preferred using her left hand. Physical actions involving the hands were demanding and strongly influenced by her seating. With little assistance, she could use her

left hand to get hold of and release objects; she needed much help to use her right hand for any kind of actions. Tilde was dependent on others for all kinds of physical actions.

Tilde was introduced to Blissymbolics at the age of 6 years. She had a personalized Bliss-board including 121 Bliss-words of which approximately two thirds were nouns and one third were symbols for verbs, adjectives, people and specific grammatical functions. The board also included the alphabet and numbers 1 to 12. Tilde accessed Bliss-words on the board by means of using a light pointer. She was a strongly motivated beginning Bliss user and used the Bliss-board regularly at school, with different people and in different places and activities. At the time of the study, there was a great need for Tilde to have access to more words on her board. She practiced light pointing at Bliss-words of a smaller size and was introduced to new symbols regularly. Tilde used the Bliss-board to answer questions but also communicated on her own initiative. She mostly selected one Bliss-word at a time but also produced longer utterances that comprised two and three symbols. She combined letters and Bliss-words. Tilde had a restricted number of Bliss-words on her board but, according to professionals with great experience in Blissymbolics, she was fast and competent in learning new Bliss-words and in making use of the Bliss-words she had. Tilde enjoyed reading and writing and was particularly fond of using synthesized speech to experiment with sounds. She needed her own personalized computer for reading and writing with letters and Bliss-words and, at the time of the onset of the study, was registered for a consultation at the regional centre for communication and computerized aids.

Tilde and her caregiver communicated using words, word approximations, vocalizations, and non-vocal body communication. The Bliss-board was used daily in different activities at home but natural communication modes, including a question-answer strategy described as the game of 100 questions by the caregiver, were the most common and although tiring, were often successful communication methods. Tilde's communication differed depending on what activity she was engaged in and depending on whether or not she liked what she was doing. Dislike was clearly and consistently expressed by Tilde saying *no no no*. Other words produced orally by Tilde that were easy to understand included *mother, father* and the name of her brother. She said *yes* by opening her mouth and *no* by shaking her head and to varying degrees, accompanied these gestures with sounds. The caregiver felt that communication with Tilde functioned well but also expressed a wish for Tilde to be able to ask questions and produce longer utterances independently.

### *Social network, activities and personality factors*

Significant individuals for Tilde included her mother, father and brother, her grandparents, her aunt and uncle, another uncle, and other relatives and friends to the family. Tilde visited a support family with children in her own age once a month. Other important persons in daily life included Tilde's taxi drivers, her teacher, the speech therapist, the occupational therapist and physiotherapist, assistants at school, classmates and friends at the after-school program. The caregiver raised the issue that Tilde often met the same adults and the same children. For example, at school, in activities at the after-school centre and during summer camps, the same people were involved. The mother commented that it was difficult to give Tilde the kind of variation in social life that a child of Tilde's age needs. Tilde participated in swimming, horseback riding and other structured activities, such as cooking, at the after-school centre but did not have any scheduled activities in the evenings or weekends. Tilde enjoyed school and was often happily engaged in different kinds of play (e.g., played with dolls, played hospital with friends). She participated in play activities with enthusiasm and lots of imagination. She had a strong personality, knew what she wanted and was explicit in her expression of satisfaction and dissatisfaction. Tilde had a great sense of humor and was ingenious in the way she communicated her ideas and opinions.

Tilde needed assistance in all activities at home and often wanted to do more than she could manage. Activities she enjoyed included reading stories, listening to stories on the tape recorder, and playing computer games. She also liked to play with Barbie, do puzzles, and crosswords for children and work with letters. Outdoor activities that Tilde and her caregiver enjoyed doing together included to go to the cinema and to go shopping. Activities Tilde was not fond of included to lie in bed and to carry out daily care. Many activities at home related to care and were physically demanding and not very fun, neither for the caregiver, nor for Tilde.

#### **4.1.2.4 Comparison dyad 2 – CD2**

Comparison dyad 2 (CD2) included a girl aged 7 years and 8 months and her mother (age 35). The dyad lived in a small village in a coastal area where the mother worked in medical care. Also included in the family were the father, an older brother and a younger sister. The girl had no history of speech or language impairment. Her receptive language functions and

cognitive capabilities were reported to be age appropriate. She had normal hearing and vision and no physical impairments.

### ***Social network, activities and personality factors***

Apart from the closest family, significant persons for this child included her grandparents, her cousins, her teachers and her best friend. The girl was in first grade at school. She was a social and physically active person and had many friends. She was often engaged in several activities at the same time. She enjoyed playing games, playing with pretend pets, drawing, playing with Barbie, as well as playing computer and television games. Outdoor activities were often physical in nature (e.g., gymnastics, roller blades). Scheduled leisure time activities included skating, soccer, floorball, gymnastics and choir. The caregiver spontaneously described her daughter as quick, talkative and very independent.

### **4.1.2.5 Comments**

One inclusion criterion was that each focus dyad and comparison dyad (i.e., FD1-CD1 and FD2-CD2) should resemble each other regarding home environment and social status. Because the size of the population of children with severe impairments and cognitively age equivalent capabilities is small, this criterion was not possible to fulfill completely. Questions also arose as to what criteria were the most relevant for the purposes of this study, and for the purpose of comparison in general. The comparison dyad for focus dyad 1 resembled the focus dyad regarding habits in daily life at home although not in number of siblings. Since data from the comparison dyads are used for descriptive and comparative purposes and not for scientific control, the fact that the dyads were not matched in a strict sense is not a problem. It was an aim that the children of each focus and comparison dyad (i.e., FD1-CD1 and FD2-CD2) were the same age and resembled each other regarding receptive language functions and cognitive capabilities. To the degree that (a) the tests used measure such aspects and, (b) the informal observations and reports were correct, these aims were fulfilled.

In interpreting results (Chapters 5 and 6), the reader should keep in mind that the focus dyads of this study included girls and female caregivers. Moreover, the focus children of the study belong to what Martinsen and von Tetzchner (1996) called the expressive group of AAC users. There is a considerable gap between the focus children's comprehension of



spoken language, which is good, and their ability to use spoken language in interaction with others, which is severely restricted. The children are non-ambulatory and their hand functions are restricted in any task. The children will probably depend on some kind of aided communication systems throughout their lives.

#### 4.1.3 Material – Interaction samples

The study corpus comprised 38 interaction samples, altogether 7 hours, 43 minutes and 36 seconds long, including a total of 5824 communicative contributions and 36311 tokens (cf. Appendix B). Of the total number of contributions, 2530 belonged to the focus dyads and 3294 belonged to the comparison dyads; 2739 of the total number of contributions belonged to the caregivers and 2869 belonged to the children. The corpus included 216 contributions made by other family members. Of the total number of tokens, 15666 belonged to the focus dyads and 20645 belonged to the comparison dyads; 26773 of the total number of tokens (73.7%) belonged to the caregivers, 8445 of the tokens (23.3%) belonged to the children and 1093 tokens (3%) belonged to other family members. Since the participants had different means for expressing themselves, the focus children primarily using word approximations and body communication, the total number of word types<sup>40</sup> was not specified.

The 38 interaction samples were involved in the four sub-studies as follows. The sub-studies on mealtime interaction, *conversational topics at mealtime* and *mealtimes and patterns of interaction* involved two dyads (FD1 & CD1), one activity type (mealtime) and four mealtime interaction samples. The sub-study on how children and caregivers *refer to people in different activities* involved two dyads (FD1 & CD1), five activity types (mealtime, game, drawing, teeth brushing & story reading) and 20 interaction samples from the five activities. The sub-study on *content and goals in communication with Blissymbolics* involved four dyads (FD1, FD2, CD1 and CD2), five activity types (mealtime, game, drawing, teeth brushing & story reading) and 38 interaction samples (i.e., all video-recorded interactions except FD2's cleaning of the room). Hence, FD1 and CD1, and the mealtime samples from these dyads were involved in all studies, while the game, drawing, teeth

---

<sup>40</sup> In the study, a token is an occurrence of a word, a word approximation, a vocalization or a graphic sign. A type is a unique word type (e.g., "it is cold and it is windy" includes 7 tokens and 5 types).

brushing and story reading samples from FD1 and CD1, respectively, were involved in the sub-studies on person reference and Bliss-board communication. Focus dyad 2 (FD2) and CD2, and data from these dyads, were involved in the sub-study on Bliss-board communication.

#### 4.1.4 Transcription

Each interaction sample was transcribed following the main principles of the transcription standard for spoken language and Modified Standard Orthography (MSO) for Swedish (Nivre, 1997). In MSO, the basic units of transcription are contributions, that is, everything said or otherwise contributed by one speaker until the next speaker takes over. A contribution is, “a continuous stretch of communicative activity from one participant, bounded either by inactivity or by communicative activity from another participant” (Nivre, p. 3). The term *contribution* is used in preference to *utterance* because communication behaviors other than speech were transcribed. A contribution should not be confused with an interlocutor’s right to hold the floor or take a turn; rather, as recorded in the transcripts, it indicates how communication partners organize and distribute their communication (contribute) within the discourse. A contribution by one speaker can include one or several silent pauses. Simultaneous communication by two speakers is transcribed separately, that is, contributions that overlap are transcribed and treated as two separate contributions. In the end, the speakers in the dyad may have the same number of contributions or not, depending on amount and type of simultaneous communication. Spoken words that were inaudible either were transcribed (as far as possible) or were noted as incomprehensible. Sometimes such unclear tokens were given possible translations in commentary lines.

Body communication, everything but spoken words, word approximations, vocalizations and graphic sign selections was transcribed, note that a contribution could exist of body communication only. Examples of body communication were hand, head and larger body movements, eye gaze, facial expressions and laughter<sup>41</sup>. When the child or caregiver searched the Bliss-board it was treated as body communication. Other physical actions transcribed included those that were not primarily communicative, but that seemed to be important for interaction (e.g., physical management of a Bliss-board apart from

---

<sup>41</sup> As pointed out by Mey (2001) laughter is often not treated as a linguistic phenomenon but can serve important communicative functions in interaction.

searching for and pointing at Bliss-words, feeding, putting a fork into a glass of milk). The MSO acknowledges the multimodality of face-to-face interaction and allows for comments on vocalizations, properties of speech, moods and so forth, which have the potential for communicative effects.

In transcribing selections of Bliss-words, the notational system by von Tetzchner and Jensen (1996) was used. A selection of a Bliss-word was transcribed with capital letters and italicized (e.g., *BED*). A sound (e.g., ng) accompanied simultaneously by selection of a Bliss-word (e.g., the Bliss-word for ice cream) were transcribed in the following way {ng *ICE CREAM*}. As far as possible, aided communication was treated in the same way as unaided communication. For example, selection of a Bliss-word on the board was treated as a token and selection of a Bliss-board that occurred simultaneously with the speaking partner's communication was transcribed as an overlap. A child's searching for Bliss-words on the board was treated as communicative activity and, therefore, was not transcribed as a pause. The time it took for a child to point at a specific Bliss-word was specified in a commentary line below the child's contribution (see *Presentation of data in transcripts*).

### ***Presentation of data in transcripts***

The transcription signs used in the discourse excerpts (cf. Chapter 5) are based on the directives given in MSO (Nivre, 1997) and on the guidelines presented by von Tetzchner and Jensen (1996). Each contribution is first presented in Swedish. When possible, a translation into English is provided within parenthesis after or below the contribution. The focus children's expressions are only translated into English when resembling the Swedish pronunciation of a specific word, then, only if this interpretation by the analyst could be confirmed by the child's body communication and by the content of the caregiver's succeeding contribution. The parts of a contribution that were commented upon are within <>, and are numbered in cases where there are more than one comment. The corresponding comments are given below the contribution (@). Comments include, for example, interpretations of the focus children's expressions, possible communicative functions of expressions, specification of body communication (BC) and physical actions (PA). Pauses are marked with / and are specified for length (cf. 4.2.2.2). Communication that occurred simultaneously, overlaps, is marked with square brackets [ ] and numbers. In the discourse excerpts, all original transcription comments except those of relevance to the analysis at

hand, were omitted. In each excerpt, CH refers to child and CA refers to caregiver, and (...) means that a token was not at all possible to transcribe.

#### **4.1.5 Data analysis**

##### ***Activity-based communication analysis***

Activity-based communication analysis (Allwood, 2000) was used to examine the relationships between activities and interaction. The model is presented in the background section (2.2.1) and application of the model in the different sub-studies is described in Section 4.2. The activities, as realized in the interactions, are described in the results relating to each sub-study and in the discussion (cf. Chapters 5 & 6).

##### ***Guidelines for treatment of tokens, types and contributions in the transcripts***

During analysis of the transcripts, a pragmatic view of meaning was adopted. In all sub-studies, and for all participants, the meaning of a token or a contribution (or part of a contribution) and non-vocal body communication was interpreted in relation to its occurrence within the context of discourse. In this situation, context included co-text, situation and other background knowledge that was available to the analyst (cf. Korolija, 1998). Whilst it is true that all tokens and contributions were treated in relation to their occurrence within the context of discourse, it is also true that the participants of the present study expressed themselves in very different ways and that different approaches to data sometimes were needed.

The caregivers of each focus dyad, and the children and the caregivers of each comparison dyad used conventional speech. The tokens and contributions produced by these speakers were identified in their own right, that is, on the basis of conventional meaning associated with each token/tokens in a contribution. The focus children's speech consisted of a few words, word approximations and vocalizations that needed to be interpreted for meaning. Hence, all of the focus children's tokens and contributions were analyzed and interpreted for meaning as far as possible either during transcription (some) or after transcription was completed (most). Often, the focus children's tokens were given possible interpretations. In the interpretation process the content and functions of a focus child's and focus caregiver's preceding and succeeding tokens and contributions were important determinants, as were other contextual properties, physical actions and use of objects,

moods, meanings of previous and subsequent tokens, previous and present conversational topics, background information and future expectations as evidenced through either participant's conversational output. Specifically, the explicit interpretations of a focus child's communication, made and verbalized by a caregiver within the interaction, and the child's responses to these interpretations, were important for the analyst in the process of understanding the child's communication. Treatment and analysis of transcription data is also commented upon in relation to each sub-study (Section 4.2).

#### **4.1.6 Statistical methods**

Descriptive statistics in the study included calculation of mean and percentage values. Further, one-group Chi-square tests were used to find out if the numbers of the linguistic features focused on were uniformly distributed. For each situation, the null hypothesis was that the linguistic features in focus, per time unit, were uniformly distributed. In all calculations of Chi-square values, the differences between the samples in terms of interaction sample length were taken into consideration. The uses of the Chi-square test in three of the four sub-studies are described in the specific procedures (cf. 4.2.1.3, 4.2.2.3 & 4.2.3.3) and in Appendix C.

## **4.2 Specific Procedures**

### **4.2.1 Conversational topics at mealtime**

#### **4.2.1.1 Participants and material**

The sub-study involved two video recordings of caregiver and child (Maria) in focus dyad 1 (FD1a & FD1b) and two video recordings of caregiver and child in comparison dyad 1 (CD1a & CD1b). The four video recorded interaction samples were 22:53 (min: sec, FD1a) and 19:33 (FD1b); and 22:15 (CD1a) and 12:03 (CD1b), respectively.

#### **4.2.1.2 Data analysis**

The data analysis followed the main principles of activity-based communication analysis (Allwood, 2000). First, the dyads' mealtime interactions were analyzed with regard to collective and individual influencing background factors. Second, the interaction samples were analyzed with regard to influenced linguistic factors in the following way: (a) the

general linguistic features of the interactions were outlined, (b) the focus child's vocal expressions were specified with regard to tokens, types and meanings and (c) all samples were studied with regard to conversational topics. Treatment of data was based on careful analyses of transcriptions and video recordings. Each procedural step is described below.

### ***Influencing contextual background factors***

The analysis of collective influencing factors included a specification of (a) the joint purpose of the activity, (b) the general role configurations of the activity, (c) the objects needed for realization of the activity, and (d) the general physical and psychological circumstances within the activity. The analysis of individual influencing factors included a specification of (a) each participant's physical and communicative possibilities within the activity, (b) the individual goals and roles brought into and developed within the activity and (c) the procedures and structures developed within the activity. Thus, it was possible to specify the influencing factors that were associated with (a) the activity type and (b) the individuals as they participated in the activity (cf. Ahlsén, 1995; Allwood, 2000).

### ***Influenced linguistic factors***

#### ***General linguistic features***

The transcripts were computed using TraSA (Grönkvist, 1998) which is a computational tool for statistical analysis of written language transcripts of spoken language. TraSA provided information about number of contributions, tokens and types. The same calculations were done manually. Length of interaction is defined as the length of the video-recorded sample. Maria's data were different regarding tokens and types and, therefore, were treated separately.

#### ***Specification of the focus child's tokens, types and meanings***

Maria's speech consisted of vocalizations and word approximations; the relationships between her vocal output and content were not always evident. A detailed analysis of Maria's vocal output was necessary for coding conversational topics and for obtaining a general understanding of her role, participation and communication in the interactions. For Maria, a token was considered an occurrence of a vocalization or word approximation, a

type was a unique vocalization or word approximation as defined by its expressive form and *meaning* was considered the semantic content tied to an expressive form (type). In the analysis, it was assumed that Maria could express a specific meaning with different types or through a combination of types, and that particular types could be related to different meanings. In the specification of Maria's data in the results, *interpreted tokens* referred to the total number of tokens in each sample that could be interpreted for meaning, *interpreted types* referred to the total number of types included in the tokens that were interpreted for meaning, and *different meanings* referred to the total number of different meanings found among interpreted tokens and types.

### *Topics*

The topic analysis was influenced by the work of Keenan and Schieffelin (1976), Brinton and Fujiki (1984), Mentis and Prutting (1991) and Perlmann (1984), and by the work presented in the book by Blum-Kulka and Snow (2002), but was developed especially to suit the material and purpose of the present study.

Four steps were followed. First, each video recording and transcription was in its entirety sequentially analyzed for topic segments. A topic segment was defined as part of a contribution, a complete contribution, or several contributions in succession that had a mutual main focus (topic). Words, vocalizations, word approximations and body communication that referred to the same action, activity, person, object, or idea were considered to have the same focus and were regarded as belonging to one and the same topic segment. A major change in focus implied a change in topic segment (and topic). Given the high level of body communication observed in the focus dyad, the main focus was defined from both vocal verbal and body communication perspectives. Second, each topic segment was labeled with regard to its assumed main focus (e.g., event at school), which thereafter constituted the topic of the topic segment. All topic segments with issues related to the activity goal of eating a meal were defined and labeled as the *ongoing activity* topic. The ongoing activity topic included everything that had to do with (a) the activity structure and practical goals and (b) the child or caregiver's communication and/or behavior in relation to the implementation of the activity, including prayers. Steps 1 and 2 implied that a specific topic could be related to one or several topic segments, depending on how often the topic occurred in the sample. Third, each topic segment was specified for length

with regard to the number of contributions, or parts of contributions, involved from the initiation of the topic segment until its end. Fourth, each topic segment was coded with regard to whether it had been initiated by the child or the caregiver.

The ongoing activity topic was differentiated from *other* topics, which included all topics with assumed focus on areas other than the immediate ongoing activity. For the comparison dyad, short interposed comments that related to the immediate activity within contributions that focused on other topics were not counted as topic shifts, so long as the preceding and succeeding expressions within contributions were united by the same main focus. All together, there were nine such instances within contributions in the comparison dyad's samples.

#### **4.2.1.3 Statistical method**

Descriptive statistics done on each interaction sample included calculations of mean number of contributions per minute of interaction sample length, and mean number of tokens per contribution. Percentages of tokens contributed by children and caregivers, respectively, in each interaction sample were specified. One-group Chi-square tests were used to find out if the numbers of tokens and types were uniformly distributed. For each situation, the null hypothesis was that tokens and types, respectively, per time unit, would be uniformly distributed (see Ex. 1 in Appendix C).

#### **4.2.1.4 Interobserver agreement**

To determine interobserver agreement, coding was completed by an independent observer who was experienced in transcription and speech analysis, including that of speech produced by speakers with communication impairments. The observer was given procedural instructions based on data not selected for reliability coding; training was carried out on the second recordings for each dyad (FD1b, CD1b). In order to avoid an interpretation bias, the observer was not specifically trained in the focus child's body communication repertoire. The video recordings and transcriptions were used, as necessary, for all coding events.

First, the independent observer checked all four transcriptions against the video recordings to ensure correctness. The observer judged the transcriptions to be correct in relation to the video recordings. Second, the observer interpreted 12 (13%) randomly selected tokens contributed by the focus child in FD1a (of those that were given a specific



meaning by the first observer). The interobserver agreement was 83% (Agreement/Agreement + Disagreement x 100). If the first and independent observers' opinions differed initially, discussion and review of recordings led to consensus about the meanings of those tokens. Third, the total samples of FD1a and CD1a were coded for topics by the independent observer, using the same definitions as those used by the first observer; Table 4.2 gives a summary of the results.

Table 4.2 Number of topics and topic segments identified by the first observer and the independent observer across samples

Samples	FIRST OBSERVER		INDEPENDENT OBSERVER	
	Topics	Topic segments	Topics	Topic segments
FD1a	4	9	5	8
CD1a	14	20	12	15

In FD1a, the independent observer identified five topics that contained all topics identified by the first observer and a short segment of exchanges coded by the first observer as belonging to an ongoing activity segment. The first observer coded one segment as belonging to a different topic, whereas this same segment was coded by the independent observer as belonging to the ongoing activity. In CD1a, the independent observer identified 12 topics. These included 11 of the topics identified by the first observer plus one topic, about the camera. The first observer also identified two sub-school topics as well as a string of utterances around the topic of play, which were judged by the independent observer to belong to a more general school topic segment, a telephone call, and an ongoing activity topic segment.

## 4.2.2 Mealtimes and patterns of interaction

### 4.2.2.1 Participants and material

The sub-study was a continuation of the analysis of conversational topics. Hence, the participants and the material were identical to that of the preceding sub-study. Data consisted of four video-recorded mealtime interactions of focus dyad 1 (FD1), including the child called Maria, and comparison dyad 1 (CD1). The interaction samples were of the

following lengths: (a) FD1a; 22:53 (min: sec), (b) FD1b; 19:33, (c) CD1a; 22:15, and (d) CD1b; 12:03.

#### **4.2.2.2 Data analysis**

The analysis built on the model for activity-based communication analysis (Allwood, 1976, 2000; Ahlsén, 1995). See section 4.2.1.2 for analysis of the influencing background factors of the present interactions. In this sub-study, the influencing background factors of the mealtime activities of FD1 and CD1 were related to the dyads' patterns of interaction at mealtime. Interaction patterns were illustrated and discussed through discourse excerpts. Details concerning the analysis of interaction patterns are provided below.

#### ***Influenced linguistic factors***

The numbers of pauses of different length and of overlaps in different positions were calculated by use of TraSA (Grönkvist, 1998) and were controlled manually.

A *pause* was defined as absence of speech or body communication (Allwood, Nivre & Ahlsén, 1990) within or between speakers' contributions, but could include physical actions that were not considered primarily communicative, such as feeding. TraSA specified the number of pauses of different lengths within and between contributions. A *pause within* a speaker's contribution is bounded by communicative activity by the same speaker, that is, in one or several places a speaker's contribution includes instances that are characterized by absence of speech or body communication. A *pause between* two speakers' contributions means that a contribution by one speaker is followed by a certain amount of absence of speech or body communication by both speakers, which, in turn, is followed by a new contribution on behalf of the speaking partner; a speaker change is preceded by a significant pause. It is impossible for an outside observer, and often also for the interlocutors engaged in the communication, to determine whether a pause between two contributions belongs to the preceding or succeeding speaker or to both of them. Hence, pauses between contributions were not specified in terms of ownership. According to MSO (Nivre, 1997), a pause is defined as short if the pause has, "a duration of the same order of magnitude as a word given the current speech rate," (Nivre, 1997, p.7) and long if the pause has, "a duration of several seconds and is noticeable as a 'gap' in the speech flow" (Nivre, 1997, p.7). Pauses not classifiable as being long or short are defined as intermediate. The present

analysis concerned patterns of interaction in relation to activity management. Given the different means of communication within the dyads, it was important to include silent body communication in the analysis and, thus, impossible to specify the length of very short pauses. Pauses, within and between contributions, were defined as *short (I)* if the pause had a duration of 1-5 seconds, *intermediate (II)* when the duration of the pause was 6-10 seconds, and *long (III)* if the pause had a duration of 11-30 seconds. *Very long* pauses (*IIII*) measured more than 30 seconds. Note that all pauses that were analyzed in the study exceeded the length of a typical speaker-switching pause reported by, for example, Light et al. (1985a), in which the mean between speaker pause was 0.69 seconds.

By definition, an *overlap* existed when a child and a caregiver communicated by means of using words, word approximations, vocalizations and/or with body communication at the same time. In a dyadic interaction, an overlap includes two overlapping units, one for each speaker. An overlapping unit could occur in the beginning, in the middle or in the end of each speaker's contribution (i.e., a part of a speaker's contribution is simultaneous with the speaking partner's communication). An overlapping unit could also cover a speaker's whole contribution (i.e., a whole contribution by one speaker is simultaneous with the speaking partner's communication). Overlapping units that covered parts of contributions were separated from overlapping units that were total (i.e., covered whole contributions).

The causes and functions of pauses and overlaps were analyzed and exemplified in relation to the transcripts of each individual dyad's interactions. The analysis of interaction patterns at mealtime, as indicated by patterns of pauses and overlaps, also depended on review of video recordings.

#### **4.2.2.3 Statistical method**

Descriptive statistics done included calculations of mean number of contributions per minute of interaction sample length, mean number of tokens per contribution, and percent of tokens for children and caregivers (cf. 4.2.1.3). Mean number of pauses per minute of interaction sample length, percent of pauses of different lengths within and between contributions (of total numbers of pauses for each dyad), percent of contributions that involved overlapping units and percent of overlapping units (of total numbers of overlapping units for each dyad) that covered parts of contributions and whole contributions

also were calculated. The distribution of pauses and overlaps in the interaction samples was analyzed using one-group Chi-square tests. In all calculations, differences in lengths of interaction samples were taken into consideration (cf. Appendix C). For each situation, the null hypothesis was that pauses and overlaps, respectively, per time unit, were uniformly distributed.

#### **4.2.2.4 Interobserver agreement**

An independent observer carried out coding of data. Training was done on each dyad's second recording. All coding was carried out on each dyad's first recording (cf. 4.2.1.4). The independent observer transcribed 10% of the total amount of recording time in FD1a and CD1a to account for pauses and overlaps. Sections for transcription were chosen randomly but the first observer checked to ensure that the sections chosen for transcription by the independent observer contained pauses and overlaps. The extent of agreement expected by chance was accounted for by calculating interobserver agreement coefficients using Cohen's Kappa<sup>42</sup>. It was predetermined that only Kappa values greater than 0.50 would qualify as acceptable measures of interobserver agreement. The  $\kappa$ -values were as follows: for existence of pauses, 0.67 (FD1a) and 0.64 (CD1a) and for existence of overlaps, 0.59 (FD1a) and 0.81 (CD1a).

### **4.2.3 Referring to people in different activities**

#### **4.2.3.1 Participants and material**

This sub-study included 20 video recordings of focus dyad 1 (FD1) and comparison dyad 1 (CD1) interacting in five activity types, mealtime, game, drawing, teeth brushing and story reading. Ten activity samples belonged to FD1 and CD1, respectively. In total, data included 4 hours, 18 minutes and 8 seconds of interaction. The total interaction time was 2 hours and 19 minutes for FD1, and 1 hour, 59 minutes and 8 seconds for CD1 (cf. Table 4.3). In the analysis, the two interaction samples from each activity type and dyad were compiled into one activity type sample for each dyad. All activity type samples were then analyzed for words and word approximations referring to people, including children and

---

<sup>42</sup> The interobserver coefficients of Cohen's kappa are given the following strengths of agreement by Landis & Koch (1977): <0.00 = poor, 0.00-0.20 = slight, 0.21-0.40 = fair, 0.41-0.60 = moderate, 0.61-0.80 = substantial, and 0.81 - 1.00 = almost perfect.

caregivers' reference to themselves and each other. In the results, five interaction samples belong to FD1 and CD1, respectively. The length (min: sec) of each of the interaction samples in FD1 and CD1, respectively, that made up the 5 activity samples that were analyzed are specified in Table 4.3 (see also Appendix B and Chapter 5; 5.3).

Table 4.3 Length (min: sec) of interaction samples in FD1 and CD1

Activity types	FOCUS DYAD 1 (FD1)			COMPARISON DYAD 1 (CD1)		
	Sample a	Sample b	Total	Sample a	Sample b	Total
Mealtime	22:53	19:33	42:26	22:15	12:03	34:18
Game	22:29	23:08	45:37	15:05	06:36	21:41
Drawing	15:23	13:17	28:40	18:57	16:03	35:00
Teeth brushing	04:12	03:37	07:49	01:42	02:49	04:31
Story reading	06:07	08:21	14:28	11:24	12:14	23:38

Some similarities and differences in length of interaction samples within and between dyads are noteworthy (cf. Table 4.3). The focus child and caregiver spent more time in the mealtime and the game activities than they did in the other activities. The comparison dyad spent more time in the mealtime activity and in the drawing activity than they did in the other activities. A comparison between the dyads, of the total amount of time spent in relation to each activity type shows that FD1 spent more time than CD1 on mealtime, playing games and teeth brushing activities. Each of the teeth brushing and game samples for FD1 were longer than each of the teeth brushing and game samples for CD1. The comparison dyad spent more time than FD1 on their drawing activity and in the story reading activity. Each of the drawing and story reading samples for CD1 were longer than the corresponding samples for FD1 (cf. Table 4.3). The observed differences in length of interaction samples between the dyads did not only relate to the total time spent in each activity type, but also to the length of each activity type sample with the exception that the first mealtime sample for CD1 was longer than the second mealtime sample for FD1.

#### 4.2.3.2 Data analysis

For examining person reference in relation to the dyads' activities, data were treated in two ways. First, each video-recorded interaction sample was analyzed for influencing contextual background factors (cf. Allwood, 2000). The results of the analysis of background factors were presented by means of descriptive summaries of each activity. The collective goals of the activities were specified and the main procedures used for the realization of the activities were outlined, as were details regarding individual body posture and role configurations for each dyad in relation to each activity type. Individual goals were mentioned in the descriptions of the activities but were primarily attended to in the discussion of the dyads' use of person reference in the different activities (cf. Chapter 6; 6.2.2). The activity descriptions also included information about objects and communication aids. Second, the transcript of each interaction sample was analyzed for person reference. In this process, video recordings were used as complements to transcripts when necessary. The analysis of person reference included two main parts: (a) Identification of person reference and (b) coding of person reference into categories. The analysis also included a specification of the degree to which the dyads referred to present and non-present individuals. Before describing the procedures used for analyzing person reference, some general issues regarding how person reference was viewed in the study are presented.

#### *Some notes on the investigation of person reference*

First, the analysis builds on the suggestion by Brown and Yule (1983), to take the term reference, "out of discussions of lexical meaning and," reserve it, "for that function whereby speakers (writers) indicate, via the use of a linguistic expression, the entities they are talking (writing) about." (p. 205). Second, in face-to-face interaction, speakers refer to people who are present and people that are not present in the interaction situation (cf. Schegloff, 1996). The present analysis concerns both present person reference and non-present person reference. All words and word approximations that referred to person were included in the analysis independently of whether or not the speaker's primary goal in using a specific item was to refer to person. That is, phrases which did not mainly refer to person could still include person referential items. For example, possessive pronouns used in phrases that referred to objects were identified and treated as person references and were included in the analysis independent of the function of the phrase (e.g., "*min tipp tapp*" (*my tipp tapp*)).

Third, speakers refer to people in both direct and indirect ways. Direct person reference means that a particular word or word approximation is actually used by a speaker. For example, in the utterance, “nu är *vi* färdiga” (now *we* are ready), the word *vi* (*we*) is a direct person reference. In a dyadic interaction the utterance, “färdiga” (done) also may refer to the speaker and speaking partner (i.e., *we*). The latter utterance is an example of an indirect person reference. For an analyst who is not part of the interaction the study of indirect person reference involves a high degree of interpretation. For validity reasons, only direct person reference was identified and coded in the study. Fourth, in order to gain a comprehensive picture of the role of person reference in the dyads’ activities it was also relevant to include both specific and nonspecific person reference in the analysis. The following authentic utterance includes a direct and specific person reference: “är det den *du* vill ha” (is it that one *you* want). The speaker used the second person pronoun (*you*) and given the dyadic interaction situation the point of reference (i.e., the speaking partner) was specific. Nonspecific person references then, are words that by convention have less specific points of reference, for example, *one*, *someone* and *nobody* (i.e., generic and indefinite pronouns). Fifth, personal pronouns and proper names as such were not of interest in the study, rather, how the dyads, by means of using vocal language, referred to person in different ways in different activities. As pointed out by Brown and Yule (1983), in real discourse pronouns can be used to refer to practically anything. In the present data, for example, second person pronouns and proper names were used to refer to animals (e.g., “nu *du* fula fula fluga” (now *you* ugly ugly fly) and “elefantmamman *Johanna*” (the elephant mother *Johanna*)). Such uses of pronouns and proper names were not included in the analysis.

### ***Identification of person reference***

The procedure for identifying person reference in the transcripts was as follows. Each transcript was approached manually at the level of contributions and tokens. The token/s of each contribution were examined in the order they occurred in the transcript and in relation to co-textual and other contextual cues, according to the following definition of person reference. Person reference exists if a word or a word approximation in a direct, specific or unspecific way, refers to a present or a non present, real or fictive person/s. Words and word approximations used to refer to people in the present study included pronouns (personal and

possessive, generic, interrogative, demonstrative and indefinite) and nouns (proper names included).

Data showed that two or more words in combination sometimes pointed to the same person. For example, in the utterance, “*det var kents barn,*” (it was *kent’s child*) the proper name *kent* (in the genitive form) was combined with the noun *child*, as the comparison child was specifying what child she was talking about. Each word in such combinations was counted as a separate instance of person reference (e.g., *kent’s child* = two instances of person reference). The focus child sometimes used combinations of word approximations and/or sounds to refer to a person. Each such combination of word approximations and/or sounds was counted as one instance of person reference because it was impossible to interpret each string of sounds independently.

Each token produced by the focus child was interpreted for the possibility of reference to a person. As for the other speakers, and as in the sub-studies of mealtime communication, the interpretations of the focus child’s tokens depended on the content of preceding and succeeding tokens and contributions as well as on other contextual information. Only tokens for which there was explicit evidence for reference to a person in the data, were identified as person references and were included in the continued analysis. Either the child’s pronunciation was similar to a conventional pronunciation and such an interpretation by the analyst was relevant according to contextual cues or the caregiver explicitly interpreted the child’s speech and the child explicitly agreed on the caregiver’s interpretation.

### *Coding of person reference into categories*

In order to examine who children and caregivers referred to, each person reference in the transcripts was coded into one of 15 different categories. The categories used for coding of person reference were based on work by Marvin et al. (1994b) but were developed to suit the present data. The categories used for coding of person reference in the present study were:

1. *Self*: Reference to self (e.g., I, me, mine).
2. *Speaking partner*: Reference to the speaking partner (e.g., you, Maria, mum).
3. *Self + Speaking partner*: Reference to the interlocutors, the child and the caregiver (e.g., we).



4. *Self + other*: Reference to self and one or several other persons, except speaking partner (e.g., we).

5. *Speaking partner + other*: Reference to the speaking partner and one or several other persons, except self (e.g., you).

6. *Third person*: Reference to a third person who is in the room where the activity takes place (could be a member of the family).

Common to categories 1 to 6 is the present person perspective; items of categories 1 to 6 were used to refer to at least one person (child, caregiver or third person) that was physically present in the interaction situation. Category 7 included items that by convention were unspecific. Items coded into this category may or may not have had the speaker and/or the speaking partner included in their point of reference.

7. *Unspecific*: Unspecific reference to a person (e.g., one, someone, nobody, who) except references to fictive persons (see explanation of coding of unspecific items below and see category 12).

Categories 8-12 included items that were used to refer to non-present persons.

8. *Family*: Reference to a non-present parent, sibling, child or other family member (e.g., Anders, grandmother).

9. *Other child*: Reference to a non-present child, except family members.

10. *Personnel*: Reference to professionals working at schools or other resource centers, except the researcher.

11. *Other adult*: Reference to a non-present adult, except family members or professionals at schools or other resource centers (incl. reference to the researcher).

12. *Fictive*: Reference to fictive persons, that is, pronouns and proper names used to refer to individuals in drawings and books, in telling of tales and rhymes, in playing strings, in songs and prayers, and in relation to talk about records, games and films.

Two categories were added to account for two types of communicative sub-activities that occurred in the interactions. Category 13 was devoted to person references that occurred in sequences of reported speech, and in one sequence of reading. Data included two types of reported speech: (a) the comparison child or caregiver told each other what she (herself) or someone else had said, and (b) the focus caregiver suggested what the focus child might say in the future (i.e., the caregiver reported what the child perhaps would come to say). The reading was different from story reading in that it had a real life perspective.

The focus caregiver read aloud to the child about an upcoming event for children with disabilities. Hence, the persons referred to were not fictive. Category 14 included person references that occurred in telephone conversations (i.e., the phone rang during the activity and the comparison child or one of the caregivers answered the phone and talked to the person who called). Each instance of person reference that occurred in sequences of reported speech and in the special case of reading, as well as in telephone conversations was coded into category 13 or 14, respectively.

13. *Cited*: Reference to real persons in reported speech and in reading of an information sheet (i.e., not related to story reading).

14. *Telephone*: Reference to a person during telephone conversations.

Categories 13 and 14 were different from the other categories in that all person references that occurred in a sequence of focus (i.e., sequences of reported speech, reading or phone calls) were included in either of the categories (i.e., in reality, categories 13 and 14 included different types or categories of person references). A separate section in the results was devoted to categories 13 and 14; these were specified in Appendices E1 and E2. A final category (15) was added to account for cases where it was obvious that some person was referred to but where it was impossible for the analyst either to transcribe or to code the reference into any of the other categories.

15. *Unclear*: Reference to a person but not possible for the analyst to transcribe the word or to code the word into any other category.

It was assumed that a particular word could be used to refer to different people and that one and the same person could be referred to through the use of different words. It was the person referred to that was of primary focus in the coding of person reference into categories. However, for validity reasons the unmarked case was adhered to during coding; *man* (one), *någon* (someone), *några* (some), *vems* (whose), *annan* (other), *ingen* and *inga* (nobody) were coded into category 7 (unspecific) in all cases except when occurring in sequences of reported speech or in telephone conversations. *Vem* (who) was coded into category 7 in all cases except when occurring during story reading (1 instance), when occurring in relation to talk about a person in a drawing (1 instance) and when occurring in sequences of reported speech or in telephone conversations. Further, *vi* (we) in expressions such as, for example, “nu ska *vi* se” (let *us* see), “så tar *vi* den” (now *we* take that) and “så gör *vi* så” (now *we* do this) were always coded into category 3 (speaking partner + self)

although the point of reference at times might have been self, speaking partner or unspecified.

As mentioned previously, combinations of words (two or more words in succession) sometimes related to a specific person. Person references in such combinations were counted separately and were coded into the same or different categories depending on the point of reference of each discrete item. For example, in the expression, “*kents barn*” (*kent’s child*), *kent’s* was coded into category 11 (other adult) and *child* was coded into category 9 (other child). In the utterance “*slog du dig*” (*did you hurt yourself*); *you* and *yourself* were both coded as reference to speaking partner (category 2). At a later stage in the analysis, all combinations were specified (Appendix E3), as were the other words and word approximations in the different categories (cf. Appendices E6 & E7).

#### ***Reference to present and non-present person***

Treatment of data also included specification of the degree to which the dyads referred to present and non-present persons in different activities. For this purpose, the different categories of person reference were compiled into four groups. The first group, the *present person* group, included all person references that occurred in categories 1 to 6 (self, speaking partner, self + speaking partner, self + other, speaking partner + other, and third person). The second group, the *non-present person* group, included person references of categories 8 to 12 (family, other child, personnel, other adult, and fictive). The *unspecific* group included all person references coded as unspecified (category 7). The last group, labeled *other*, included references that occurred in the categories called cited, telephone, and unclear (categories 13 to 15).

#### **4.2.3.3 Statistical method**

Descriptive statistics compiled in the study were calculations of percentages of person reference out of the total number of person reference for each dyad and activity type, percentage of person reference out of the total number of person reference in each category and in different activities for each dyad. The percentage of person reference in the four groups of present person, non-present person, and unspecified and other person reference for each dyad and activity type also was calculated (cf. Appendix E9). One-group Chi-square tests were used to analyze how person references were distributed between the dyads in

each activity type. For each activity situation, the null hypothesis was that person references, per time unit and token, were uniformly distributed. In calculating the expected values for numbers of person references for each dyad activity sample the differences between the dyads, in terms of interaction sample lengths and numbers of tokens, were taken into consideration. The procedure is described in Example 2, Appendix C.

#### **4.2.3.4 Interobserver agreement**

An independent observer was trained and informed about the procedures for coding data through oral and written instructions and by use of 10 video-recorded activity samples and transcripts (all a-samples). The independent observer examined 20% of the total number of contributions (including 17.8% of the total number of tokens) in the 10 b-samples and was given three different tasks. First, he coded 20-22% of the total number of contributions in each b-sample from the middle of each transcript, each including at least 5 tokens that had been identified as person reference by the researcher, for existence of person reference (identification). Second, using the same contributions, the independent observer coded all tokens which had been identified and coded as person reference by the first observer, into categories of person reference. A third assignment for the independent observer was to code all tokens by the focus child that had been identified and coded as person reference by the first observer into categories of person reference. In all tasks, the independent observer followed the same procedures as the first observer. The extent of agreement between observers for each sample and assignments 1 and 2, respectively, was calculated using kappa statistics<sup>2</sup>;  $\kappa$ - values are presented in Table 4.4.

There was total agreement between the first observer and the independent observer concerning both existence of person reference and categories of person reference for 6 interaction samples,  $\kappa = 1$  for: (a) Mealtime-FD1b & CD1b, (b) Game-CD1b, (c) Teeth brushing-FD1b & CD1b, and; (d) Story-FD1b. For Drawing-FD1b and Story-CD1b, there was total agreement for categories of person reference (cf. Table 4.4). Thus, for eight samples there was complete agreement between the observers concerning categories of person reference. The remaining  $\kappa$ -values were as follows: (a) Game-FD1b:  $\kappa = 0.96$  for existence of person reference and  $\kappa = 0.82$  for categories of person reference, (b) Drawing-FD1b:  $\kappa = 0.91$  for existence of person reference, (c) Drawing-CD1b:  $\kappa = 0.97$  for

Table 4.4 Contributions and tokens coded for person reference by the independent observer and  $\kappa$ -values representing extent of agreement between observers for assignments 1 and 2

Activity types and samples	No. of contributions coded by the IndOb	No. of tokens in contributions coded by the IndOb	Extent of agreement for existence of person reference ( $\kappa$ )	Extent of agreement for categories of person reference ( $\kappa$ )
Mealtime-FD1b	61	116	1.00	1.00
Mealtime-CD1b	23	154	1.00	1.00
Game-FD1b	93	329	0.96	0.82
Game-CD1b	16	59	1.00	1.00
Drawing-FD1b	37	52	0.91	1.00
Drawing-CD1b	26	173	0.97	0.77
Teeth-FD1b	11	47	1.00	1.00
Teeth-CD1b	10	54	1.00	1.00
Story-FD1b	22	95	1.00	1.00
Story-CD1b	50	97	0.96	1.00
Total	349	1176		

Note: IndOb = independent observer.

existence of person reference and  $\kappa = 0.77$  for categories of person reference, and (d) Story-CD1b:  $\kappa = 0.96$  for existence of person reference. All of the discrepancies between the observers for categories of person reference in Game-FD1b and Drawing-CD1b depended on misunderstanding on behalf of the independent observer concerning how to categorize tokens that occurred in sequences of reported speech and telephone conversations<sup>43</sup>.

For the third assignment, the interobserver agreement was 85.7% (Agreement/Agreement + Disagreement x 100). The observers coded the focus child's three references to *mother* differently. This discrepancy in coding, between the first observer and the independent observer, was a result of insufficient background knowledge on behalf of the independent observer. In a discussion following the three tasks used for determining agreement, the two observers reached consensus concerning all differences in coding.

## **4.2.4 Content and goals in naturalistic communication with Blissymbolics**

### **4.2.4.1 Participants and material**

This sub-study involved four dyads of children and caregivers; focus dyad 2 (FD2) and focus dyad 1 (FD1) including the children called Tilde and Maria, and comparison dyad 1 and 2 (CD1 & CD2). The point of departure for the analysis was two sequences of Bliss-board communication in FD2 that occurred in one game and one mealtime activity sample, respectively. The parts of these Bliss-board sequences that included actual use of Bliss-words were compared to all other interaction data belonging to FD2, FD1, CD1 and CD2 (i.e., all data that did not involve use of Bliss-words). Altogether, 38 samples of interaction that originated from five activity types, mealtime, game, drawing, teeth brushing and story reading, were analyzed (see further *Comparisons of Bliss-word episodes and episodes that did not involve Bliss-words* in 4.2.4.2). The interaction samples involved in the analysis are specified in Appendix B. The Bliss-board sequences are presented in the results (cf. Chapter 5; 5.4.2 & 5.4.3).

---

<sup>43</sup> Whilst the first observer had coded 5 and 6 successive person references in each sample into categories 13 and 14 (cited and telephone), respectively, despite clear instructions, the independent observer tried to specify each of these tokens into different categories.

#### **4.2.4.2 Data analysis**

Data analysis included several steps. First, the situations of use of the Bliss-board in FD2 were examined. Second, the Bliss-board sequences were specified regarding general linguistic features. Third, Bliss-board sequences were analyzed into episodes. Fourth, episodes during Bliss-board interactions were specified in terms of content. Fifth, episodes that included Bliss-words (i.e., Bliss-word episodes) were separated from episodes in the Bliss-board sequences that did not include use of Bliss-words. Sixth, all interactions of FD2, FD1, CD1 and CD2 that did not involve use of Bliss-words were examined for episodes that, in terms of content, were similar to the Bliss-word episodes in FD2. Episodes were analyzed and exemplified with regard to communicative content and interaction strategies and goals. The different procedural steps are described separately below.

##### ***Situations of Bliss-board usage***

The degree to which Bliss-board communication was integrated with fulfilling the goals of the activities was examined. By reviewing the video recordings, it was possible to describe the contextual aspects of the two situations and to get an overall picture of how the dyad used the Bliss-board. The Bliss-board interactions were specified with regard to the collective goals of the predetermined activities. Procedures and goals involved in the Bliss-board interactions were outlined, as were physical factors such as physical relations between the child and the caregiver, placement of the Bliss-board, selection techniques and other actions performed by the child and the caregiver.

##### ***General linguistic features of Bliss-board sequences***

The transcripts of the Bliss-board sequences were analyzed manually and were specified regarding general linguistic features; length of sequences, numbers of contributions and tokens, mean numbers of tokens per contribution and numbers of selections of different types of Bliss-words. Selections of Bliss-words on the board were counted as tokens but were also specified separately (cf. Chapter 5; Table 5.9).

### *Analysis of Bliss-board sequences into episodes*

A main interest in the analysis was to find communicative exchanges in the Bliss-board sequences that were held together by content and/or action unity. As basis for further analysis, the transcripts of the Bliss-board sequences were segmented into topical episodes (cf. Korolija, 1998; Korolija & Linell, 1996; Linell & Korolija, 1995). With minor modifications, the criteria for determining episode boundaries described by Korolija and Linell (1996) were followed. In the study, an episode was defined as a segment of interaction that involved at least three consecutive contributions that were bound together by means of focusing on the same main theme<sup>44</sup>. To count as an episode in this study a segment did not have to include three total contributions. The caregiver's contributions were long and what really mattered in the analysis, in terms of determining episode boundaries, was that the exchange between the child and the caregiver included at least two total contributions and part of a third contribution. Hence, an episode could start and end within a contribution. Further, all contributions, including those that consisted of body communication only, were considered relevant to the interaction. A feature of the Bliss-board interactions was that episodes could include expressions that concerned physical actions and goals of the ongoing activity, although these issues, in the content analysis that followed, were not considered main themes of episodes. Such expressions were intertwined in episodes in a way that did not influence internal coherence. Contributions or parts of contributions at episode boundaries that included body communication and where words were absent were analyzed as belonging to the preceding or succeeding episode depending on which episode they seemed most related to.

### *Content of episodes in Bliss-board sequences*

The next task in the analysis was to specify what the child and the caregiver communicated about when the Bliss-board was present. Episodes that occurred in the Bliss-board sequences were examined according to three frames of reference (cf. Balandin & Iacono, 1998a; Marvin et al., 1994b; Stuart et al., 1993). The frames, and the way the frames were used in the analysis, were as follow:

---

<sup>44</sup> That is, in the opinion of an outside observer.



1. *Time*: Episodes were specified in relation to time. Episodes concerned past time (i.e., another day), immediate past time (i.e., the same day as the day of interaction), present time (i.e., the interaction situation), immediate future time (i.e., the same day as the day of interaction) and future time (i.e., another day), or were unspecific with regard to time (e.g., imaginary talk).
2. *Person*: Episodes were specified with regard to who was of main concern in the episode, the child, the caregiver, the dyad, some other person/s or an unspecified person (i.e., often related to use of the generic pronoun *man (one)*).
3. *Idea*: Depending on the words, word approximations and body communication that occurred in episodes, the focus of conversations within episodes, was specified (e.g., talk about content of story).

Following the analysis of episodes in relation to frames of reference, episodes that involved Bliss-words (i.e., Bliss-word episodes) were separated from episodes in the Bliss-board sequences that did not include Bliss-words. The latter are described in the results (Section 5.4.2.2) and are involved in the interaction analysis as comparison material<sup>45</sup>. Next, based on the frame analysis (i.e., 1, 2 and 3 above), Bliss-word episodes were compiled into four main content areas. The headings of the four different content areas aimed to give a gross picture of what the dyad communicated about and what purpose language had within different episodes. The results of the analysis of content of Bliss-word episodes are specified in Section 5.4.2.4 (Chapter 5) and were the basis for the continued interaction analysis (see *Comparisons of Bliss-word episodes and episodes that did not involve Bliss-words* below).

#### ***Comparisons of Bliss-word episodes and episodes that did not involve Bliss-words***

The interactions of FD2, FD1, CD1 and CD2 that did not involve Bliss-words, were analyzed for episodes that were similar to the Bliss-word episodes in FD2 in terms of content. Episodes that did not involve Bliss-words came from four different types of data. First, some episodes in the Bliss-board sequences did not involve Bliss-words. Second, one of the interaction samples in FD2, in which the Bliss-board was used, included a part that

---

<sup>45</sup> The Bliss-board interactions differ from all other interactions in the study in that use of the Bliss-board is a true choice. The Bliss-board is there and the dyad can choose to use it or not. In this respect, episodes in the Bliss-board interactions that did not involve selections of Bliss-words were also interesting.

was totally unaided (i.e., the Bliss-board was put away). Third, in 6 and 10 interaction samples, respectively, belonging to FD2 and FD1, the Bliss-board was never present. Thus, episodes of these interactions did not involve Bliss-words. Fourth, episodes in the 20 interaction samples of CD1 and CD2 never involved Bliss-words. The specific guidelines followed in the analysis in relation to different areas of content, are presented in relation to the interaction analysis (cf. Chapter 5; 5.4.3). When all interaction samples in the study had been examined, it was possible to compare episodes with similar content along the dimension aided - unaided - never aided as follows: (a) aided (FD2) - unaided (FD2 & FD1), (b) unaided (FD2) - unaided (FD1), (b) aided (FD2) - never aided (CD1 & CD2), and (c) unaided (FD2 & FD1) - never aided (CD1 & CD2)<sup>46</sup>. Similarities and differences between episodes were illustrated in relation to discourse excerpts. In the interaction analysis, episodes were considered with regard to who initiated episodes (i.e., child or caregiver) and with regard to participants' actions and strategies in the development of conversational content within episodes. Episodes were also examined with regard to what contextual resources were relevant to episode initiation, as well as with regard to how the development of content within episodes related to context in different ways (cf. Korolija, 1998; Korolija & Linell, 1996).

#### **4.2.4.3 Interobserver agreement**

The task for the independent observer was to identify and code episodes in transcripts of interactions that did not involve Bliss-words. First, the independent observer was informed about the purposes and procedures of the investigation. Second, the video recordings of the Bliss-board sequences were presented and the segmentation of the transcripts of these recordings into episodes as well as the procedures for analyzing the content of episodes in Bliss-board sequences were explained. In this way, the independent observer got an overall picture of the type of conversational content he should look for in the transcripts that did not involve Bliss-words. Third, training of coding of content of episodes that did not involve Bliss-words was performed on transcripts of interactions that not were involved in the coding assignment. Fourth, the independent observer examined the total samples of four

---

<sup>46</sup> A major difference between the focus dyads and the comparison dyads is that the former depend on communication aids, but not the latter. Despite this, the term unaided is sometimes used to refer to all interaction except those that include Bliss-words in FD2.

randomly selected transcripts from the focus dyads, two transcripts from FD2 and FD1, respectively, and four randomly selected transcripts from the comparison dyads, two transcripts from CD1 and CD2, respectively (cf. Table 4.5). The independent observer was instructed to identify episodes that were similar to the Bliss-word episodes in terms of content and to code each episode into one of the four areas of content (cf. Chapter 5, 5.4.2.4). The data used in the assignment represented 22% of the total number of interaction samples that did not involve the Bliss-board and included 20% of the total number of episodes identified by the first observer. The independent observer followed the same procedures as the first observer and was given detailed written instructions about what communication was included in each of the four content areas. Table 4.5 shows the total numbers of episodes identified in each sample by the two observers.

Table 4.5 Number of episodes identified by the first observer and the independent observer across samples

Samples	FIRST OBSERVER	INDEPENDENT OBSERVER
	No. of episodes identified	No. of episodes identified
Game-FD1b	1	2
Teeth-FD1b	1	1
Game-FD2a	0	3
Story-FD2a	8	11
Story-CD1a	1	1
Teeth-CD1b	3	3
Teeth-CD2a	1	3
Drawing-CD2b	5	6

To summarize, the independent observer identified all the episodes that the first observer had identified. The tendency, regarding disagreements, was that the independent observer identified a larger number of episodes than the first observer (i.e., the first observer was more restrictive) and that the observers did not agree on whether some segments of interaction were episodes or sub-episodes. The independent observer listed several issues that made the task difficult. The detailed transcripts, with many different codes and

comments, required a great deal of concentration. A related problem was that the different activities seemed to lead to different goals and interaction styles for the focus dyads and the comparison dyads and that it was demanding to shift focus between communications and transcripts that were so different. Finally, the larger numbers of episodes identified by the independent observer could have been related to the fact that, as stated by the independent observer, "When you are told to look for something you expect to find something."

## **Chapter 5**

### **Results**

This chapter presents the results of each sub-study, the purposes and research questions of these were outlined in Chapter 3.

#### **5.1 Conversational Topics at Mealtime**

The mealtime activity has been proven important to development of language, cognitive and social skills in children without disabilities and for that reason is relevant to study with respect to children with disabilities. This section, and section 5.2, report on the results of two interrelated analyses of mealtime interactions involving a child with and a child without disabilities and their caregivers. In order to examine communicative content at mealtime in a dyad including a child with disabilities, the four mealtime samples from focus dyad 1 (FD1a&b) and comparison dyad 1 (CD1a&b) were analyzed concerning influencing background factors, general linguistic features and conversational topics. In addition, the analysis included specifications of the focus child's vocal expressions.

##### **5.1.1 Influencing contextual background factors**

###### **5.1.1.1 Collective factors**

The data indicated that participants in both dyads entered the mealtime activity on similar grounds. In both dyads, the major goal and joint purpose of the activity, the reason for its performance, was to have a meal. Another salient collective goal was communication. For both dyads, the two main roles within the mealtime activity were the child as a recipient of care and the adult as a caregiver. Both dyads chose to eat in the kitchen; only the children and caregivers were present during the meals. The video camera constituted an uncommon artifact within the activity but did not imply restrictions in physical space. Other artifacts included kitchen furniture, objects and instruments needed for completion of the activity: material used for eating and drinking, the table, chairs, cutlery, plates and glasses. Artifacts imply both possibilities and constraints. They are important for pursuit of the activity and have deictic functions, but may also impose limitations on physical space. The study imposed no time pressure on the dyads' activities. Apart from video recording and research participation, the psychological circumstances were normal.

### **5.1.1.2 Individual factors**

Maria had severe mobility restrictions, impaired hand function, and severe speech impairments. She sat in a wheelchair and could not move from the table other than by turning her body and head slightly to the sides. Maria required assistance throughout mealtime in order to eat and drink. No communication aids were present during any of the two interaction samples; thus, aided communication factors had neither negative (e.g., physical space limitations and aid management) nor positive (e.g., communication benefits) effects. Maria and her caregiver communicated via vocalizations, spoken word approximations and words, and non-vocal body communication. Maria's communication was continuously interpreted by the caregiver, to whom Maria responded using confirmations or denials. Their individual roles depended on several factors and entailed different rights and obligations: Maria was obliged to cooperate, manage eating, and communicate her desires in relation to the activity. Her goals and sub-goals were to eat and communicate; what she received was care. Maria's possibilities for independent participation during the interactions observed were severely limited; she was communicatively and physically dependent on her caregiver. Maria's caregiver had to contend with significant physical and psychological demands associated with Maria's care requirements, while simultaneously managing other physical aspects of the activity, communication, and her own meal. The caregiver's goals and sub-goals were to eat, serve, set the table, prepare for feeding, feed and communicate. At mealtime, Maria's physical and communicative characteristics resulted in codependence between her and the caregiver with respect to both the activity and communication.

The individual conditions observed for the focus dyad at mealtime stand in contrast to those observed for the comparison child and caregiver, who were physically and communicatively independent, and whose roles were quite similar with regard to independent action, communicative possibilities and rights. The child's independence was reflected in communication, during eating, and in a variety of other physical actions (e.g., moving herself around and above the chair, playing with food and cutlery). With regard to individual influencing factors, participants in the focus and comparison dyads carried out mealtime activities in relation to very different preconditions: The different contextual background factors were not separate entities but rather interrelated parameters that influenced communication on different levels in relation to time.

## 5.1.2 Influenced linguistic factors

### 5.1.2.1 General linguistic features

Table 5.1 includes the results of the analysis, length of interactions and numbers of contributions, tokens, and types for each dyad's samples. Inspection of this table indicates that interaction samples from the focus dyad contained a larger number of contributions per minute than did samples from the comparison dyad. Interaction sample CD1a included a larger number of tokens and types than the focus dyad's samples, and CD1b – the shortest sample in the study – included a smaller number of tokens and types than did samples in the focus dyad. One-group Chi-square tests were used to determine if the number of tokens and types were uniformly distributed (cf. Chapter 4; 4.2.1.3 & Appendix C). The Chi-square statistics for number of tokens in the four situations were (a) FD1a-CD1a  $\chi^2(1) = 55.45$ ; (b) FD1a-CD1b  $\chi^2(1) = 12.45$ ; (c) FD1b-CD1a  $\chi^2(1) = 58.18$ ; and (d) FD1b-CD1b  $\chi^2(1) = 15.14$ . For each situation, the null hypothesis was rejected ( $p < 0.001$ ). Thus, when differences in interaction sample length between the dyads' samples were taken into consideration, FD1a and FD1b included a smaller number of tokens than was expected. There also was asymmetry between Maria and her caregiver in terms of the number of tokens contributed. In FD1a and FD1b, 80% and 71% of the total number of tokens belonged to the caregiver, and 20% (FD1a) and 29% (FD1b) of the tokens belonged to Maria. In the comparison dyad, the difference between the child and the caregiver in terms of the number of tokens was less pronounced; in CD1a and CD1b, 53% and 65% of the total number of tokens belonged to the caregiver, and 47% (CD1a) and 35% (CD1b) of the tokens belonged to the child.

Chi-square tests were also carried out for number of types. The Chi-square statistics for the four situations were (a) FD1a-CD1a  $\chi^2(1) = 10.35$  ( $p < 0.01$ ); (b) FD1a-CD1b  $\chi^2(1) = 21.10$  ( $p < 0.001$ ); (c) FD1b-CD1a  $\chi^2(1) = 6.13$  ( $p < 0.05$ ); and (d) FD1b-CD1b  $\chi^2(1) = 14.81$  ( $p < 0.001$ ). Thus, in relation to interaction sample length, the focus dyad's samples included a smaller number of types than expected. Table 5.1 shows that there also were large differences between the children regarding number of tokens and types. The Chi-square statistics for child tokens in the four situations were: (a) FD1a-CD1a  $\chi^2(1) = 222.55$ ; (b) FD1a-CD1b  $\chi^2(1) = 60.71$ ; (c) FD1b-CD1a  $\chi^2(1) = 119.72$ ; and (d) FD1b-CD1b  $\chi^2(1) = 19.86$ . For each situation, the null hypothesis was rejected ( $p < 0.001$ ). This means that, in

relation to interaction sample length, Maria had a smaller number of tokens than expected. The comparison child's data included 229 and 118 word types in CD1a and CD1b, respectively. Maria's speech (see Table 5.1) included 68 different types in FD1a and 83 types in FD1b. In addition, the results of the analysis of Maria's vocal output suggested a restricted variability in terms of the number of different meanings she expressed in each sample (cf. Table 5.1, Section 5.1.2.2 and Appendices D1 & D2).

### **5.1.2.2 Focus child's tokens, types and meanings**

The total number of tokens, types, and meanings that occurred in each focus group sample is presented in Table 5.1. Maria had 190 tokens and 68 different types in FD1a, and 219 tokens and 83 types in FD1b, which was 3 minutes and 20 seconds shorter. Meaning was interpreted for 90 tokens and 29 types in FD1a, and for 66 tokens and 26 types in FD1b. 16 and 10 different meanings were identified for Maria in FD1a and FD1b, respectively. In the two samples, this means that a specific meaning could not be discerned for 100 tokens (39 types) for FD1a; and 153 tokens (57 types) for FD1b. Most tokens and types could be analyzed for communicative function in relation to the discourse context. For Maria, there were synonyms among assumed meanings and expressive similarities among many of the types. 7 of 26 identified meanings were common to FD1a and FD1b. Maria's interpretable vocal expressions are presented in Appendices D1 and D2.

### **5.1.2.3 Conversational topics**

The total number of topics and topic segments for each dyad sample is presented in Table 5.1. The topic patterns are specified in Tables 5.2 and 5.3. There were four topics and nine topic segments in FD1a (Table 5.1). Two topics occurred more than once in the sample and two topics were unique (Table 5.2). Three topics concerned aspects other than those that were related to the immediate activity goals. Maria initiated two of these other topics and one topic was initiated by her twice. The most frequent topic was ongoing activity and, in all but one of the segments, included a considerably larger number of contributions than other topics did. It was talked about more often and in longer segments and was always initiated by the caregiver.



Table 5.1 Frequency of general linguistic features, topics and topic segments across samples in FDI and CD1

	FD1a			FD1b			CD1a			CD1b		
	Tot	CH	CA	Tot	CH	CA	Tot	CH	CA	Tot	CH	CA
Length of interaction	22:53			19:33			22:15			12:03		
No. of contributions	310	159	151	303	153	150	275	139	136	117	60	57
Mean no. of contributions/min	13.5	6.9	6.6	15.5	7.8	7.7	12.4	6.3	6.1	9.7	5.0	4.7
No. of tokens	955	190	765	766	219	547	1255	588	667	598	211	387
Percent of tokens		20%	80%		29%	71%		47%	53%		35%	65%
Mean no. of tokens/contribution	3.1	1.2	5.1	2.5	1.4	3.6	4.5	4.2	4.9	5.1	3.5	6.8
No. of types	322	68	266	279	83	205	393	229	262	247	118	182
No. of interpreted tokens		90			66							
No. of interpreted types		29			26							
No. of different meanings		16			10							
No. of times meanings occur		85			59							
No. of topics	4			6			14			5		
No. of topic segments	9			10			20			9		

Note: CH = child, CA = caregiver.

Table 5.2 Types of topics in FD1: frequency of topics, topic segments and lengths; responsibility for initiation of topic segments across samples

Samples	No.	Topics	No. of topic segments	No. of contributions in topic segments (length)	Initiation
FD1a	1.	<i>Ongoing activity</i>	5	112, 62, 0.5 + 47.5, 38, 10.5	CA (all)
	2.	Future trip	1	13	CH
	3.	Uncle	2	9.5, 3.5	CH (both)
	4.	Incident outside	1	13.5	CA
FD1b	1.	<i>Ongoing activity</i>	5	125, 18, 41.5, 11, 46	CA (4) CH (1)
	2.	Movie	1	18	CH
	3.	Activity at school tomorrow	1	23.5	CH
	4.	Food at school today	1	10	CA
	5.	Cat	1	7	CH
	6.	Mother	1	3	CH

*Note:* CH = child, CA = caregiver, 0.5 refers to part, though not necessarily half of a contribution, and is used to show that a topic may be initiated and ended within a contribution.

The topic situation was similar in the second sample (FD1b), where there were 6 topics and 10 topic segments. The ongoing activity topic was the most frequent, occurring in 5 segments; all other topics were unique. On average, the ongoing activity topic segments included more contributions than did other topic segments and were mostly initiated by the caregiver. Maria initiated 5 different topics a total of 5 times, and she initiated 4 out of 5 of the other topics. In total, the samples in the focus dyad included 9 topics and 19 topic segments. The ongoing activity topic was common across the two samples and accounted for 10 topic segments. Maria was responsible for introducing 6 out of the 8 other topics in 7 topic segments.

Table 5.3 Types of topics in CD1: frequency of topics, topic segments and lengths; responsibility for initiation of topic segments across samples

Samples	No.	Topics	No. of topic segments	No. of contributions in topic segments (length)	Initiation
CD1a	1.	<i>Ongoing activity</i>	6	12, 11.5, 4, 21, 20, 45	CH (4) CA (2)
	2.	Study	1	9	CH
	3.	Study and ongoing activity	1	8	CH
	4.	Telephone call	1	24.5	CA
	5.	Schools	1	7	CH
	6.	Cousin	1	5	CA
	7.	Conversation at school	1	8	CH
	8.	Record	1	8.5	CH
	9.	Weather	1	1	CA
	10.	Cars	1	19	CA
	11.	Activity at school	1	9	CA
	12.	Person at school	1	16	CH
	13.	Playing string	2	1, 41	CH (both)
	14.	(Not interpretable)	1	4.5	CH
CD1b	1.	<i>Ongoing activity</i>	5	9.5, 14, 18, 12, 0.5	CA (3) CH (2)
	2.	Incident at work	1	27.5	CA
	3.	Past night	1	10.5	CA
	4.	Get the rabbit	1	6	CA
	5.	Activity after meal	1	19	CH

*Note:* CH = child, CA = caregiver, 0.5 refers to part, though not necessarily half of a contribution, and is used to show that a topic may be initiated and ended within a contribution.

An interaction-based analysis of topic initiations and topic changes provided further information about the content shared within the focus dyad, as well as evidence for how

meaning was constructed. The frequent and sometimes extensive ongoing activity segments functioned as means for pursuing the activity. They were typically introduced by the caregiver in relation to immediate regulatory goals and actions, and on a more specific level, related to her own and Maria's behavior. The caregiver guided her own actions by verbal means, asked Maria questions, and commented on and interpreted Maria's behavior and communication in relation to immediate activity goals. Maria responded using word approximations, vocalizations, and other body communication and took her own initiative when it came to expressing her own needs. Maria's responses and initiatives were interpreted or otherwise commented on by the caregiver. The caregiver introduced, held and developed topics by utilizing verbal comments and/or a verbal question strategy – always closely observing Maria's feedback and responses.

Example 5.1 below contains the first part of an ongoing activity topic segment that originally covered 62 contributions. It was initiated by the caregiver and occurred after the future trip topic (i.e., when the trip topic initiated by Maria had been explored as far as was possible, the caregiver redirected the conversation toward the activity).

Example 5.1: *Ongoing activity* (FD1a).

1. CA: <1 >1 <2 a:å // (10 s.) >2 <3 va de gott da >3  
 – (<1 >1 <2 a:å // (10 s.) >2 <3 was it good >3)  
 @ <1 PA: dries CH's face >1, <2 imitates CH's previous expression; PA: feeds CH >2, <3 question; PA: cuts the sandwich >3
2. CH: < m > – (m)  
 @ < meaning: yes; BC and PA: looks toward the plate at the table and at CA who cuts the sandwich >
3. CA: < m korven va goa > – (m the sausage tastes good)  
 @ < feedback, comment and question; PA: cuts the sandwich >
4. CH: < m > – (m)  
 @ < meaning: probably yes; BC and PA: looks at CA who cuts the sandwich >
5. CA: < eller > – (or)  
 @ < question; PA: cuts the sandwich >
6. CH: < m > – (m)  
 @ < meaning: probably yes; BC and PA: looks at CA who cuts the

sandwich >

7. CA: < champinjonerna > – (*the mushrooms*)

@ < comment and question; PA: cuts the sandwich >

8. CH: <1 ng eeä na dou <2 / (2 s.) [1 m ]1 >2 <3 dou >3 >1

– (<1 ng eeä na dou <2 / (2 s.) [1 m ]1 >2 <3 dou >3 >1)

@ <1 meaning: unclear >1, <2 PA: CH chews >2, <3 BC and PA: CA turns toward CH with the fork raised, CH opens her mouth and CA gives CH to eat, CH has her hands in front of her face >3

9. CA: < [1 vackert]1 > – (*[1 take it easy]1*)

@ < comments CH's eating; BC and PA: takes CH's hands down >

10. CA: < du // (6 s.) > – (*you // (6 s.)*)

@ < comments CH's eating; PA: dries CH's mouth, puts fork at plate and starts to eat her own sandwich >

11. CH: <1 m mm /// (12 s.) <2 m >2 >1 – (<1 m mm /// (12 s.) <2 m >2 >1)

@ <1 meaning: unclear; BC and PA: looks at CA who eats >1, <2 BC: CA turns and looks at CH in response to CH's previous vocalizations >2

12. CA: m – (*m*)

@ < eliciting feedback, comment and question – *what?* >

13. CH: <>

@ < BC: stretches out her arms in front of her >

14. CA: < m > – (*m*)

@ < eliciting feedback, comment and question – *what?* >

15. CH: <1 hm di >1 <2 gia: >2 <3 // (8 s.) >3

– (<1 hm di >1 <2 gia: >2 <3 // (8 s.) >3)

@ <1 meaning: unclear; BC and PA: raises her arm, CA holds CH's arm, raises the fork and stretches it toward CH's mouth, CH turns her body and head toward her left side and looks at the glass on the table, rejects feeding >1, <2 meaning: unclear, probably drink, loud; BC: looks toward the glass >2, <3 PA: CA gives CH to drink >3

The example shows the importance of the use and understanding of body communication between Maria and her caregiver. The example also shows that there is little variation in Maria's vocal expressions, *m* being a frequently occurring sound (see also Appendices D1 & D2). The content shared between Maria and the caregiver related to the

goals of the activity, and the situational context was an important framework for understanding and development of communication between the two.

The topics in the focus dyad that were not coded as ongoing activity, that is, other topics, were anchored to the situation in terms of how and why they were initiated and with respect to content. The caregiver initiated two other topics (cf. Table 5.2). The topic that concerned what Maria had eaten at school the same day covered 10 contributions and is presented in its entirety in Example 5.2. The segment occurred at a time when both Maria and her caregiver had paused during the meal. The atmosphere was relaxed. The caregiver had adjusted Maria's seating, whereupon Maria and the caregiver looked at each other. The sequence exemplifies the large difficulties involved in co-construction of meaning when there is both ambiguity in the match between vocal output and meaning, and a lack of shared background knowledge.

Example 5.2: *Food at school today* (FD1b).

1. CA: < va åt ni i skolan ida > – (*what did you eat at school today*)  
@ < question; BC: looks at CH, CH has her head down and now lifts it up and looks at CA >
2. CH: < a: > – (*a:*)  
@ < meaning: unclear, response; BC: CA and CH look at each other >
3. CA: < ha > – (*what*)  
@ < question; BC and PA: CA and CH look at each other, CA leans forward to clean CH's nose >
4. CH: < ja: > – (*ja:*)  
@ < meaning: unclear, response; BC and PA: CA and CH look at each other and CA cleans CH's nose >
5. CA: < a > – (*yes*)  
@ < eliciting feedback, question; BC and PA: looks at CH who turns her head toward her left side as CA cleans her nose >
6. CH: < öh > – (*öh*)  
@ < meaning: unclear; BC: looks at CA, raises her arms and moves her arms in front of her face, CA looks at CH >
7. CA: < >  
@ < BC: chuckles >
8. CH: < jue > – (*jue*)

@ < meaning: unclear; BC: turns her head toward her right shoulder and waves with her arms, CA looks at CH >

9. CA: <1 korv å ägg >1 <2 nä / (4 s.) >2

– (<1 *sausage and egg* >1 <2 *no* / (4 s.) >2)

@ <1 BC: quiet and quick, question intonation, turns her head toward her left shoulder and looks at CH, CH looks at CA >1, <2 BC and PA: quiet, shakes her head and takes CH's hand, bites and kisses CH's hand >2

10. CH: < a ng > – (a ng)

@ < meaning: unclear; BC: waves arms and raises her head, looks upwards >

In this example, the caregiver initiated a contribution using a what-question. The questions in contributions three and five were feedback and interpretations of Maria's vocal responses (*a:* and *ja:*) and also seem to have functioned as elicitors for new interpretable responses from Maria. In line nine, the caregiver used question intonation as she interpreted Maria's previous communication and suggested what she may have eaten. At the end of the same contribution, that is, immediately, the caregiver rejected her own suggestion by saying *no* and shaking her head. At this very moment, the caregiver may have realized that her strategy would not work. She also answered her own question. The guessing process was cumbersome and the topic receded quickly. In the focus dyad, questions as information-eliciting devices seem mostly to have been ineffective when the central theme of the topic was unknown to the caregiver and when situational cues were absent. The succeeding contribution (line 11 below) reveals that the caregiver redirected the conversation toward the goals of the activity. She commented on her own action, called for Maria's attention, and at the same time informed her about the next procedural step.

11. CA: < nu komme de ett lass här / (5 s.) > – (*now there is more coming here* / (5 s.))

@ < PA: continues feeding >

It is reasonable to believe that the food at school topic was invoked by the main focus of the present activity – food. The same kind of situational anchorage is seen in the incident outside topic, which was introduced by the caregiver as a car passed by the house. The sound of the car functioned as a topic initiator. The caregiver and Maria physically directed their attention toward the road outside the kitchen window and the topic developed into a conversation about who was driving the car.

As indicated by Table 5.2, it was mainly Maria who was responsible for other topic initiations. She caught the caregiver's attention by use of word approximations, vocalizations, intonation, gestures and gaze, or by a combination of these modes and, in this sense, often managed to set the grounds for topic initiation (cf. Keenan & Schieffelin, 1976). Thereafter, either she looked at objects to indicate what she wanted to talk about, or she looked attentively at the caregiver, leaving it up to the caregiver to interpret her intentions. In these cases, eye gaze was often combined with vocalizations and unsatisfied intonations. Maria was very distinct in her communication and had a strong will, which increased the chances for successful topic initiation and topic decision. When a topic need was expressed, Maria and the caregiver were generally efficient in reaching mutual understanding with regard to Maria's primary intention (i.e., they managed to cooperate and decide on the main area of concern). Topics introduced by Maria were developed by the caregiver, who spoke for Maria about the topic. In this sense, Maria had a responding, but not a passive, role. In fact, her active initiatives, feedback, and responses were crucial to the meaning construction process.

Example 5.3 demonstrates a topic initiation by Maria. The topic originally included 18 contributions and concerned a movie she and the caregiver had seen. It was preceded by a long segment related to the ongoing activity of eating a meal. Throughout the movie topic, the caregiver was eating. As Maria paused during her own eating, she had time for other communication. She said *no*, turned her head toward her right side, and looked dissatisfied. The caregiver continued to eat and responded to Maria by saying *yes*.

Example 5.3: *Movie* (FD1b).

1. CH: < ngä > – (ngä)

@ < meaning: probably no; BC and PA: turns her head toward her right side where there is a cupboard, seems dissatisfied, CA eats >

2. CA: < jo > – (yes)

@ < contrastive yes, comment; PA: CA eats >

3. CH: < a > – (a)

@ < meaning: unclear, seeks attention; BC and PA: looks at CA, CA eats, CH seems dissatisfied >

4. CA: < m > – (m)

@ < response; PA: eats >



5. CH: < eh > – (*eh*)  
 @ < meaning: unclear; BC and PA: looks toward the cupboard, CA eats, CH seems dissatisfied >
6. CA: < va ä de > – (*what is it*)  
 @ < question; BC: CH looks toward the cupboard, CA looks in the same direction as CH >
7. CH: <1 m m >1 [1 <2 >2 <3 >3 ]1 uoa [2 <4 >4 ]2  
 – (<1 m m >1 [1 <2 >2 <3 >3 ]1 uoa [2 <4 >4 ]2)  
 @ <1 meaning: unclear; BC: smiles, CA and CH look at cupboard >1, <2 BC: smiles, looks at CA >2, <3 BC: laughs, looks at CA >3, <4 BC: laughs, looks toward the cupboard again >4
8. CA: [1 < > ]1  
 @ < BC: laughs, looks at CH >
9. CA: [2 <1 >1 ]2 / (1 s.) <2 adam å eva [3 den filmen a ]3 >2 <3 hu va den >3  
 / (3 s.) [4 <4 va va de på den >4 <5 >5 ]4  
 – ([2 <1 >1 ]2 / (1 s.) <2 adam and eva [3 that movie yes ]3 >2 <3 how was it >3 / (3 s.) [4 <4 what was in the movie >4 <5 >5 ]4)  
 @ <1 BC: looks in the same direction as CH toward the cupboard >1, <2 comment and question; BC: CA and CH look at each other >2, <3 question; BC: looks at CH >3, <4 question; BC: laughs, CA and CH look at each other >4, <5 BC: laughs, CA and CH look at each other >5
10. CH: [3 < > ]3  
 @ < meaning: yes; BC: looks at CA and nods >
11. CH: [4 <1 >1 <2 >2 ]4 <3 nga:j >3 – ([4 <1 >1 <2 >2 ]4 <3 nga:j >3)  
 @ <1 BC: big smile, looks at CA >1, <2 BC: laughs, CH and CA look at each other >2, <3 meaning: unclear; BC: laughs, CH and CA look at each other >3
12. CA: < pussades [5 dom ]5 > gjorde dom [6 de nä ä ]6  
 – (< did [5 they]5 kiss > did they do [6 that no o ]6)  
 @ < question and comment; BC: laughs, CA and CH look at each other >
13. CH: [5 < > ]5  
 @ < meaning: yes; BC: looks at CA and nods >
14. CH: [6 <1 a a >1 ]6 <2 >2 – ([6 <1 a a >1 ]6 <2 >2)  
 @ <1 meaning: yes, BC: quiet, nods and smiles toward CA >1, <2 BC: looks at CA, nods and smiles >2

Using word approximations and vocalizations, Maria managed, in a persuasive manner, to catch and direct the caregiver's attention toward the cupboard where the movie was kept. Her initiation strategy and the caregiver's follow-up were delicate, but the sequence also indicated that meaning construction between Maria and the caregiver was a vulnerable process that demanded sensitivity on both their parts. All topic segments in the focus dyad, whether initiated by Maria or the caregiver, were in different ways anchored in the physical or emotional-psychological context, and were invoked and introduced by means of situational cues. Note also that questions, as used by the caregiver, primarily served to reach understanding and not to develop personal topics. As it seems, questions concerned the meaning of the child's vocal expressions but also the child's behavior and mode from a more general, "what is going on" perspective (cf. the caregiver's question in line 6; Ex. 5.3).

Figure 5.1 provides a summary of the total number of contributions in all study samples that were involved in the ongoing activity topic segments as opposed to other topic segments. For FD1a and FD1b, 270.5 (87%) and 241.5 (80%), respectively, of all contributions belonged to the ongoing activity topic segments, and 39.5 (13%) and 61.5 (20%), respectively, of all of the contributions belonged to other topic segments. By comparison, CD1a and CD1b were comprised of 113.5 (41%) and 54 (46%) contributions, respectively, that belonged to the ongoing activity topic segments, and 161.5 (59%) and 63 (54%) contributions, respectively, that belonged to other topic segments. Thus, the focus dyad and the comparison dyad distributed their contributions differently. In the focus dyad, more than two thirds of all contributions in each sample were devoted to communication about the collective goal of eating a meal. Many of the contributions in the comparison dyad also related to the ongoing activity topic. However, more than half of all contributions in CD1a and CD1b belonged to other topics.

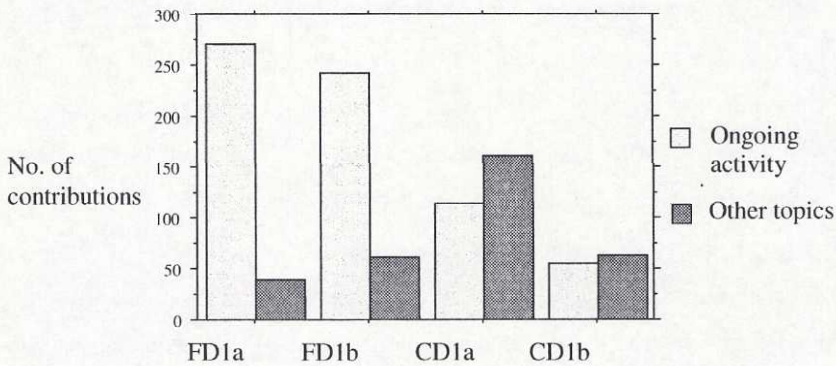


Figure 5.1 Number of contributions involved in topic segments related to the ongoing activity and other areas in the focus dyad and in the comparison dyad's interaction samples

As is shown in Table 5.1, the contributions in CD1a were varied in that there were 14 different topics and 20 topic segments. The most frequent topic was the ongoing activity topic (6), but it should be noted that there were also 13 other topics (cf. Table 5.3). The child initiated more different topics and segments than the caregiver did but in comparison to the focus dyad, there was more equality between the comparison child and caregiver with regard to topic type and topic segment initiation. Sample CD1b was the shortest sample in the study and included 5 different topics and 9 topic segments. The ongoing activity topic occurred the most frequently, but 4 other unique topics also occurred. The caregiver initiated more different topics and topic segments than the child did (cf. Table 5.3). In total, the participants in the comparison dyad conversed on 18 different topics. The ongoing activity accounted for 11 out of a total of 29 topic segments; this also was a frequent topic in the comparison dyad. The ongoing activity topic, however, did not include considerably more contributions than other topics. Two of the other topics in CD1b, for example, contained more contributions than any of the segments of the ongoing activity topic in the same sample. In relation to length of interaction, there was a larger variety of topics in the comparison dyad than in the focus dyad.

The comparison dyad's ongoing activity topics included talk about the food in general (e.g., taste, amount), as well as behavioral directives (e.g., drink the milk, sit on the chair). Other topics were initiated by the child or the caregiver in relation to what either of them

had experienced or were about to experience. The topics were personal, extended beyond the present situation, and contained a variety of communicative functions and word types such as questions, pronouns and proper names. Topics were narrative and explanatory in content and structure, related to information seeking about the speaking partner, and included talk about self in relation to other people: who they were, what they had done, what they own, and how they behave (cf. the analysis of person reference; 5.3). In the comparison dyad, other topics were drawn from each participant's experiences, stimulated inferences, and often led to conversations about other new topics that were unrelated to the immediate activity. Some topics consisted of naturally invoked playing strings.

### **5.1.3 Summary**

A key finding of this sub-study was that the focus dyad and the comparison dyad communicated about very different things at mealtime. No communication aids were used in the focus dyad and Maria, in contrast to the comparison child, had severely restricted possibilities for independent participation in any matter. A related observation concerned the great demands on the focus caregiver at mealtime. Most of the communication in the focus dyad concerned the practical handling of the mealtime activity. The focus dyad also talked about topics other than the ongoing activity; an important finding was that Maria, despite a limited vocal vocabulary, was responsible for introducing most of these other topics. Other topic introduction by Maria, and other communication in the focus dyad, depended on body communication and considerable cooperation between Maria and the caregiver. Another important finding was that, although not focusing mealtime issues explicitly, other topics in the focus dyad in different ways related to the here and now. The comparison dyad, in contrast to the focus dyad, devoted a larger number of contributions to talk about things other than the ongoing activity. There were also important differences between the dyads concerning the content of other topics and ongoing activity topics. In the comparison dyad, other topics were distinctly removed from the interaction situation and, more than in the focus dyad, ongoing activity topics reflected what seems to have been the caregiver's wish to guide her child in appropriate behaviors at mealtime.

## **5.2 Mealtimes and Patterns of Interaction**

Building on the preceding analysis of conversational topics, this sub-study explored patterns of interaction in the four mealtime interactions of focus dyad 1 (FD1a&b) and comparison dyad 1 (CD1a&b).

### **5.2.1 Influencing contextual background factors**

The focus dyad and the comparison dyad participated in the mealtime activity based on different individual background factors regarding communication, physical capability, goals, roles and procedures (cf. Sections 5.1.1.1 & 5.1.1.2). Speech impairments, poor major mobility, involuntary movements and difficulty in handling objects manually, prevented independence in communication and physical action for Maria who had to confirm and reject not only the caregiver's "own" contributions, but also those contributions by the caregiver that were interpretations of Maria's own speech, body movements and actions. The caregiver was responsible for interpreting Maria's communication, distinguishing between involuntary movements, voluntary but non-communicative body movements, and specific body communicative acts. Apart from goals that related to communication, the focus dyad had specific individual goals that related to eating. The comparison child was less dependent on the caregiver and the caregiver's obligations were less complicated than those of the caregiver in the focus dyad. The relatively few obligations for the comparison caregiver allowed her considerable rights such as concentrating on her own eating and easy communication with her child. The different goals and responsibilities in the dyads at mealtime resulted in different patterns of interaction.

### **5.2.2 Influenced linguistic factors**

Table 5.1 (5.1.2.1) specifies the general linguistic features of the present interactions. To summarize, the focus dyad data contained a larger number of contributions than the comparison dyad data: The mean number of contributions per minute of interaction sample length was 13.5 and 15.5, for FD1a and FD1b, respectively; and 12.4 and 9.7, for CD1a and CD1b, respectively. Chi-square tests done on FD1a, FD1b, CD1a and CD1b revealed that FD1a and FD1b, per time unit, included a smaller number of tokens and types than what

was expected from the model. The mean number of tokens per contribution also was lower in the focus dyad data than in the comparison dyad data.

### 5.2.2.1 Frequency of pauses and overlaps

Table 5.4 presents data for pauses of different lengths *within* and *between* contributions and for overlaps in FD1a, FD1b, CD1a and CD1b.

#### *Pauses*

As shown in Table 5.4, the focus dyad data (FD1a&b) contained 51 (24, 27) pauses that occurred within contributions and the comparison dyad data (CD1a&b) included 92 (62, 30) pauses within contributions. The mean number of pauses per minute of interaction sample length was lower for FD1a and FD1b, 1.05 and 1.38, respectively, than for CD1a (2.79) and CD1b (2.49). The significance of the observed differences in numbers of pauses within contributions was analyzed using one-group Chi-square tests; the results for the four situations were: (a) FD1a-CD1a  $\chi^2(1) = 18.61$  ( $p < 0.001$ ); (b) FD1a-CD1b  $\chi^2(1) = 9.83$  ( $p < 0.01$ ); (c) FD1b-CD1a  $\chi^2(1) = 8.86$  ( $p < 0.01$ ); and (d) FD1b-CD1b  $\chi^2(1) = 4.74$  ( $p < 0.05$ ). The null hypothesis could be rejected for each situation. This means that the focus dyad's samples, per time unit, included a smaller number of pauses within contributions than what was expected from the model. Looking at numbers of pauses of different lengths within contributions there were both similarities and differences between the dyads. Of the total number of pauses within contributions in FD1 (a&b), 51% were short, 35% were intermediate, and 14% were long. The corresponding numbers for pauses of different lengths within contributions for CD1 (a&b) were 44% short, 33% intermediate, 22% long, and 1% very long. Thus, looking at the total number of pauses for each dyad, FD1 had a larger number of short pauses and a smaller number of long pauses within contributions than CD1.

Table 5.4 Frequency of pauses and overlaps across samples in FD1 and CD1

	FD1a			FD1b			CD1a			CD1b		
	Total	CH	CA	Total	CH	CA	Total	CH	CA	Total	CH	CA
No. of pauses within contributions	24	5	19	27	13	14	62	25	37	30	2	28
Mean no. of pauses/minute	1.05			1.38			2.79			2.49		
No. of short pauses within contributions	12	4	8	14	8	6	32	15	17	9	1	8
No. of intermediate pauses within contributions	10	1	9	8	3	5	19	6	13	11	0	11
No. of long pauses within contributions	2	0	2	5	2	3	10	4	6	10	1	9
No. of very long pauses within contributions	0	0	0	0	0	0	1	0	1	0	0	0
<hr/>												
No. of pauses between contributions	32			34			56			21		
No. of short pauses between contributions	10			14			32			14		
No. of intermediate pauses between contributions	2			3			7			1		
No. of long pauses between contributions	19			17			17			6		
No. of very long pauses between contributions	1			0			0			0		
<hr/>												
No. of overlaps	23			22			17			6		
No. of overlapping units	46	23	23	44	22	22	34	17	17	12	6	6
No. of overlapping units involving parts of contributions	33	12	21	32	16	16	26	12	14	8	3	5
No. of overlapping units covering whole contributions	13	11	2	12	6	6	8	5	3	4	3	1

Note: CH = child, CA = caregiver.

There also were fewer pauses between contributions in FD1 (66) than in CD1 (77) but that difference was small (cf. Table 5.4). The null hypothesis, that pauses between contributions were uniformly distributed could be rejected for FD1a-CD1a  $\chi^2(1) = 7.69$  ( $p < 0.01$ ), but not for FD1a-CD1b, FD1b-CD1a, and FD1b-CD1b. This means that FD1a included a smaller number of pauses between contributions, per time unit, than what was expected from the model when the sample was compared to CD1a. With regard to length of pauses between contributions, there was a difference between the dyads. For FD1 (a&b) long pauses between contributions were more common (56%) than short and intermediate (44%), whereas the comparison dyad had more short and intermediate pauses (70%) than long pauses (30%) between contributions.

### *Overlaps*

The focus dyad data included 23 and 22 overlaps (i.e., 46 and 44 overlapping units) for FD1a and FD1b, respectively (Table 5.4). The comparison dyad data contained 17 (CD1a) and six (CD1b) overlaps (i.e., 34 and 12 overlapping units). This means that, in FD1a and FD1b, respectively, 15% and 14% of the total number of contributions included simultaneous communication. Twelve percent and 10% of the total number of contributions in the comparison dyad samples of CD1a and CD1b, respectively, included simultaneous communication. One-group Chi-square tests were used to find out if the numbers of overlapping units were uniformly distributed. The Chi-square tests revealed that the null hypothesis could be rejected for FD1a-CD1b  $\chi^2(1) = 4.88$  ( $p < 0.05$ ) and for FD1b-CD1b  $\chi^2(1) = 7.48$  ( $p < 0.01$ ), but not for FD1a-CD1a and FD1b-CD1a. This means that FD1a and FD1b included a larger number of overlapping units than what was expected from the model in relation to CD1b. There were similarities between the dyads regarding number of overlapping units that covered parts of contributions versus whole contributions. In FD1 (a&b) and CD1 (a&b), 72% and 74%, respectively, of the total number of overlapping units covered parts of contributions, and 28% and 26%, respectively, of the total number of overlapping units covered whole contributions.



### 5.2.2.2 Pauses and overlaps in interaction

The focus dyad had fewer pauses and a larger number of overlaps than the comparison dyad. Analyses of pauses and overlaps in interaction also revealed that they related to the activity in different ways and served partly different functions in FD1 and CD1 at mealtime.

A prominent feature of FD1's interactions was the considerable amount of time that Maria and her caregiver spent waiting. Waiting occurred in relation to feeding, eating and drinking. However, on the contrary to what one could have expected, waiting in relation to feeding and eating in FD1 did not necessarily lead to communicative inactivity. Instead, such waiting often stimulated body communication and comments on the partner's behavior or communication and, therefore, was not always manifested as pauses. Comments during waiting concerned the actions at hand (i.e., the ongoing activity topic) and often required some kind of response. Maria and the caregiver were attentive to and continuously responded to each other's communication. The result is a pattern of interaction characterized by frequent interchanges (i.e., gave comparatively few pauses within contributions) of relatively short contributions. Existing pauses in the focus dyad often occurred in relation to eating and drinking (cf. Ex. 5.5 below) and since mealtime actions were time consuming many of the pauses that did occur between contributions in the focus dyad (i.e., where waiting did not immediately invoke communication) were long. In the comparison dyad, fulfillment of immediate activity goals was not as dependent on either participants' physical prerequisites or communication capabilities. Accordingly, either the comparison child or caregiver could initiate a contribution, eat and drink and be silent, quite often even for a longer time than 10 seconds and, thereafter, proceed with her own contribution (i.e., such behaviors resulted in pauses within contributions).

In relation to the topic of ongoing activity, which was the main discourse context for pauses in the focus dyad, pauses could be related to communication goals such as for Maria to express her will, and to get her personal needs listened to and accomplished. Example 5.4 provides an illustration of how a pause within Maria's contribution, which did not include physical action on her part, had interactional consequences. The pause in line 3 precedes a specifically pronounced expression by Maria. In the interaction, this pause seemed to be indicative of Maria's planning of communication. Above all, it was related to an expected response from the caregiver; the pause had an immediate interactive effect. In the

negotiation sequence below, the caregiver interprets Maria's contributions and has given several suggestions, in the preceding discourse, as to what Maria may want.

Example 5.4: Discourse excerpt from FD1b.

1. CH: < ng g ä > – (ng g ä)

@ < meaning: possibly no; BC: turns head slightly, dissatisfaction? >

2. CA: < korv > – (sausage)

@ < interpretation question >

3. CH: <1 gä >1 [1 <2 >2]1 / (2 s.) <3 gia >3

– (<1 gä >1 [1 <2 >2]1 / (2 s.) <3 gia >3)

@ <1 meaning: no; BC: loud >1, <2 BC: laughs, looks at CA >2, <3 meaning: drink; BC: looks at CA, looks at glass; loud >3

4. CA: [1 < > ]1

@ < BC: laughs, looks at CH >

5. CA: <1 ja ja hör >1 <2 >2 – (<1 yes I hear >1 <2 >2)

@ <1 BC: laughs >1, <2 PA: gives CH to drink >2

Maria's previous responses were ambiguous. In line 3, her contribution was initiated by a loudly expressed word approximation resembling the Swedish word for *no* (nä). Thereafter, Maria and the caregiver looked at each other and laughed. Maria then made a short pause. After the pause, Maria continued with her contribution as she looked first at the caregiver then at the glass, while loudly expressing that she wanted more to drink. Responding to the contribution, the caregiver laughed, confirmed that she had understood and gave Maria something to drink. Apart from possibly relating to own communication management Maria's pause seemed related to the establishment of communicative attention, may have facilitated understanding, evoked a response and an action by the caregiver, thus, Maria's goals were achieved. Example 5.4 demonstrates the degree of shared responsibility and fine-tuning that existed between Maria and her caregiver with regard to interaction outcome. Maria expressed needs that she wanted to have fulfilled immediately and thereby influenced the caregiver's contributions to the discourse. Several of Maria's pauses related to specific caregiver responses and actions of the type presented in Example 5.4. As exemplified, physically non-active silences within the focus dyad's contributions may have served important interactive functions. However, many pauses within the focus dyad were

filled with physical actions (i.e., eating and drinking). Example 5.5 includes a pause within the caregiver's contribution as she gave Maria something to drink.

Example 5.5: Discourse excerpt from FD1a.

1. CH: < >

@ < BC: looks at CA, laughs >

2. CA: < nej skärp dig nu // (9 s.) drick da nä ä >

– (no pull yourself together now // (9 s.) drink now no o)

@ < BC: looks at CH, CH clicks her tongue and laughs; PA: gives CH a drink >

Pauses of the kind shown in Example 5.5 occurred naturally in relation to activity actions and from an interaction perspective also gave the caregiver natural chances to attend to and wait for Maria's reactions, behavior and communication during activity management. Pauses of this kind are indicative of great influence of activity on the focus dyad's pattern of interaction; mealtime procedures imposed pauses that related to communicative functions different from those that were observed in the comparison dyad.

In the comparison dyad, pauses within contributions also occurred in relation to eating and drinking. However, in contrast to what was seen in the focus dyad, the comparison child and caregiver did not very often talk about the mealtime actions they were performing. Hence, pauses in the comparison dyad served communicative functions, which do not seem, to the same degree, to exist in the focus dyad. For example, pauses in the comparison dyad clearly related to structuring one's own speech in relation to the speaking partner's contributions (cf. Ex. 5.6), and in relation to word finding and change in topic (cf. Ex. 5.7 to 5.9). In Example 5.6 below, the dyad is discussing a telephone call made before the meal. The discussion concerns the person the child had called.

Example 5.6: Discourse excerpt from CD1a.

1. CA: hur gammal va hon tror du – (how old do you think she was)

2. CH: m det va kents barn / (4 s.) – (m it was kent's child / (4 s.))

3. CA: <1 >1 <2 jaha >2 / (4 s.) men då har du ringt fem noll på slutet / (3 s.)

– (<1 >1 <2 aha >2 / (4 s.) but then you dialed five zero at the end / (3 s.))

@ <1 BC: looks at CH >1, <2 comments CH's previous utterance >2

Example 5.6 includes two pauses that clearly related to the caregiver's reflection on the content of the child's contribution. The first pause occurred after the child's contribution in line 2, where the caregiver, instead of contributing, seemed to think about what the child had said. In line 3, the caregiver gave the child a questioning look. This look was followed by verbal feedback with regard to what the child's contribution meant and a 4-second pause. After the pause, the caregiver established that she had understood and that the child must have dialed the wrong number. Example 5.7 demonstrates two word-finding pauses in the context of a contribution related to a mealtime issue.

Example 5.7: Discourse excerpt from CD1a.

1. CA: vill du ha / (2 s.) heter de / (2 s.) citronpeppar  
 – (do you want / (2 s.) what is it called / (2 s.) lemon pepper)

Pauses in the comparison dyad often preceded topic changes and contributions sometimes contained several pauses of different lengths (Examples 5.8 and 5.9).

Example 5.8: Discourse excerpt from CD1a.

1. CA: du har mjölken kvar /// (18 s.) ja försöker komma på va Anders sa te  
 knäckebrö är han va liten men ja kommer inte på de / (2 s.) jo knack / (2 s.) vet  
 du vad han sa  
 – (you still have some milk left /// (18 s.) I am trying to remember what Anders  
 said for crispbread when he was little but I can't remember / (2 s.) yes knack  
 / (2 s.) do you know what he said)

Example 5.9: Discourse excerpt from CD1b.

1. CA: <1 >1 de ä bättre du gör själv <2 // (8 s.) >2 <3 m dö >3 / (4 s.) vill du ha mer  
 tomat /// (12 s.) <4 får du papper sitt ner >4 // (6 s.) <5 tack för maten >5  
 – (<1 >1 it is better you do it yourself <2 // (8 s.) >2 <3 m you >3 / (4 s.) do  
 you want more tomato /// (12 s.) <4 here you have some paper sit down >4  
 // (6 s.) <5 thank you for the food >5)  
 @ <1 PA: CA has fed CH but now stops >1, <2 PA: CH serves herself >2, <3  
 CA reacts to amount of food taken by CH >3, <4 PA: CH eats and soils, CA  
 reacts and gives CH paper >4, <5 function: request; say thank you after the  
 meal >5

The focus dyad's interaction at mealtime was less variable concerning conversational topics. Thus, relations between pauses and change in conversational content were not as evident and several pauses within the focus dyad's comparatively short contributions were uncommon.

In the focus dyad, overlaps often included comments on Maria's communication and behavior in relation to the immediate activity, or included content necessary for reaching mutual understanding in relation to another topic introduced by Maria (see 5.1.2.3; Ex. 5.3). Overlaps were often connected to emotive situations in which a general heightening of the interactive flow was observed (e.g., quicker changes of contributions and expression of emotions by body movements and voice). Such overlaps could include an abundance of body communication and communicative functions related to intimacy and closeness. In these overlaps the content of Maria's and the caregiver's overlapping units was often similar and could include, laughter, teasing and various facial expressions. Example 5.10 below, which is a continuation of Example 5.1, includes two overlaps. The first overlap (lines 2 and 3) occurs after the caregiver has given Maria something to drink. The caregiver is commenting on Maria's drinking and Maria expresses her need for more. The second overlap (lines 5 and 6) occurs as the caregiver is responding to Maria's preceding expression and body communication and tells her to wait; Maria responds simultaneously using arm gestures to show what seems to be her need for more. In the focus dyad, simultaneous communication often related to the fulfillment of activity goals.

Example 5.10: Discourse excerpt from FD1a.

1. CH: <1 hm di >1 <2 gia: >2 <3 // (8 s.) >3

– (<1 hm di >1 <2 gia: >2 <3 // (8 s.) >3)

@ <1 meaning: unclear; BC and PA: CH raises her arm, CA holds CH's arm, raises the fork and stretches it toward CH's mouth, CH turns her body and head toward her left side and looks at the glass on the table, rejects feeding >1, <2 meaning: unclear, probably drink, loud; BC: CH looks toward the glass >2, <3 PA: CA gives CH a drink >3

2. CA: ojoj [1 ojoj]1 vackert – (ohoh [1 ohoh]1 take it easy)

3. CH: [1 < m > ]1 – ([1 m]1)

@ < function and meaning: more; BC: stretches arms in front of her slightly to her right, head turned toward her left, looks straight at glass >

4. CH: < m > – (m)

@ < function and meaning: more; BC: stretched arms >

5. CA: ja du ska få mer m <1 // (9 s.) >1 (...) [2 a vänta lite ]2 du får ta mer å äta också  
– (yes I will give you more m <1 // (9 s.) >1 (...) [2 yes wait a little]2 you have to take more to eat also)

@ <1 PA: gives CH a drink >1

6. CH: [2 <> ]2 – ([2 <> ]2)

@ < BC: CH stretches her arms, looks at glass, dissatisfaction? >

Maria's desire for more to drink resulted in overlaps and her message was clear – she did not want to wait. The need for immediacy, in relation to both activity management and communication, increases the likelihood of overlap. This simultaneity is indicative more of the dyad's ability to manage activity and parallel communication than of interruption and relates to the demands involved at mealtime. The overlap in Example 5.11 occurs after the caregiver has left the table; this sequence demonstrates a typical difficulty in unaided communication. Maria and her caregiver need to be in the same place in order for communication to be successful.

Example 5.11: Discourse excerpt from FD1a.

1. CA: nä – (no)

2. CH: <>

@ < BC and or PA: tremulating sound with lips directed toward the sandwich >

3. CA: (...) <1 blåser du så m >1 <2 så de kallnar >2 (...)

– ((...) <1 do you blow m >1 <2 so it cools down >2 (...))

@ <1 question, comment >1, <2 comment; BC: quiet >2

4. CH: < auoa [1 aoua]1 > – (auoa [1 aoua]1)

@ < meaning: toilet; BC: looks in the direction of where CA is >

5. CA: [1 (...) ]1 ska du på toa – ([1 (...)]1 do you need to go to the toilet)

6. CH: < a > – (yes)

@ < meaning: yes >

The caregiver maintained communicative contact with Maria by commenting on her behavior from a distance. In line 4, Maria used two similar word approximations in

succession. The caregiver's overlapping unit seems to have been caused by her need to interpret Maria's first word. In fact, the need for interpretation in the focus dyad can also explain why overlaps did not come out as interruptions. From Maria's point of view, and from a communication management perspective, she needed to act immediately if her intentions were to be comprehended as communicative and, therefore, she easily overlapped the caregiver's contributions. In Example 5.11, Maria cannot see the caregiver's face and therefore does not know whether she is being attended to or whether the caregiver heard and understood, so she repeats her expression. An overlap in relation to interpretation is also exemplified in 5.12 below; the example includes one of the instances in the focus dyad's mealtime data in which communication concerned something outside immediate activity goals. Maria reaches for a paper on the table in front of her.

Example 5.12: Discourse excerpt from FD1a.

1. CH: <1 aoua a neo o a >1 [1 <2 ng >2]1 – (<1 aoua a neo o a >1 [1 <2 ng >2]1)  
 @ <1 meaning: unclear; BC and PA: CH stretches arms and hands toward a paper >1, <2 meaning: probably yes >2
2. CA: [1 < nä >]1 ska ja läsa – ([1 no]1 shall I read)  
 @ < reacts to and comments CH's pushing away the paper >
3. CH: < ng > – (ng)  
 @ < meaning: yes; BC: quiet nasal >

Maria's body movement influenced the activity and was rejected by the caregiver, which resulted in simultaneous communication, that is, the caregiver's *no* in line 2 did not seem to be an interpretation of the *ng* expressed by Maria in the preceding contribution. However, it is evident from this example that despite the fact that communication was simultaneous, the caregiver quickly interpreted that Maria wanted her to read the paper loud.

Overlaps in the comparison dyad often related to comments regarding the child's physical actions or included other functions, such as prayers, simultaneously produced play sequences or argumentation. For example, the overlap in Example 5.13 is part of a longer discussion in which the child requests information that the caregiver does not give her.

Example 5.13: Discourse excerpt from CD1a.

1. CH: men [varför] – (*but [why]*)

2. CA: [försök nu å] sitt ner på stolen – (*[now try to] sit on the chair*)

The comparison caregiver did not abide the child's request and her overlapping unit emerged as an interruption; the change in topic seemed to constitute an attempt to guide the direction of the conversation as well as to distract the child. This kind of negotiation, manifested here in terms of an overlap, did not exist to the same extent in the focus dyad, where negotiations between Maria and her caregiver mostly concerned message interpretation in relation to immediate practical goals.

### **5.2.3 Summary**

The observations made in this sub-study, fewer pauses and a larger number of overlaps in the focus dyad than in the comparison dyad, are primarily indicative of skilled synchronous interactions between Maria and the caregiver at mealtime. With regard to the organization of contributions in relation to time, asymmetry was not a salient feature of the focus dyad's unaided mealtime interactions. It is also true that the interaction pattern in the focus dyad, with frequent interchanges of relatively short contributions reflected the limited expressive possibilities of Maria and the considerable demands involved in the completion of the activity by the dyad. Importantly, the analysis of the focus dyad's interactions indicated that overall, communication that focused on practical goal fulfillment functioned well with natural communication modes. However, previous research and analysis of mealtime topics in this study indicate that there is much more to the mealtime activity than management of eating and drinking. With respect to communicative content, the focus dyad's mealtimes leave a great deal to be desired. The results of the analyses of conversational topics and interaction patterns at mealtime are discussed in Chapter 6, 6.1.

### **5.3 Referring to People in Different Activities**

When caregivers and children who do not have disabilities talk, they often refer to themselves and other people. This section presents the findings of an analysis of person reference in dyads of caregivers and children with and without disabilities. Twenty interaction samples from focus dyad 1 (FD1) and comparison dyad 1 (CD1) interacting in five activity types were compiled into 10 activity samples that were analyzed regarding the dyads' practices for referring to people, the use and function of person reference in different



activities. The results include descriptions of activities (influencing background factors) and specifications of influenced linguistic factors in terms of frequency of person reference, categories of person reference, and degree of reference to present and non-present person. Comparisons are made across dyads and activity types.

### **5.3.1 Activities**

#### **5.3.1.1 Mealtime**

The mealtimes of FD1 and CD1 are described in detail in Sections 5.1 and 5.2 of this chapter.

#### **5.3.1.2 Game**

Both dyads played their games in the kitchen in the afternoon. Objects involved in the activities were games and the pieces associated with them as well as objects common to the kitchen environment. The main collective goals of the activity were for children and caregivers to play a game together, to win the game and to have fun. For both dyads the game procedures involved sub-goals relating to evaluations and decisions on roles and pieces to have, on moves (when to start, who starts, who is next) and on what kind of moves to make. Other relevant issues were to decide who won the game as well as to decide whether to quit the game or to play again. Other collective factors of the activity related to roles and competencies required by the participants. Children and caregivers had to assume the roles of players A and B and cooperate in ways such that the game could be pursued. In addition, children and caregivers had to know, understand and follow the procedures, rules and specific expressions related to the game. The dyads played different types of games that involved cards. Each dyad played the same game in both recordings. The dyads' game activities were similar in terms of collective activity goals and roles but, as shall be shown, differed with respect to individual factors and communication, here analyzed with respect to person reference.

The focus dyad played a game where the child and the caregiver chose and turned cards in order to collect matching pairs. Maria sat in her wheelchair and the caregiver sat beside Maria on her right side. The Bliss-board was not used in either of the samples but in both recordings Maria used her light pointer to tell the caregiver what cards she wanted. The caregiver followed Maria's directive light pointing closely, as well as other communication

by Maria, and turned cards for Maria as well as for herself. Maria was explicit in her communication. She noticed if she was misunderstood by the caregiver and participated actively in solving misunderstandings. Still, for the game to be successful, Maria depended on the caregiver's ability and willingness to comprehend. Involuntary arm movements by Maria influenced the activity. During parts of the game, the caregiver had to hold Maria's arm so that she would not push the cards off the table. The game activity implied considerable physical demands for the focus dyad but not for the comparison dyad. The comparison dyad played a game where the child and the caregiver turned picture cards in order to match cards with pictures on larger cards. The comparison child and caregiver sat beside each other at the kitchen table. At times, the comparison child also stood up while she played and seemingly played the game using her whole body. There was lots of "playing around" and large body movements by the comparison child in the game activity. These movements seemed to be very natural for the child but perhaps were not so natural for the caregiver who wanted the child to sit down. Both the comparison child and caregiver acted independently in choosing, turning and collecting cards. Important issues in this dyad were for the child and the caregiver to be apprehensive and to follow the procedures and the rules of the game.

### **5.3.1.3 Drawing**

The drawing activity was carried out in the middle of the day in each dyad's kitchen. The collective goal of the activity was for the children to draw while the caregivers were cooking. Objects used for the realization of the activity included papers, pencils and crayons, erasers, rulers, and other drawing materials. Objects and furniture common to the kitchen environment were also present. In the drawing activity, the children and the caregivers were in the same room but not always in the same place. Each child sat by the table during the entire activity and each caregiver went back and forth between the child and the stove. From a collective point of view, different goals were involved in the activity for children and caregivers. For the children, the activity involved physical goals relating to drawing. For the caregivers the physical goals of the activity related to cooking. In all respects, except for collective influencing background factors, the drawing activity was different for the dyads. Maria sat in her wheelchair by the table. Apart from cooking, the focus caregiver had to assist Maria in securing the paper on the table, in choosing colors, in

securing crayons in Maria's hand, in changing crayons when Maria wanted new colors, and so on. The caregiver also had to make sure that Maria, due to involuntary arm movements, did not destroy the paper. Maria managed, but in most respects depended on the caregiver to be able to draw: In the focus dyad, drawing, to a large degree, depended on cooperation between Maria and the caregiver regarding communication and physical actions. No communication aids were present in the two samples. The comparison child and caregiver were communicatively and physically independent and, apart from drawing and cooking, used the activity as an opportunity to talk. In fact, communication was a prominent goal in the comparison dyad's drawing activity.

#### **5.3.1.4 Teeth brushing**

The teeth brushing activity took place in the evenings, in each dyad's bathroom. The collective goal of the activity was to brush the child's teeth. Both dyads also performed other sub-activities common to evening bathroom procedures (e.g., cleaned the children's hands and faces). Objects involved in each dyad's activity were toothbrush, toothpaste and other objects common to the bathroom (e.g., soap and towel, water, basin, mirror, toilet). Activity structures and procedures included to find body postures that allowed brushing, to get the toothbrush and the toothpaste, to put the toothpaste on the toothbrush, to brush teeth and to have teeth brushed. In addition, the dyads had to manage use of water (i.e., to turn water on and off, drink, rinse mouth and toothbrush), and needed to get and use a towel. The teeth brushing activity included several physical goals and for each dyad, cooperation between the child and the caregiver was of utmost importance. Brushing the child's teeth was more difficult for the focus dyad than for the comparison dyad. The focus caregiver encouraged Maria to brush her own teeth, and to clean her hands and face by herself, actions that further complicated the performance of activity. The caregiver had Maria either on her own hip or on her leg, or she stood behind Maria, lifting her up by holding under her arms. Brushing and cleaning were influenced by involuntary body movements and by Maria's difficulty letting go of objects. There were no communication aids present in either of the focus dyad's samples. In the comparison dyad, the caregiver did all the brushing of the child's teeth and the cleaning of the child's face, hands and feet. That is, the comparison caregiver did not encourage independent acting on behalf of her child in this activity. The comparison child sat beside the washbasin and the caregiver stood in front of the child or by

the child's side. The caregiver told the child what to do and the child did what the caregiver told her to do. As it seemed, brushing the child's teeth was not a physically demanding activity for the comparison dyad.

### **5.3.1.5 Story reading**

Story reading took place in the evening, in each child's bed. Objects involved in the activity were books. Other objects and furniture in the children's rooms were also present. The collective goal of the activity was to read a story, a mainly verbal goal. Activity procedures common to the dyads included finding proper and suitable body postures, to decide what book to read, to read and to listen to a story as well as to decide when to stop reading. Another goal seemed to be having a good time together. From a collective point of view, the story reading activity was similar for the dyads. However, there were great differences between the dyads in terms of how the story reading activity was carried out. The children and the caregivers in each dyad were assigned and took very different roles. As a result, the dyads' activities included different procedures and sub-goals. The focus dyad read two different books in the two recordings. The caregiver was primarily in charge of the activity as she read stories to Maria. Maria listened; mainly taking a receiving role. Apart from having to hold, read and turn pages in the book the caregiver also was responsible for adjusting Maria's lying position in the bed. No communication aids were used during the focus dyad's story readings. The comparison child and caregiver read the same book in both recordings. Reading time was divided strictly between the child and caregiver, who took turns reading a passage, a sentence, two words or one word. The caregiver prompted and corrected the child and asked questions in relation to the child's reading. The comparison child acted independently in the activity; asked questions, turned pages just to check things up, played with a string and moved her legs around. Reading was a shared responsibility in the comparison dyad and the activity had a rule-governed structure. The way the comparison child and caregiver alternated in the roles as reader and listener in order to practice the child's reading skills was very different from how the story reading activity was managed in the focus dyad.

Except the use of the light pointer in the game activity, the focus dyad's communication was unaided in all activity samples, that is, neither the Bliss-board, nor any

other communication aids involving graphic signs were used in any of the 10 video recordings of this dyad.

### 5.3.2 Person reference

#### 5.3.2.1 Frequency of person reference

Table 5.5 shows the total number of person references (PR) for each dyad and number of person references in each activity sample for each dyad. Table 5.5 also includes information about length of interactions and total numbers of tokens for each dyad, as well as the total number of tokens in each activity sample for each dyad.

The focus dyad's data (FD1) included 815 person references and the comparison dyad's data (CD1) included 1018 person references. Of all person references in FD1, 21 (3%) belonged to Maria and 794 (97%) belonged to the caregiver. In FD1, game and mealtime included the largest numbers of person references. These activity samples were also the longest samples in FD1, and both included large numbers of tokens (cf. Table 5.5). In CD1, mealtime and drawing included the largest numbers of person references.

Figure 5.2 shows the total number of person references for each dyad in each activity type.

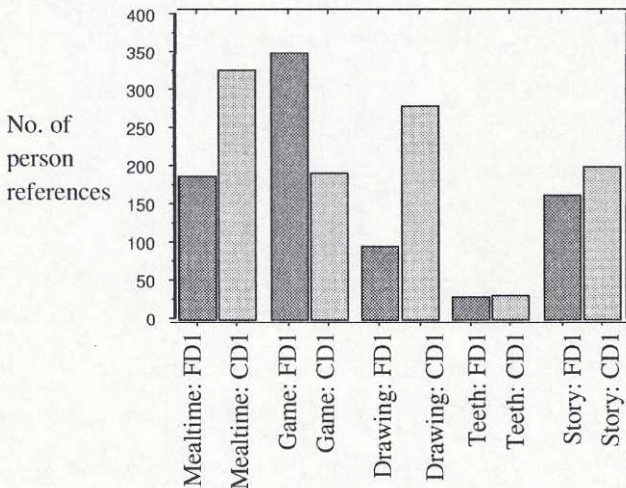


Figure 5.2 Total number of person references in the activities of FD1 and CD1

Table 5.5 Length of interaction, number and percent of tokens and person references across activity samples in FD1 and CD1

	TOTAL SAMPLE		MEALTIME		GAME		DRAWING		TEETH		STORY	
	FDI	CDI	FDI	CDI	FDI	CDI	FDI	CDI	FDI	CDI	FDI	CDI
Length of interaction	2:19:00	1:59:08	42:26	34:18	45:37	21:41	28:40	35:00	07:49	04:31	14:28	23:38
No. of tokens	7481	6316	1721	1853	2714	1004	932	1856	336	232	1778	1371
No. of PR	815	1018	185	326	348	189	93	277	28	29	161	197
No. of PR - Child	21	446	10	131	4	64	5	137	0	12	2	102
No. of PR - Caregiver	794	572	175	195	344	125	88	140	28	17	159	95
Percent of PR of total			23%	32%	43%	19%	11%	27%	3%	3%	20%	19%
no. of PR for each dyad												

Note: PR = person reference.

As seen in Table 5.5 and in Figure 5.2, CD1 had a larger number of person references than FD1 at mealtime, in drawing, in teeth brushing, and in the story reading activity. The focus dyad had a larger number of person references than CD1 in the game activity.

As shown in Table 5.5 and described in Chapter 4 (4.2.3.1) and in Appendix C (Ex. 2), the interaction samples were of different length and included different numbers of tokens. One-group Chi-square tests were used to determine if the numbers of person references were uniformly distributed within the activities. The Chi-square values were for: (a) mealtime, FD1-CD1  $\chi^2(1) = 9.6303$  ( $p < 0.01$ ); (b) game, FD1-CD1  $\chi^2(1) = 16.8943$  ( $p < 0.001$ ); (c) drawing, FD1-CD1  $\chi^2(1) = 25.9918$  ( $p < 0.001$ ); (d) story reading activity, FD1-CD1  $\chi^2(1) = 87.2437$  ( $p < 0.001$ ) and; (e) teeth brushing, FD1-CD1  $\chi^2(1) = 0.2238$ . For four of the five activity situations, the observed numbers of person references were distributed differently than what was expected from the model. Thus, in relation to interaction sample length and numbers of tokens, CD1 included larger numbers of person references than what was expected at mealtime, in drawing and in the story reading activity<sup>47</sup>. In the game activity, FD1 included a larger number of person references than what was expected from the model. It was not possible to reject the null hypothesis (i.e., an even distribution of person references in the two dyads) for the teeth brushing activity. The observed difference between FD1 and CD1 in the teeth brushing activity, in terms of distribution of numbers of person references, was not significantly different from what was expected from the model.

### 5.3.2.2 Categories of person reference

Presented in Tables 5.6 and 5.7, are numbers of person references in different categories across activities for FD1 and CD1. In the left columns, categories are ranked from most to least common, according to the total numbers of person references included in each category. Tables 5.6 and 5.7 also include the total numbers of person references in each category for children and caregivers, respectively.

---

<sup>47</sup> Numbers of person references in the story reading activities depended on what books the dyads read.

Table 5.6 Frequency of person reference across categories and activities in FD1

FOCUS DYAD 1									
	Total	Percent	CH	CA	Mealtime	Game	Drawing	Teeth	Story
1. Speaking partner	396	48.6%	3	393	108	196	52	20	20
2. Fictive	111	13.62%	0	111	4	1	-	-	106
3. Self + speaking partner	110	13.5%	0	110	18	46	15	7	24
4. Self	94	11.53%	1	93	8	77	9	-	-
5. Family	45	5.52%	11	34	18	7	11	-	9
6. Unspecific	16	1.96%	0	16	4	10	1	-	1
7. Other adult	11	1.35%	5	6	10	1	-	-	-
7. Cited	11	1.35%	0	11	11	-	-	-	-
9. Third person	9	1.10%	1	8	-	3	5	-	1
10. Telephone	6	0.74%	0	6	-	6	-	-	-
11. Personnel	3	0.37%	0	3	3	-	-	-	-
12. Self + other	1	0.12%	0	1	-	-	-	1	-
12. Speaking partner + other	1	0.12%	0	1	1	-	-	-	-
12. Unclear	1	0.12%	0	1	-	1	-	-	-
15. Other child	0	-	0	0	-	-	-	-	-
Total	815	100%	21	794	185	348	93	28	161

Note: CH = child, CA = caregiver.



Table 5.7 Frequency of person reference across categories and activities in CD1

	COMPARISON DYAD 1									
	Total	Percent	CH	CA	Mealtime	Game	Drawing	Teeth	Story	
1. Speaking partner	304	29.87%	60	244	118	82	68	12	24	
2. Fictive	189	18.57%	104	85	20	1	27	-	141	
3. Self	228	22.40%	144	84	66	82	46	7	27	
4. Other child	123	12.08%	54	69	29	7	79	8	-	
5. Self + speaking partner	32	3.14%	9	23	14	9	6	1	2	
5. Unspecific	32	3.14%	15	17	15	4	10	-	3	
7. Personnel	21	2.06%	10	11	10	-	11	-	-	
8. Family	19	1.87%	6	13	17	-	2	-	-	
9. Cited	18	1.77%	12	6	12	-	6	-	-	
10. Other adult	15	1.47%	10	5	13	1	1	-	-	
11. Telephone	11	1.08%	8	3	-	3	8	-	-	
12. Self + other	9	0.88%	8	1	5	-	4	-	-	
12. Speaking partner + other	9	0.88%	0	9	1	-	8	-	-	
14. Unclear	8	0.79%	6	2	6	-	1	1	-	
15. Third person	0	-	0	0	-	-	-	-	-	
Total	1018	100%	446	572	326	189	277	29	197	

Note: CH = child, CA = caregiver.

The focus dyad's data included 14 categories of person reference. The five most common categories in FD1 were speaking partner, fictive, self + speaking partner, self, and family. The comparison dyad data also included 14 categories of person reference, the most common being speaking partner, fictive, self, other child, self + speaking partner, and unspecified. As shown in Table 5.6, Maria's data included five categories of person reference. Interestingly, the most common category of person reference for Maria was family. Maria had few references to speaking partner and only one reference to self. The comparison child's data included 13 categories of person reference. By far, the most common category for the comparison child was self, constituting 32% of the total number of person references made by the child and 63% of the total number of references to self in CD1 (cf. Table 5.7). Other child, which was a common category of person reference for both the child and the caregiver in CD1, did not occur in any of the activity samples of FD1. There were also interesting differences between the dyads with respect to the personnel category; the data for CD1 included 21 references to personnel and the data for FD1 included 3 references to personnel.

Different activities included different numbers of categories of person reference. For FD1, mealtime and game (i.e., the activities that included the largest numbers of person references) also included the largest numbers of different categories, 10 categories, respectively. Drawing and story reading included six categories each. Including only three categories, teeth brushing was the activity in FD1 with least variation in terms of numbers of different categories of person reference used (cf. Table 5.6). Data in Table 5.7 show that, for CD1, drawing and mealtime included 14 and 13 different categories, respectively; the game activity included eight categories, the teeth brushing and story reading activities included five different categories of person reference, respectively.

In both FD1 and in CD1, reference to speaking partner and self + speaking partner occurred in all activities. A closer examination of Table 5.6 reveals that many of the references to speaking partner in FD1 (76%) occurred at mealtime and during the game activity. Further, the game activity contained 42% of all references to self + speaking partner and 82% of all references to self in FD1 including the only reference to self by Maria. It is also interesting that FD1 referred to family members in all activities except teeth brushing. In FD1, fictive references mainly occurred during story reading. In CD1, reference to self occurred in all activities and the category other child was common to all

activities except story reading. Most of the person references coded as fictive in CD1 occurred during story reading. However, 25% of all fictive references in CD1 occurred at mealtime and during drawing. In CD1, references to self + other and to speaking partner + other occurred at mealtime and during the drawing activity. Further, most references to other adult in CD1 occurred at mealtime.

Table 5.8 presents, in ranked order, the three categories that included the largest numbers of person references for each dyad in each activity type, as well as the percent of person reference in these categories in relation to the total numbers of person references for each dyad in each activity. According to Table 5.8, self + speaking partner, the inclusive *we*, was one of the three most common categories in all activities for FD1, but only occurred as one of the three most common categories in the game activity for CD1. Self was a common category in all activities for CD1, but was only among the three most common categories in the game activity for FD1. Family was one of the three most common categories of person reference for FD1 at mealtime and in the drawing activity, but was not a common category in any of CD1's activities. Other child, which did not occur at all in FD1, was one of the three most common categories of person reference for CD1 at mealtime, in drawing, and in the teeth brushing activity. In CD1, but not in FD1, each activity type had a different pattern of most common categories of person reference. The dyads had identical patterns concerning the most common categories of person reference in the game activity.

### ***Person references coded as cited and telephone***

The cited category in FD1 included 11 person references, all of which related to two instances of communication. One instance was the caregiver's hypothesizing and saying that if Maria did not eat more food, she would wake up in the night and say, "*jag är hungrig*" (*I am hungry*); the caregiver talked for and about Maria. The other instance was the caregiver's reading an information sheet aloud for Maria. The reading, which included 10 person references, is specified in its entirety in Appendix E1. In FD1, the category telephone included six person references that occurred in relation to one phone call (cf. Appendix E2). In CD1, the cited category included 18 person references that occurred in relation to (a) talk about what the child and her friend had said during a telephone conversation, (b) a report by the caregiver of what the child's brother had said when he was little and (c) a report by the child of what she and her friends had said at school (cf.

Table 5.8 The three most common categories of person reference in each activity type for FD1 and CD1

Activity types	FOCUS DYAD 1			COMPARISON DYAD 1		
	Categories	No.	Percent	Categories	No.	Percent
<i>Mealtime</i>	Speaking partner	108	58.4%	Speaking partner	118	36.2%
	Self + sp. partner	18	9.7%	Self	66	20.2%
	Family	18	9.7%	Other child	29	8.9%
<i>Game</i>	Speaking partner	196	56.3%	Speaking partner	82	43.4%
	Self	77	22.1%	Self	82	43.4%
	Self + sp. partner	46	13.2%	Self + sp. partner	9	4.8%
<i>Drawing</i>	Speaking partner	52	55.9%	Other child	79	28.5%
	Self + sp. partner	15	16.1%	Speaking partner	68	24.5%
	Family	11	11.8%	Self	46	16.7%
<i>Teeth brushing</i>	Speaking partner	20	71.4%	Speaking partner	12	41.4%
	Self + sp. partner	7	25%	Other child	8	27.6%
	Self + other	1	3.6%	Self	7	24.1%
<i>Story reading</i>	Fictive	106	65.8%	Fictive	141	71.6%
	Self + sp. partner	24	14.9%	Self	27	13.7%
	Speaking partner	20	12.4%	Speaking partner	24	12.2%

Note: Self + sp. partner = Self + speaking partner.

Appendix E1). Eleven person references in CD1 that occurred during two phone calls were coded as telephone (cf. Appendix E2).

### ***Combinations of words referring to person***

As shown in Appendix E3, FD1 contained 5 combinations of words referring to person. The combinations, which occurred in the game activity, included 10 person references that belonged to the categories speaking partner and unspecified. In CD1, 14 combinations of words that referred to person occurred in four activities (mealtime, game, drawing and story

reading). The 14 combinations in CD1 included 29 person references from 9 different categories (cf. Appendix E3).

### ***Words used to refer to person***

Appendices E4 to E8 specify the words used to refer to person in FD1 and CD1 in different categories and activities. The most common word type for both dyads was the second person pronoun *du* (you), which constituted 43% (FD1) and 25% (CD1) of the total numbers of person references in each dyad. The second most common word type for both dyads was the first person pronoun *jag* (I), which constituted 14% (FD1) and 21% (CD1) of the total numbers of person references in each dyad. The third most common word type in FD1 was *vi* (we), which constituted 10% of all person references in FD1. In CD1, the third most common type of word was proper names. Twelve percent of the total number of person references in CD1 were proper names. Maria's person references included 10 proper names, 7 nouns, 1 first-person personal pronoun, and 3 second-person personal pronouns (cf. Appendix E4, E6 & E8).

### **5.3.2.3 Reference to present and non-present person**

Person references were divided into four groups that included different categories of person reference as follows: (a) *present person* = self, speaking partner, self + speaking partner, self + other, speaking partner + other and third person; (b) *non-present person* = family, other child, personnel, other adult and fictive; (c) *unspecific* = unspecific, and; (d) *other* = cited, telephone and unclear (see further Appendix E9). Each dyad's pattern in the different activities, in terms of the percent of person reference in the four different groups, is illustrated in Figures 5.3 to 5.7. Before presenting the figures it should be pointed out that 16 of the 21 person references identified in Maria's data concerned individuals that were not present in the situation (cf. Appendix E9).

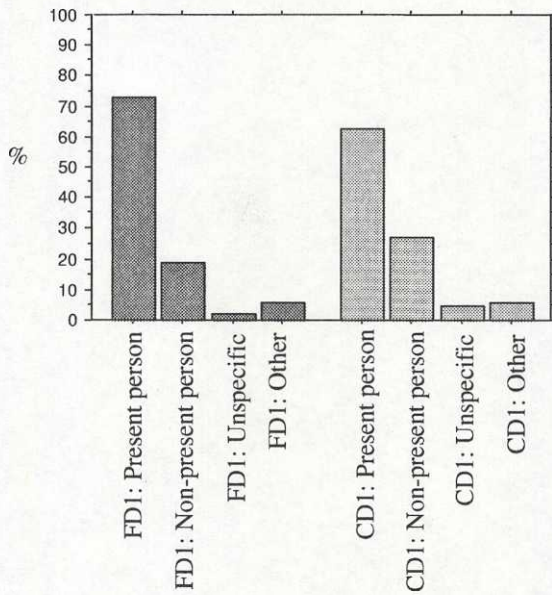


Figure 5.3 Reference to present and non-present person, unspecific reference and other reference in the mealtime activity for FD1 and CD1

With respect to the four groups, the dyads had similar distribution of person references at mealtime. Differences between the dyads concerned the extent to which they referred to present and non-present person. For FD1 and CD1, respectively, 18.9% and 27.3% of all person references concerned people who not were present in the situation. Apart from the story reading activity, mealtime was the activity in which FD1 had the largest number of references to non-present persons.

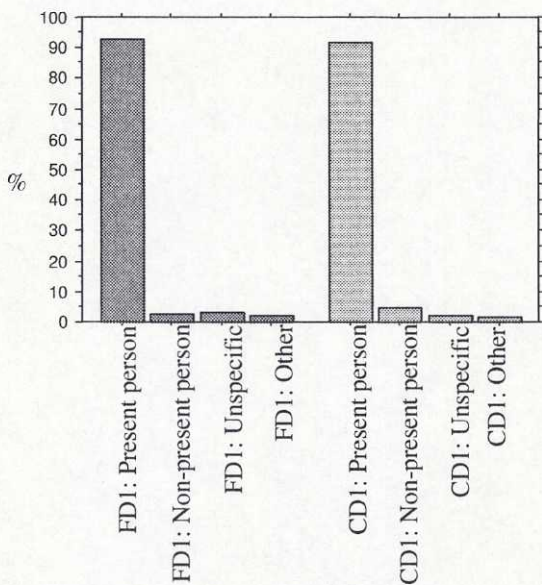


Figure 5.4 Reference to present and non-present person, unspecific reference and other reference in the game activity for FD1 and CD1

Figure 5.4 shows that there were remarkable similarities between the dyads concerning reference to present and non-present person in the game activity. Approximately 90% of all person references in each dyad's game sample belonged to the present person group. Hence, although the dyads played different games, and although playing involved different physical demands for the dyads, the present time perspective, reflected via person reference, was common to the dyads in this activity, which, in turn, reflects that the collective goal of the game activity had large influence on both dyads' communication. There were, however, important qualitative differences between the dyads concerning use and function of person reference in the game activity. These differences are discussed in Chapter 6 (6.2.2).

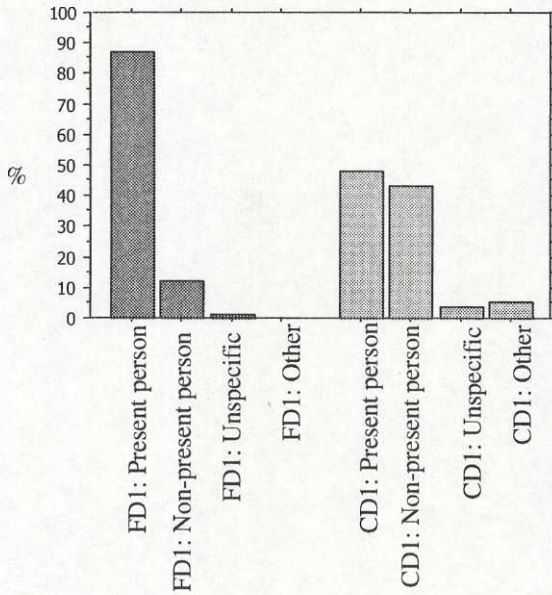


Figure 5.5 Reference to present and non-present person, unspecific reference and other reference in the drawing activity for FD1 and CD1

Interesting differences in types of person reference were revealed in relation to the drawing activity. Most of the references to person in the drawing activity in FD1 concerned either Maria, the caregiver, or both of them (i.e., the inclusive *we*) thus, belonging to the present person group. In contrast, the comparison dyad had an almost equal distribution of references to present and non-present persons in the drawing activity. Apart from story reading, drawing was the activity in CD1 that included the largest numbers of references to persons who were not present in the situation; for CD1 this was the activity type in which numbers of references to present and non-present persons was the most equal. Although the difference was small, in the drawing activity, the comparison child referred to non-present person more often than she referred to present person (cf. Appendix E9). With respect to present and non-present person reference, there were large differences between the dyads in relation to the drawing activity. I will return to this finding in the discussion section (Chapter 6, 6.2.2).



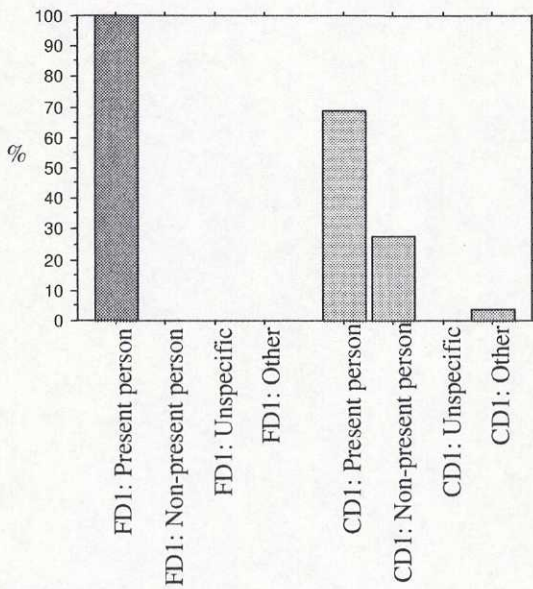


Figure 5.6 Reference to present and non-present person, unspecific reference and other reference in the teeth brushing activity for FD1 and CD1

For both dyads, the teeth brushing activity included few person references. Existing person references were distributed differently within the dyads' samples. In FD1, person references mainly consisted of different words used by the caregiver to refer to Maria and to the inclusive *we*, in other words, present person reference was used only in FD1's teeth brushing activity. In CD1's teeth brushing activity, 27.6% of all person references belonged to the non-present person group.

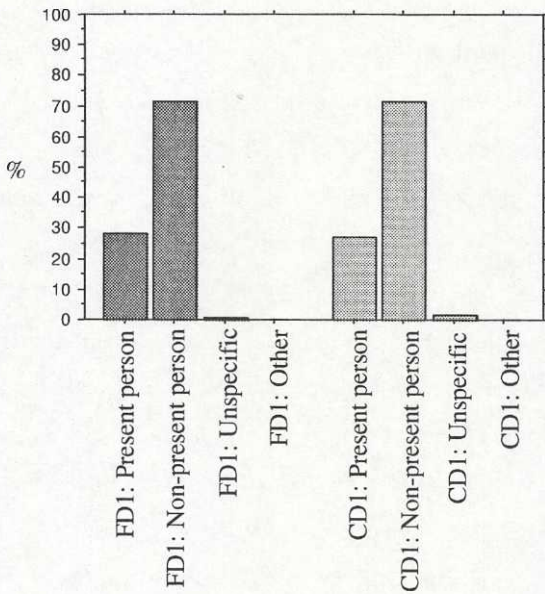


Figure 5.7 Reference to present and non-present person, unspecified reference and other reference in the story reading activity for FD1 and CD1

For both dyads, approximately 70% of all references to people in the story reading activity concerned non-present persons, that is, in this activity type, were primarily fictive. However, although there were great similarities between the dyads with respect to the types of person references made, considering the interaction goals that were fulfilled in the dyads' activities, there were also differences between the dyads concerning their referring to person.

### 5.3.3 Summary

The communication between a caregiver and a child with disabilities and between a caregiver and a child without disabilities has been examined with respect to the ways the dyads referred to people in five different activities. Analyses and descriptions of activities exemplified the differences that existed between the dyads in the practical handling of the activities and, in particular, demonstrated the challenges caregivers and children with severe impairments may experience in daily life. The activity analyses also revealed that apart from

using the light pointer while playing games, the focus dyad only used natural communication modes. Some of the more important results obtained with respect to person reference were: (a) Maria made few references to people, (b) the comparison dyad referred to people more often than the focus dyad at mealtime, in the drawing activity and during story reading; (c) the focus dyad referred to people more often than the comparison dyad in the game activity; (d) there were large differences between the dyads in terms of numbers of references to self + speaking partner, self, family, other child and personnel; (e) the comparison dyad referred to non-present people more often than the focus dyad did and (f) most of Maria's references were to non-present family members and other adults. Another relevant observation was that in some activities there were obvious similarities between the dyads concerning how they referred to people, evidencing the relationship that exists between social activities and language use, that is, independent of who participates in the activity. The differences and similarities that existed between the dyads in terms of reference to people in activities and the relationship between person reference and different interaction goals are further evaluated and discussed in Chapter 6 (6.2).

## **5.4 Content and Goals in Naturalistic Communication with Blissymbolics**

The focus dyads of this study were users of Blissymbolics. However, as the preceding analyses have revealed, apart from the use of the light pointer in the game activity, communication in focus dyad 1 (FD1) was unaided in all activity samples. The situation was slightly different in focus dyad 2 (FD2) and this section presents the results of different analyses that build on the two sequences of Bliss-board communication that occurred between the child and the caregiver in this dyad. The results include specifications of the situational characteristics of the Bliss-board interactions, an overview of linguistic features of the Bliss-board sequences and descriptions of episodes in Bliss-board sequences. Bliss-word episodes of FD2 also were compared to the interactions that did not involve Bliss-words in FD2, FD1, CD and CD2.

### **5.4.1 The situations of Bliss-board usage**

The Bliss-board was used on two different occasions in FD2, in the second recordings of the game and mealtime activities, respectively. These interactions were video recorded on the same day. In both situations, Tilde sat in her wheelchair by the kitchen table. The caregiver mostly sat close to Tilde on Tilde's left side. The caregiver placed the Bliss-board in an upright position on the table in front of Tilde and herself. Tilde selected Bliss-words on the board by means of using a light pointer that was mounted on the left side of her glasses. Apart from the actual searching of the board and pointing at Bliss-words, Tilde depended on the caregiver for physical handling of the board. Tilde had Bliss-words on both sides of the board and it was the caregiver's responsibility, and right, to move and turn the sides of the Bliss-board as indicated by Tilde or when she needed or wanted to herself. The specific characteristics of the two situations of Bliss-board communication are described separately below.

#### **5.4.1.1 Bliss-board communication in relation to the game activity**

The game activity sample for FD2 was 12 minutes and 15 seconds long. The Bliss-board sequence occurred in the beginning of the sample and was ended by the caregiver after 4 minutes and 19 seconds, when she folded the board and put it away. Thereafter, the dyad started to play the game. The Bliss-board was not used more in the activity. Apart from mounting the light pointer on Tilde's glasses, the caregiver sat beside Tilde during the whole sequence. The goal of communication seemed settled between Tilde and the caregiver; no physical actions other than those that related to communication with the Bliss-board were performed during the sequence. The principle guiding the use of the board in this situation seemed to be first talk, then play. Apart from the fact that the final contributions in the Bliss-board sequence concerned the game, and may have functioned as a sort of preparation for playing, the actual use of the Bliss-board did not relate to the collective and individual goals of playing a game.

#### **5.4.1.2 Bliss-board communication at mealtime**

The situation was different at mealtime. The second mealtime activity sample in FD2 was 11 minutes and 21 seconds long. The Bliss-board was present and available for use during the entire activity. However, the fact that the board was present did not mean that it was

used all the time. As shown in Sections 5.4.2.4 and 5.4.3 below, use of the Bliss-board related to communication on specific themes. The mealtime activity of FD2 differed from the mealtimes of FD1 (cf. 5.1 & 5.2) concerning the type of meal that was performed. The present activity resembled snack time more than a typical meal; the caregiver gave Tilde an ice cream and drank a cup of coffee but did not eat anything herself. Although the collective goals related to eating and feeding, in this mealtime sample of FD2, communication was also a prominent goal. The main individual goals for the caregiver were to feed Tilde, to dry Tilde's face and clothes, and to communicate with Tilde. Tilde's goals were to eat and to communicate. The potential problem of parallel management of different actions was solved in ways that seemed rational and efficient. For example, the caregiver would feed Tilde, ask questions, and comment on Tilde's communication at the same time, but never gave Tilde something to eat while Tilde was active using the board. Tilde and the caregiver managed to fulfill goals relating to feeding and eating while communicating by means of using the Bliss-board.

## **5.4.2 Characteristics of Bliss-board sequences**

### **5.4.2.1 General linguistic features**

Table 5.9 gives an overview of the two Bliss-board sequences. The game-Bliss sequence included 37 contributions. Twenty-one contributions belonged to Tilde and 16 contributions belonged to the caregiver. Thus, some of Tilde's contributions were concurrent with the caregiver's contributions; they were total overlaps. The mealtime-Bliss sequence (i.e., the entire mealtime activity sample) included 87 contributions. Forty-six contributions were Tilde's and 41 contributions were the caregiver's (cf. Appendix B & Table 5.9). In this sequence too, some of Tilde's contributions were complete overlaps. As shown in Table 5.9, there were large discrepancies between the caregiver and Tilde in terms of numbers of tokens contributed. In the game-Bliss sequence, 397 and 16 tokens belonged to the caregiver and Tilde, respectively; in the mealtime-Bliss sequence, 655 tokens belonged to the caregiver and 49 tokens belonged to Tilde. Looking at Table 5.9 it is important to remember that numbers of contributions and tokens only give a gross picture of the amount of communication that occurs. As is illustrated through discourse excerpts in Section 5.4.3 (and as has been shown in relation to the mealtime interactions of Maria and her caregiver) communicative success between Tilde and the caregiver to a large degree depended on body

communication. Of the total number of the contributions made by Tilde in the game-Bliss and mealtime-Bliss samples 5 (24%) and 13 (28%), respectively, only included body communication and for both Tilde and the caregiver, spoken words, word approximations and vocalizations usually were produced together with whole body movements, head movements, facial expressions and eye gaze.

Table 5.9 Linguistic features of Bliss-board sequences in FD2

	Game-Bliss			Mealtime-Bliss		
	Total	CH	CA	Total	CH	CA
Length of sequence	04:19	-	-	11:21	-	-
No. of contributions	37	21	16	87	46	41
No. of tokens	413	16	397	704	49	655
No. of selections of Bliss-words	6	6	-	12	11	1
No. of types of Bliss-words selected	5	5	-	11	10	1
Mean no. of tokens/contribution	11.16	0.76	24.81	8.09	1.06	15.97
No. of episodes	3	-	-	12	-	-
No. of Bliss-word episodes	1	-	-	5	-	-

*Note:* No. of tokens includes the 6 and 12 selections of Bliss-words made by Tilde and the caregiver.

#### 5.4.2.2 Episodes in Bliss-board sequences

The game-Bliss interaction sequence included 3 episodes (cf. Table 5.9). The first and the last episodes, which involved 15 contributions and 157 tokens, did not include Bliss-words. One episode in the middle of the sequence included Bliss-words. The Bliss-word episode involved 24 contributions and 256 tokens and was 3 minutes and 38 seconds long. The episode was initiated and ended within contributions that belonged to the first and final episodes in the sequence. As shown in Table 5.9, 12 episodes were identified in the mealtime-Bliss sequence. In sequential order, episodes 2, 6, 7, 9, 10, 11 and 12, which involved 42 contributions and 233 tokens, did not include Bliss-words. There were five Bliss-word episodes in the mealtime-Bliss sample (i.e., episodes 1, 3, 4, 5 & 8). These

episodes involved 50 contributions and 471 tokens and, were a total of 6 minutes and 29 seconds long. As was the case with the Bliss-word episode in the game-Bliss sequence, some of the mealtime-Bliss-word episodes were initiated and ended within contributions that also were involved in other episodes. In total, there were 6 Bliss-word episodes.

Episodes in the Bliss-board sequences that did not involve Bliss-words were varied in nature. Five episodes in the mealtime-Bliss sample accompanied and concerned physical actions and goals of the ongoing interaction. These episodes were comprised of utterances that concerned, for example, Tilde's eating and personal needs in relation to mealtime issues (e.g., "är du törstig svare mej ordentligt ja eller nej" – *are you thirsty answer me properly yes or no*), feeding procedures and other actions performed by the caregiver (e.g., "oj nu söljar vi" – *oh now we are messy*, "ska vi ta en sked istället tycker du eller" – *should we take a spoon instead or what do you think*, "så tomt" – *so empty*). Two episodes in the mealtime-Bliss sample that did not involve Bliss-words concerned Tilde's making funny faces and the meaning of the word *grimace*. The two episodes in the game-Bliss sample that did not involve Bliss-words consisted of communication about Tilde's day as well as talk about playing the game. Apart from the episode that concerned Tilde's day, which I will return to in the interaction analysis, the episodes in the Bliss-board sequences that did not involve actual use of Bliss-words, concerned practical issues and behaviors, thus, they were closely tied to the situation of interaction.

#### **5.4.2.3 Types of Bliss-words in Bliss-word episodes**

Tilde made 6 and 11 selections of Bliss-words in the game-Bliss and mealtime-Bliss samples, respectively. In the game-Bliss sample, Tilde selected Bliss-words representing the following meanings: ledsen (*sad*), sjuk (*sick*), mage (*stomach*), glass (*ice cream*) and glad (*happy*). The Bliss-word for ice cream was selected twice. Bliss-words selected by Tilde in the mealtime-Bliss sample included: glass (*ice cream*), glad (*happy*), fritids (*after-school centre*), buss (*bus*), baka (*bake*), väska (*bag*), dator (*computer*), säng (*bed*), lyssna (*listen*), and juice/soft (*fruit juice*); the Bliss-word for after-school centre was selected twice. In the mealtime sample, but not in the game sample, Tilde combined two and three Bliss-words on two different occasions. In the mealtime sample, the caregiver pointed at the Bliss-word for dryck (*drink*). This instance represented the only selection of Bliss-words by the caregiver in the two sequences.

#### **5.4.2.4 Content of Bliss-word episodes**

The content of some Bliss-word episodes also related to the interaction situation. However, by means of using Bliss-words, Tilde and her caregiver usually did something more with language than focusing on the physical actions and goals at hand and, from an overall perspective, the Bliss-word episodes concerned issues other than those that were in focus when Bliss-words were not used (cf. the episodes in the Bliss-board sequences that did not involve Bliss-words, 5.4.2.2). The results of the analysis of content of Bliss-word episodes could be summarized as follows. All Bliss-word episodes in some way or other concerned Tilde (i.e., with regard to the frame of person, Tilde was in focus during all Bliss-word episodes). From the perspective of time, the Bliss-word episodes embedded communication about past, present and future time. Some episodes were unspecific in relation to time; they were related to the present in terms of being uttered here and now but apart from this could not be specified with regard to time. Two Bliss-word episodes concerned actions and events that Tilde had experienced in the past or was about to participate in. Two episodes concerned Tilde's moods and feelings and two episodes resembled each other in terms of including communication that in explicit ways related to concepts and words. For reasons that are explained in Section 5.4.3.4, these episodes were included in the analysis and were entitled world and language. From here on, Bliss-word episodes and episodes that did not involve Bliss-words in the interactions of FD2, FD1, CD1 and CD2 are examined in relation to four areas of content: (a) past actions and events (1 Bliss-word episode), (b) future actions and events (1 Bliss-word episode), (c) the state of the mind and body (2 Bliss-word episodes), and (d) world and language (2 Bliss-word episodes). As illustrated in the excerpts in Section 5.4.3 below, FD2 did many things with language within each episode; headings only indicate a main, by the analyst, assumed feature of episodes.

#### **5.4.3 Bliss-word episodes versus episodes that did not involve Bliss-words**

In Sections 5.4.3.1 through 5.4.3.4, Bliss-word episodes are exemplified, analyzed and compared to episodes that did not involve Bliss-words in the interactions of FD2, FD1, CD1 and CD2. Phenomena of particular interest to the understanding of the interactions are discussed there. In the transcripts ••• stands for episode boundary within a contribution (i.e., ••• indicates that there was more communication before and/or after the part of the contribution that is presented). English translations with comments (see Chapter 4; 4.1.4)



are given after or below the original contributions. Word approximations and vocalizations made by the focus children are not always translated.

#### 5.4.3.1 Communication about past actions and events

One Bliss-word episode in the mealtime-Bliss sample concerned what Tilde had done at the after-school centre. The episode, presented in Example 5.14, was the fifth episode in the sample and occurred after an episode that focused on what Tilde should do the following day (cf. 5.4.3.2; Ex. 5.22). The caregiver initiated the episode by means of asking two questions (lines 1 & 3). Tilde answered the first question quickly as she pointed at the Bliss-word for *computer*. The caregiver responded to Tilde's reply by confirming Tilde's choice of Bliss-word, by looking at Tilde and by reformulating and expanding Tilde's utterance (line 3). Next, the caregiver followed Tilde, who was looking at the Bliss-board, and asked her what else she had done. Tilde responded by selecting the Bliss-word for *bed*. Tilde's choice of Bliss-word was confirmed by a new question/statement from the caregiver (line 5). Again, by verbalizing and expanding Tilde's utterance, the caregiver provided more meaning to the conversation (line 7). The episode faded out when Tilde, as it seemed, communicated that she wanted more ice cream.

Example 5.14: *What did you do at the after-school centre today?* (FD2; mealtime-Bliss)

1. CA: ••• <1 men va gjorde du idag när jag >1 <2 hämta dej >2 <3 på fritis >3  
– (<1 but what did you do today when I >1 <2 came to get you >2 <3 at the after-school centre >3)  
@ <1 BC: CA and CH look at board >1, <2 BC: looks quickly at CH, CH looks at CA >2, <3 BC: CA and CH turn to look at board >3
2. CH: < DATOR > – (COMPUTER)  
@ < 1 s. >
3. CA: dator ja <1 satt du å spela med datorn >1 <2 spela memory // (6 s.) m vad har du gjort mer idag da >2  
– (computer yes <1 you sat and played with the computer >1 <2 played memory // (6 s.) m and what have you done more today >2)  
@ <1 BC: looks at CH, CH looks at board >1, <2 BC: CA and CH look at board, CH seems to search the board >2

4. CH: < SÄNG > – (BED)

@ < 7 s. >

5. CA: du låg i < sängen > – (you lay in < the bed >)

@ < BC: looks at CH, CH's head is turned down toward her left shoulder, looks straight ahead >

6. CH: < ng > – (ng)

@ < feedback; meaning: unclear; BC: quiet, looks straight ahead >

7. CA: < på fritis / (1 s.) ligga i sängen >

– (at the after-school centre / (1 s.) lie in bed)

@ < BC: looks at CH >

8. CH: < m > – (m)

@ < 1 feedback; meaning: unclear; BC: turns her head to her right side, light pointer goes to the right side of the board, CA turns the side of the board, CH seems to search the board, then vocalizes, CA gives CH more ice cream >

The Bliss-word episode was short and restricted in terms of numbers of contributions and Bliss-words used. As it seemed, the first question asked by the caregiver concerned something that she already knew. However, what really is important here is the fact that Tilde was given and took the opportunity to talk about things that she had done outside the home environment; she talked about herself in relation to a place and activity the caregiver had not been part of. As shall be shown, the Bliss-word episode in Example 5.14 was different from episodes about past actions and events in FD2 and FD1, which were initiated and sustained by means of unaided communication.

#### ***Guidelines for the analysis of interactions that did not involve Bliss-words***

The Bliss-board sequences of FD2, the unaided interactions of FD2 and FD1, and the interaction samples of the comparison dyads (CD1 & CD2) were examined for episodes that did not include Bliss-words and that focused past actions and events. Since the content of the Bliss-word episode was the basis for the comparison, only episodes that focused on the child in relation to actions and events that had occurred prior to the situation of interaction were of interest. Episodes that concerned what the caregiver had done, or what other children had done without the child being somehow actively involved were disregarded, as were episodes that involved reflections on prior time for the purpose of solving some

practical issue of the interaction situation<sup>48</sup>. The results of the analysis are presented in Table 5.10.

Table 5.10 Number of episodes about past actions and events in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2

Dyads	Total	Mealttime	Game	Drawing	Teeth	Story
FD2	3	2	1	-	-	-
FD1	2	2	-	-	-	-
CD1	15	4	-	10	1	-
CD2	12	6	-	5	1	-

*Note:* The game episode of past actions and events in FD2 occurred in the game-Bliss sequence but did not involve Bliss-words.

*The Bliss-word episode in FD2 versus episodes that did not involve Bliss-words in the focus dyads' interactions*

The interactions of FD2 and FD1 that did not involve Bliss-words included 3 and 2 episodes, respectively, which focused past actions and events (cf. Table 5.10). The episode in Example 5.14 can be seen as a re-initiation of an episode that had occurred, not during mealttime, but in the game-Bliss sequence (cf. Ex. 5.15). The episode in the game-Bliss sequence also concerned Tilde's day but was not successful in terms of topic development and Bliss-board use (i.e., the caregiver tried to get Tilde to use the board but did not succeed). Distinguishing features of the episode that indicate that the caregiver expected Tilde to use Bliss-words include eye gaze and face direction in relation to the Bliss-board and different types of questions. All the questions by the caregiver in the episode in Example 5.15 below, where the Bliss-board was present but not actively used, concerned what Tilde had done at school. However, in comparison to what we saw in the Bliss-word episode (Ex. 5.14; line 1), where the caregiver's initial question was specific in relation to place (after-school centre), the questions in Example 5.15 were more open. The content of the questions, and the order in which they occurred, reflect the way communication progressed.

<sup>48</sup> This is not to say that such communication not is relevant but only that in order to make the comparison consistent some restrictions were necessary in the analysis.

Example 5.15: *What did you do today?* (FD2; game-Bliss, no use of Bliss-words)

1. CA: får se / (1 s.) <1 vill du ha lampa / (5 s.) (...) får på den / (2 s.) n / (2 s.) (...) / (3 s.) å så (...) annars får du aldrig på den / (4 s.) (...) så >1 <2 <3 [1 kan du ]1 berätta vad du har gjort idag >3 / (2 s.) <4 vad har du gjort idag >4 <5 / (2 s.) >5 >2  
– (*let us see / (1 s.) <1 do you want the lamp / (5 s.) (...) get it on / (2 s.) n / (2 s.) (...) / (3 s.) and so (...) otherwise you will never get it on / (4 s.) (...) so >1 <2 <3 [1 can you ]1 tell what you have done today >3 / (2 s.) <4 what have you done today >4 <5 / (2 s.) >5 >2*)  
@ <1 PA: CA stands up and secures the light pointer on CH's glasses >1, <2 CH looks at board >2, <3 PA and BC: sits down, looks at board >3, <4 BC: looks at CH >4, <5 BC: looks at board >5
2. CH: < [1 ng ]1 > – (*[1 ng ]1*)  
@ < meaning: unclear; BC: quiet sound >
3. CH: < ng > – (*ng*)  
@ < feedback; meaning: unclear; BC: quiet, sounds disappointed, CH looks at board and then turns her head and looks at CA, raises her arms, CA looks at CH >
4. CA: < vet du vad du har gjort idag > / (1 s.)  
– (*< do you know what you have done today > / (1 s.)*)  
@ < BC: CA and CH look at each other >
5. CH: < ng > – (*ng*)  
@ < feedback; meaning: unclear; BC: CH and CA look at each other, CH's arms are raised >
6. CA: <1 ha >1 / (2 s.) <2 kan du inte vise mamma vad du har gjort idag / (1 s.) [2 ha ]2 >2 •••  
– (*<1 ha >1 / (2 s.) <2 can you not show mum what you have done today / (1 s.) [2 ha ]2 >2*)  
@ <1 BC: quiet, intimacy, CA and CH look at each other, CA lifts CH's hand and holds it toward her own neck, CH touches mother's neck and looks at CA >1, <2 BC: CA looks at board, CH looks down to her left and at CA >2
7. CH: [2 < ng > ]2 – (*[2 < ng > ]2*)  
@ < feedback; meaning: unclear; BC: looks at CA, seems dissatisfied >

The caregiver's initial contribution included two questions that concerned Tilde's day. First, the caregiver looked at the Bliss-board and asked Tilde if she could (in this discourse context in particular, the use of the Swedish word *kan* (could) is ambiguous i.e., could mean *could you please* and/or *are you able to*) tell the caregiver what she had done today. Second, the caregiver looked at Tilde and asked a more straightforward open question (end of contribution; line 1) on the same topic. Third, the caregiver turned her attention to the Bliss-board showing Tilde that she expected and was ready for a reply. Tilde, who had been looking at the board all the time, contributed with a quiet sound and non-vocal body communication in ways that indicated that she was not satisfied (line 3). This contribution was responded to by the caregiver who looked at Tilde and asked her if she knew what she had done today (line 4). The caregiver's use of the mental verb *know* indicates that she, at this very moment, may have felt uncertain about Tilde's awareness of what she had done and, on a more general level, about how to make conversation work. At this stage, the caregiver seemed to understand that her strategy would not work. She took Tilde's hand and with a voice of humility, in a concrete way asked Tilde to show her what she had done; the caregiver looked at the Bliss-board but Tilde looked away from the board. Finally, Tilde looked at the caregiver, effectively ending the topic and the episode. The episode is interesting because it reminds us that communication involving a child like Tilde depends on the availability of communication aids and on various individual capabilities but, above all, on the child's willingness to communicate. In this respect, communication involving a child like Tilde is not different from communication involving a child without disabilities<sup>49</sup>. Even more interesting is how the present interaction continued in terms of the initiation of a new episode on a very different theme (cf. 5.4.3.3; Ex. 5.30).

The other two episodes that concerned past actions and events in FD2 belonged to the unaided mealtime interaction sample and focused on what Tilde had done at school the same day. Both episodes concerned the same topic, the party at school. The first part of the episode in Example 5.16 below concerns who was at the party. Shared background knowledge seems to have been an important factor guiding the conversation. In fact, data suggests that the caregiver already might have known who was, or was not, at the party (line

---

<sup>49</sup> However, one difference is that, in a situation such as the one presented in episode 5.15, a child who does not depend on a communication aid would have had greater possibility to express not wanting to talk about this particular issue or could have changed the direction of the conversation in other ways.

7). The interaction strategy was as follows. The caregiver mentioned the names of different children and in this way offered Tilde chances to confirm or reject questions/statements about the presence of each child that was mentioned (lines 1, 3, 5 and 7). Tilde responded by means of sounds and small body movements. To make conversation proceed, the caregiver verbalized and confirmed Tilde's responses (lines 5, 7 and 9) and, at one point, explicitly called for Tilde's attention (line 5; *hello*). Contributions 9 through 19 concerned the cake Tilde got at the party.

Example 5.16: *Who attended the party and what type of cake was it?* (FD2; mealtime-  
unaided)

1. CA: •• < var lina med på kalaset idag > / (1 s.)  
– (< *was lina at the party today* > / (1 s.))  
@ < BC: leans forward and looks closely at CH >
2. CH: a – (yes)  
@ < BC: small nod >
3. CA: kristian – (*kristian*)
4. CH: <> nää – (<> *no*)  
@ < BC: shakes head with small movements >
5. CA: < inte kristian lars / (1 s.) ha var lars med / (2 s.) hallå > / (3 s.)  
– (< *not kristian lars / (1 s.) ha was lars there / (2 s.) hello* > / (3 s.))  
@ < BC and PA: looks closely at CH, wants a response, CH has head down >
6. CH: <>  
@ < BC: lifts head and turns it slightly to her right side, away from CA >
7. CA: ja de var han va just de / (1 s.) samuel da  
– (*yes he was that is right / (1 s.) what about samuel*)
8. CH: <>  
@ < BC: CH might be shaking her head, very small movements >
9. CA: inte samuel <1 /// >1 (11 s.) mm gott och onyttigt <2 /// >2 (34 s.) smaka var  
det musseltårta ni hade sån mumintårta var de det  
– (*not samuel <1 /// >1 (11 s.) mm good and unhealthy <2 /// >2 (34 s.) taste  
was it mussel cake you had that kind of moomin cake was it*)  
@ <1 PA: feeds CH >1, <2 PA: feeds CH and drinks coffee >2

10. CH: < >  
 @ < BC: raises and turns her head slightly to her left and raises her left arm >
11. CA: < oj > – (oh)  
 @ < CH's movement complicates CA's feeding >
12. CH: < m > – (m)  
 @ < feedback; meaning: unclear >
13. CA: var det mumintårta ha – (*was it moomin cake was it*)
14. CH: < m > – (m)  
 @ < meaning: unclear; BC: very quiet, raises her head to her left and raises her left arm >
15. CA: var [1 det en god tårta da smaka den gott ]1 var det mycket grädde på den  
 – (*was [1 it a good cake then did it taste good ]1 was there much cream on it*)
16. CH: [1 < > ]1 a – ([1 < > ]1 a)  
 @ < meaning: unclear; BC: raises her head and left arm, turns to her left >
17. CH: < m > – (m)  
 @ < feedback >
18. CA: < m > – (m)  
 @ < feedback >
19. CH: < > m – (< > m)  
 @ < meaning: unclear; BC: looks to her left, nods >

The episode in Example 5.16 and the Bliss-word episode in Example 5.14 were different in terms of degree of predictability. In the episode in Example 5.16, all the caregiver's questions could be, and were, answered with a yes or a no, and the conversation developed in a rather predictable way. The second episode of the unaided mealtime interaction in FD2 (Ex. 5.17) occurred at the end of the sample and was initiated by the caregiver as she asked if school had been good for Tilde that day (line 1). Again, the type of question posed enabled and required Tilde to answer yes or no. Tilde responded by shaking her head while the caregiver was talking. Evidently, the caregiver interpreted Tilde's head movements to mean no; she verbalized Tilde's response and at the same time asked Tilde to confirm the interpretation (end of contribution; line 1), which Tilde also did (end of contribution; line 2).

Example 5.17: *Was it good at school today?* (FD2; mealtime-unaided)

1. CA: ••• var det bra på skolan idag [1 var det inte det ]1  
– (*was it good at school today [I wasn't it ]I*)
2. CH: [1 <1 >1 ]1 <2 ng >2 – ([1 <1 >1 ]1 <2 ng >2)  
@ <1 BC: shakes her head >1, <2 meaning: probably no >2
3. CA: men det var kul på kalaset i alla fall – (*but it was fun at the party anyway*)
4. CH: < ng > / (2 s.) – (< ng > / (2 s.))  
@ < feedback >
5. CA: ni åt å bada / (2 s.) å dansade i gula rummet / (2 s.) snurrade du fort  
– (*you ate and swam / (2 s.) and danced in the yellow room / (2 s.) did you turn fast*)
6. CH: < >  
@ < BC: smiles >
7. CA: < var det bra musik / (1 s.) var det rock å pop m ja >  
– (*was the music good / (1 s.) was it rock and pop m yes*)  
@ < BC: intimacy, CA and CH are very close >

Tilde's response in line 2, that school had not been good that day, was not developed. Instead, the caregiver started to talk about what might have been good, namely the party (line 3). The caregiver's contributions in lines 3, 5 and 7 included questions and statements. Minimal responses and feedback were required from Tilde as the caregiver talked for Tilde about what Tilde had experienced at the party.

The episodes that focused on past actions and events in FD1 concerned what Maria had eaten at school and a movie that Maria had seen another day (cf. 5.1.2.3; Ex. 5.2 & 5.3). The episodes were similar to the unaided episodes of FD2 presented above; Maria interacted actively but with regard to the type of semantic content she expressed, her contributions were minimal. In FD1, a short episode in a story reading activity also had a past time perspective. However, the episode concerned a book that the mother had read another time, moreover, the reason for mentioning the book was to determine what book the dyad should read now. Hence, the episode related to activity management and, therefore, was not included in this analysis.



*The Bliss-word episode in FD2 versus episodes in the comparison dyads' interactions*

The interaction data of CD1 and CD2 included 15 and 12 episodes, respectively, which focused on actions and events that the comparison children had been involved in (cf. Table 5.10). Most of the comparison dyads' episodes about past actions and events occurred at mealtime and during drawing but, also, while the children had their teeth brushed. The episodes were different from the Bliss-word episode in FD2 and from the unaided episodes in FD2 and FD1, with regard to length, content, and degree and type of child involvement. As for the focus dyads, most of the comparison dyads' episodes also concerned the day of interaction.

In the comparison dyads, episodes were often initiated by the children (e.g., Ex. 5.19 & 5.20) and since children and caregivers participated in interaction on similar grounds, participation structures within episodes were more equal than they were in any of the focus dyads' interactions (e.g., numbers and types of words used). Moreover, from a content perspective, the comparison dyads' episodes about past actions and events were often more complex than were the focus dyads' episodes. Episodes involved descriptions, as well as explanations, and were often personal and specific in terms of details. Episodes could be long and were often developed into sub-episodes. Typically, episodes concerned what the child had experienced in relation to other children and, although centering on the experiences of the child, less than in the focus dyads they focused on what the child herself had done (e.g., Ex. 5.18 & 5.19). Examples 5.18 and 5.21 demonstrate how caregivers also seemed to consider their own children in relation to other children. The way the comparison children talked about what they had experienced rather than what they had done, indicated that the comparison dyads' conversations about past actions and events were more abstract in terms of content, than the focus dyads' conversations were. Contributions 1 through 15 in Example 5.18 concerned what the child had done at school. In line 10, the child introduced a new issue to the conversation. She told the caregiver about an observation that she had made concerning another child's behavior. The caregiver, in turn, provided the child with an explanation concerning the behavior of the other child (line 11). The episode exemplifies the way the comparison children had the chance to have their experiences and thoughts evaluated together with a caregiver, to participate in conversations where perspective is a central issue.

Example 5.18: *What did you do in your home-groups at school?* (CD1; drawing)

1. CA: va gjorde ni i hemgrupperna – (*what did you do in the home groups*)
2. CH: < vet inte > men vi va inte i hemgrupperna  
– (*< do not know > but we were not in the home groups*)  
@ < playing voice, hesitation >
3. CA: i da – (*today*)
4. CH: nej – (*no*)
5. CA: ingenting – (*nothing*)
6. CH: nej – (*no*)
7. CA: de ha ni ju på onsdag – (*but you have that on wednesday*)
8. CH ja men dom nya barnen kom istället – (*yes but the new children came instead*)
9. CA: jaha va dom dä länge – (*okay did they stay long*)
10. CH: nej du vet hon annika hon höll på å prata hela tiden nä vi läste bok  
– (*no you know that girl annika she talked all the time when we read a book*)
11. CA: mä hon ha ju allri gått i < förskolan / (2 s.) hon vet ju inte hu man ska  
göra >  
– (*but she has never been to < preschool before / (2 s.) she does not know how  
to do things >*)  
@ < BC: looks at CH >
12. CH: hon fick ju bara babbla ut / (1 s.) vi fick räcka upp handen  
– (*she was allowed to babble / (1 s.) we had to raise the hand*)
13. CA: sa inte anna te henne – (*did anna not correct her*)
14. CH: nä /// (13 s.) – (*no /// (13 s.)*)
15. CA: nä hä de va ju inte bra – (*no okay that was not good*)

The episode in Example 5.19 below originates from a multiparty mealtime interaction in CD2. The comparison child and caregiver were the main actors in this episode. The episode includes several observations and explanations from the child concerning how things are at school and concerning her own role and actions at school. The child initiated the episode and, as shown, largely governed its development. The caregiver listened and provided the feedback required, she used typical feedback items (lines 4, 6, 9, 13, 15, 16,

17, 19, 20 & 24) and questions that related to the child's choice of topic (lines 2, 6, 9, 17, 20 & 24).

Example 5.19: *Coming to school after having been to the dentist.* (CD2; mealtime)

1. CH: ••• dörren var öppen när jag kom in från skolan in ti i klassrummet  
– (*the door was open when I came in from school into in the classroom*)
2. CA: ja så dörrn var öppen  
– (*really the door was open*)
3. CH: m – (*m*)
4. CA: hm – (*hm*)
5. CH: ibland brukar den va öppen – (*sometimes it is open*)
6. CA: ha ja [1 du ]1 behövde aldrig knacka då  
– (*okay [1 you ]1 didn't have to knock on the door then*)
7. CH: [1 m ]1 – (*[1 m ]1*)
8. CH: nä – (*no*)
9. CA: hm / (1 s.) vad hade du missat för nånting på morron da vad hade dom gjort innan du [2 kom ]2  
– (*hm / (1 s.) what did you miss this morning then what had they done before you [2 came ]2*)
10. CH: [2 bara ]2 vart lite räkning å sånt  
– (*[2 there ]2 had only been some math and things like that*)
11. CA: så du – (*so you*)
12. CH: fast jag visste inte vilka dom hade ropat in till tysta rummet så jag visste ju inte fall det var jag så jag visste ju ingenting  
– (*but I didn't know who they had called into the quiet room so I didn't know if it was me so I didn't know anything*)
13. CA: nähä var dom i tysta rummet allihopa då  
– (*okay were they all in the quiet room then*)
14. CH: nej dom som hon ropar upp åtta [3 eller nåt ]3 å dom som inte vill å å den dens kompis om nån annan går ut / (2 s.) två går ut eller [4 en ]4 då kan någon annan gå och sätta sig i tysta rummet

– (no the ones she calls for eight [3 or something ]3 and those that do not want and and that one's friend if someone else leaves / (2 s.) two leaves or [4 one ]4 then someone else can go and sit in the quiet room)

15. CA: [3 jaha ]3 – ([3 okay ]3)

16. CA: [4 m ]4 – ([4 m ]4)

17. CA: jaha / (1 s.) får man sitta där och jobba då  
– (okay / (1 s.) one can sit there and work then)

18. CH: ja [5 förut ]5 fick man bara gå in men det blev bara tjafs  
– (yes [5 before ]5 one could just go in there but that just led to a lot of fuss)

19. CA: [5 m ]5 – ([5 m ]5)

20. CA: mm / (1 s.) hur gjorde du med frukten da / (1 s.)  
– (mm / (1 s.) what did you do with the fruit then / (1 s.))

21. CH: jag åt den eller jag åt den efter en timme – (I ate it or I ate it after an hour)

22. CA: efter en timme [6 då ]6 – (after an hour [6 then ]6)

23. CH: [6 ja ]6 för jag skulle jobba också – ([6 yes]6 because I should work too)

24. CA: m men det kändes inte konstigt i i tänderna då / (1 s.) då du tuggade eller de kändes ingenting  
– (m but it didn't feel strange in in your teeth then / (1 s.) when you chew or it didn't feel anything)

25. CH: m nä ••• – (m no)

An important observation concerning the interactions of CD1 and CD2 is that the comparison children initiated episodes whenever they wanted on whatever topics they felt necessary. See the episode in 5.20 below, which originates from a drawing activity in CD2, where the child told and showed the caregiver what had happened to her at a friend's house. The description is detailed and included the child's spontaneous telling of her own reactions to what had happened (line 5).

Example 5.20: *Look what happened to me!* (CD2; drawing)

1. CH: ••• titta när jag var hos kristina så så skulle jag gå framåt och klättra ner så då så ramla jag framlänges ner från ett ställe och skrapa upp armen / (1 s.)  
– (look when I was at kristina's so so I should go straight ahead and climb down so then so I fell forwards down from a place and scratched my arm)

/(1 s.)

2. CA: gjorde du det – (*did you do that*)
3. CH: m jag ramla fram så jag [1 s skar mig ]1  
– (*m I fell forwards so I [1 c cut myself ]1*)  
@ < PA: stretches her arm and demonstrates for CA >
4. CA: [1 får jag se ]1 det har du inte sagt  
– (*[1 can I see ]1 you haven't said that*)
5. CH: jag ramla där [2 jag ]2 börja inte gråta – (*I fell there [2 I ]2 didn't start to cry*)
6. CA: < [2 jaha ]2 > – (*[2 okay ]2*)
7. CA: < jaha det var inte så farligt då eller > – (*okay it wasn't so bad then or*)  
@ < PA: looks at CH's arm >
8. CH: nä – (*no*)
9. CA: nä tur da ••• – (*no that was good*)

Episodes that concerned past actions and events in the comparison dyads could also be short, informative and very specific in terms of content. Episodes like the one in Example 5.21 were quickly introduced and quickly wound up.

Example 5.21: *What did you do?* (CD2; drawing)

1. CA: va du mä da då heter de leila uppe på lekparken sen solveig eller  
– (*were you with then what's the name leila up at the playground then solveig or*)
2. CH: ha – (*what*)
3. CA: gick du me leila uppe på lekparken  
– (*did you go with leila up to the playground*)
4. CH: nää ja har inte vart på lekparken på hela dan  
– (*noo I haven't been to the playground at all today*)
5. CA: nähä ••• – (*no okay*)

#### 5.4.3.2 Communication about future actions and events

One Bliss-word episode in FD2 concerned future actions and events. This episode occurred in the mealtime-Bliss sample. The episode is presented in Example 5.22. It was initiated by the caregiver by means of two questions (line 1). In both questions the caregiver asked Tilde

if she knew what she was going to do tomorrow (cf. the caregiver's use of the verb *know* in 5.4.3.1; Ex. 5.15). As Tilde replied that she did not know, the caregiver became more specific and told Tilde that she meant what Tilde should do at the after-school centre. The caregiver repeated her initial question and thereafter provided Tilde with the start of an utterance (line 3). At this moment, Tilde started to look at the Bliss-board in an active manner. It took her 7 seconds to combine the two Bliss-words for *after-school centre* and *bus* (line 4) and while she did so, the caregiver commented and at the same time confirmed her output. By means of the caregiver's use of different questions, and by means of Tilde's selection of different Bliss-words, conversation was developed and became more focused in terms of content. All through the episode, eye gaze and facial expressions were important for the dyad's use of the Bliss-board. Tilde was mostly concentrated on the board but the caregiver continuously changed her attention between Tilde and the Bliss-board and in this way actively followed the process.

Example 5.22: *What are you going to do tomorrow?* (FD2; mealtime-Bliss)

1. CA: •• <1 / (3 s.) m >1 vet du vad du ska göra <2 i morrn da >2 <3 / (2 s.) vet du vad du ska göra i morrn >3  
 – (<1 / (3 s.) m >1 do you know what you are going to do <2 tomorrow then >2 <3 / (2 s.) do you know what you are going to do tomorrow >3)  
 @ <1 BC: CA and CH look at board, CA looks quickly at CH and then back at board >1, <2 BC: CA looks at CH and then back at board, CH looks at board >2, <3 BC: CA and CH look at board >3
2. CH: < äh > – (no)  
 @ < BC: inhalation sound, smiles, raises her head and body backwards and a little to the left >
3. CA: <1 hä >1 <2 på fritis va ska ni göra i morrn ni ska >2 [1 / (2 s.) ska ni va på fritis hela dagen <3 där är fritis ja där är fritis ni ska åka buss ja / (1 s.) just de >3 ]1 / (1 s.) till / (1 s.) <4 liseberg >4 <5 / (2 s.) >5 <6 >6 mm om det inte är för regnigt / (4 s.) regnar de mycket <7 åhh va kallt >7 <8 >8 / (2 s.) <9 om det regnar mycket >9 <10 vart ska ni va >10 då da / (3 s.) <11 vet du vart ni ska va om de regnar / (1 s.) så att ni inte kan åka >11 / (2 s.) [2 <12 vet du var tilde ska va då >12 ]2

– (<1 no >1 <2 at the after-school centre what are you going to do tomorrow you are >2 [1 / (2 s.) are you staying at the after-school centre for the whole day <3 there is after-school centre yes there is after-school centre you are going with the bus yes / (1 s.) that is right >3 ]1 / (1 s.) to / (1 s.) <4 liseberg >4 <5 / (2 s.) >5 <6 >6 mm if it is not too rainy / (4 s.) if it rains a lot <7 oh it is cold >7 <8 >8 / (2 s.) <9 if it rains a lot >9 <10 where are you going to be >10 then / (3 s.) <11 do you know where you are going to be if it rains / (1 s.) so that you can't go >11 / (2 s.) [2 <12 do you know where tilde is going to be then >12 ]2)

@ <1 BC: quick look at CH >1, <2 BC: CA and CH look at board >2, <3 comments CH's pointing >3, <4 BC: quick look at CH, CH looks straight a head at board >4, <5 BC: CA and CH look at board, CH does not seem to be looking for a bliss-word >5, <6 PA: CA feeds CH >6, <7 BC: CA looks at CH, comments the characteristics of the ice cream and CH's eating of it, CH looks at board >7, <8 BC: quiet laughter, intimacy >8, <9 BC: CA and CH look at board >9, <10 BC: CA looks at CH, CH looks at board >10, <11 BC: CA looks at CH then at board then back at CH, CH looks at board >11, <12 BC: CA and CH look at board, CH points >12

4. CH: < [1 FRITIDS BUSS ]1 > – ([1 AFTER-SCHOOL CENTRE BUS ]1)  
@ < 7 s. >

5. CH: <2 [2 <1 >1 ]2 FRITIDS >2  
– (<2 [2 <1 >1 ]2 AFTER-SCHOOL CENTRE >2)  
@ <1 BC: active pointing at board >1, <2 7 s. >2

6. CA: <1 på fritids ja å då gör ni nåt annat då hittar ni nog på nåt annat >1 <2 kul >2 <3 / (3 s.) vet du va va kommer du ihåg va fröken prata om att ni kanske kan göra om det regna för mycket / (3 s.) >3  
– (<1 at the after-school centre yes and then you do something else then you probably do something else >1 <2 fun >2 <3 / (3 s.) do you know what what do you remember what your teacher talked about that you perhaps can do if it rains too much / (3 s.) >3)

@ <1 BC: CA and CH look at board >1, <2 BC: CA looks quickly at CH, CH looks at board >2, <3 BC: CA and CH look at board >3

7. CH: < nää > – (noo)  
@ < BC: turns a little toward CA >

8. CA: <1 har du glömt bort de ha >1 / (1 s.) [3 <2 vill du baka då i så fall / (3 s.) >2  
<3 eller vill du lyssna på nånting >3 <4 // (8 s.) >4 <5 m >5 / (2 s.) va <6 vill  
du göra >6 på fritis i morrn da / (1 s.) om ni inte åker till liseberg / (5 s.) ska vi  
vända <7 >7 / (5 s.) va vill du göra då // (7 s.) <8 väska >8 ]3

– (<1 have you forgot that or >1 / (1 s.) [3 <2 do you want to bake then in  
that case / (3 s.) >2 <3 or do you want to listen to something >3 <4 // (8 s.)  
>4 <5 m >5 / (2 s.) what <6 do you want to do >6 at the after-school centre  
tomorrow then / (1 s.) if you are not going to liseberg / (5 s.) should we turn  
<7 >7 / (5 s.) what do you want to do then // (7 s.) <8 bag >8 ]3)

@ <1 BC: CA and CH look at board >1, <2 BC: CA looks at CH, CH points at  
board >2, <3 BC: CA and CH look at board >3, <4 BC: CA looks quickly at  
CH and then back at board >4, <5 BC: question intonation, wants a response  
from CH, CH looks at board >5, <6 BC: CA looks quickly at CH then back at  
board >6, <7 PA and BC: CA turns the side of the board and looks at it all the  
time >7, <8 BC: CA looks at CH and back at board >8

9. CH: [3 <1 BAKA LYSSNA >1 <2 VÄSKA >2 ]3 <3 >3

– ([3 <1 BAKE LISTEN >1 <2 BAG >2 ]3 <3 >3)

@ <1 5 s. >1, <2 33 s. >2, <3 meaning: probably yes; BC: opens mouth a  
little, small movements with head backwards, CA looks at CH but CH looks  
toward board >3

10. CA: har dom en rolig väska på fritids eller

– (do they have a fun bag at the after-school centre or what)

11. CH: < >

@ < BC: opens her mouth a little and then turns head to her right side in a  
distinct way, looks at the camera which is placed close to another room where  
CA has her bag >

12. CA: < inte > – (no)

@ < PA: raises her hand to give CH more ice cream and at the same time CH  
turns her head back toward CA >

13. CH: mamma – (mother)

14. CA: har mamma en rolig väska – (does mum have a fun bag)

15. CH: < a > – (yes)

@ < meaning: yes; PA: starts to eat >

16. CA: < nähä de är inget roligt i mammas väska / (5 s.) inte de minsta roligt / (5 s.) >

...



– (< *no no there is nothing fun in mum's bag / (5 s.) not the least fun / (5 s.)* >)

@ < PA: CA feeds CH and dries CH's face, CH eats >

Important features of this episode were Tilde's use and combining of two and three Bliss-words as well as the body communication between Tilde and the caregiver in relation to Bliss-board use. Other features of this episode are also noteworthy. In the same way that a caregiver to a younger child without disabilities may do, the present caregiver referred to Tilde by using Tilde's first name instead of by saying *you* (line 3)<sup>50</sup>. Further, the way the episode was brought to an end is different from how other Bliss-word episodes were ended. In line 8, the caregiver asked Tilde what she wanted to do at the after-school centre if a particular trip would be cancelled. In line 9, Tilde pointed at the Bliss-words for *bake* and *listen*. Thereafter, it took 33 seconds until Tilde pointed at the Bliss-word for *bag*. The introduction of *bag* was an initiative that changed the direction of the conversation. The content of the remaining contributions in the episode indicate that the caregiver had too little background information to understand what Tilde meant by pointing at this particular Bliss-word and, in fact, that there might have been a misunderstanding between Tilde and the caregiver. As it seemed, Tilde confirmed (end of line 9) the caregiver's interpretation of her choice of Bliss-word (end of line 8). In the succeeding contributions, the caregiver tried to understand what Tilde meant. In this process, the dyad abandoned the Bliss-board. Tilde turned her body and face and looked in the direction of where the caregiver's bag was. To this communication, the caregiver replied that there was nothing fun in her bag. Thereafter, the caregiver and Tilde returned to feeding and eating.

### ***Guidelines for the analysis of interactions that did not involve Bliss-words***

Based on the analysis of the future time Bliss-word episode in FD2, the interactions of FD2 that did not involve Bliss-words, the unaided interactions of FD1, and the interactions of CD1 and CD2 were analyzed for episodes that concerned the child in relation to future actions and events. For the purpose of comparison, episodes that concerned the future within the ongoing activity were disregarded (i.e., episodes that concerned the next procedural step in the activity that was being performed) as were episodes that concerned

---

<sup>50</sup> In the comparison dyads' interactions, uses of children's names by caregivers mostly related to attentional and behavioral directives.

what the child would like to get in the future (i.e., were not, in a strict sense, related to things the child should do). Similarly, episodes that concerned someone else receiving something from the child in the future (e.g., talk about that a child should give a drawing to someone), were not included in the analysis. It was argued that such future events were different from the actions and events that were focused on in the Bliss-word episode presented in Example 5.22. In the analysis of the transcripts, it was difficult to separate planned actions and events from actions and events that not were planned. For that reason, episodes that concerned imaginary and possible future actions and events, actions and events that a child could, should or would like to do, but which perhaps not were planned were included in the analysis. Table 5.11 summarizes the results of the analysis.

Table 5.11 Number of episodes about future actions and events in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2

Dyads	Total	Mealtime	Game	Drawing	Teeth	Story
FD2	6	2	1	-	-	3
FD1	4	2	1	-	-	1
CD1	11	5	1	3	2	-
CD2	8	3	-	3	1	1

*The Bliss-word episode in FD2 versus episodes that did not involve Bliss-words in the focus dyads' interactions*

The unaided interactions of FD2 included 6 episodes that focused future actions and events and FD1 included 4 (cf. Table 5.11). Most episodes occurred during mealtime but these also occurred during game and story reading activities. For the focus dyads, drawing was not an activity type that stimulated talk about the future. With regard to the strategies used, there were large similarities between the focus dyads' unaided past and future time episodes. The caregivers often talked for the children who, in turn, responded through vocalizations, word approximations and non-vocal body communication, often in combination.

Four episodes in FD2 concerned the immediate future and focused what the child should do after the ongoing activity. Two other episodes that occurred in relation to story reading were imaginary in character and, therefore, were unspecific regarding future time. Example 5.23 demonstrates how an immediate future episode looked in the unaided

interactions of FD2. The episode occurred at mealtime and was initiated by Tilde. Immediately prior to Tilde's initiation of the episode, her brother, who was in the living room, had asked the caregiver at what time a specific television program started. Tilde said *m* and the caregiver responded using a typical feedback item (*m* line 2; intonation indicated that this was not a question) to which Tilde, in turn, responded by saying *m* again. The caregiver interpreted Tilde's second *m* as an expression of a specific wish and asked her if she also wanted to watch the television program. Obviously, the caregiver's interpretation was correct because in the next contribution (line 5), Tilde raised her head and said *ha* (similar to the Swedish word *ja*, which means *yes*). The situational context, that is, the brother's question may have been the reason for the initiation of the episode by Tilde and, together with knowledge about Tilde's interests, was relevant for the caregiver's interpretation and response to Tilde's communication.

Example 5.23: *I want to watch a television program.* (FD2; mealtime-unaided)

1. CH: < m > - (*m*)

@ < meaning: unclear >

2. CA: < m > / (1 s.) - (< m > / (1 s.))

@ < feedback >

3. CH: < m > - (*m*)

@ < meaning: unclear >

4. CA: <1 <2 ha >2 vill du också se på <3 hjärnkontoret >3 / (1 s.) m >1

@ <1 BC: CA touches CH's back and looks close at CH's face >1, <2

question, what >2, <3 name of tv show >3

- (<1 <2 what >2 do you also want to watch <3 the brain office >3 / (1 s.)

*m >1*)

5. CH: < ha > - (*yes*)

@ < BC: raises her head a little to her right >

6. CA: ha vi äter upp då så får du gå in så < / (5 s.) snart gå å lägge oss också / (3 s.)

ska upp tidigt i morrn igen /// (15 s.) > ...

- (*okay let us finish then so you can go in there so < / (5 s.) soon go to bed too*

*/ (3 s.) are getting up early tomorrow again /// (15 s.) >*)

@ < PA: feeds CH >

Another example of an immediate future time episode that occurred in the unaided part of the game-Bliss sample (i.e., when the Bliss-board was not present) concerned Tilde wanting an ice cream and is presented in Appendix F. An imaginary future time episode in FD2 is exemplified in 5.24. The caregiver initiated the episode as she was reading a story for Tilde. Her initiation included two questions that related to the text in the book (line 1). In this episode, and in the other imaginary episode in FD2, Tilde was in a strict responding position. The episodes were short and the caregiver's questions were adapted to the means of communication that were available to Tilde.

Example 5.24: *What would you like to do at an airport?* (FD2; story reading-unaided)

1. CA: ••• <1 vad skulle du helst vilja göra på en flygplats >1 <2 / köra flygplan >2  
 – (<1 *what would you like to do the most at an airport* >1 <2 / *drive a plane* >2)

@ <1 question relates to the text in the book >1, <2 BC: CA looks at CH >2

2. CH: < a > – (yes)

3. CA: sitta där fram va pilot – (*sit in the front be a pilot*)

4. CH: < a > – (yes)

5. CA: a ••• – (yes)

One of the four episodes in FD1, which concerned future actions and events, related to the caregiver's reading an information sheet about an upcoming event aloud and was mentioned in the sub-study on person reference (cf. 5.3; 5.3.2.2). One episode concerned the immediate future and occurred as the dyad talked about going to bed in the teeth brushing activity. Another episode, presented in Appendix F, concerned the fact that Maria did not want to participate in an activity at school the next day if the weather was bad. This episode is interesting in the way it demonstrates how Maria in a determined manner and with comparatively small means, managed to get the caregiver's attention and, according to her own goals, turn the direction of the conversation from the weather outside to tomorrow's activity (cf. results on conversational topics at mealtime; 5.1 and Chapter 6; 6.1.1). Example 5.25 includes a future time episode from one of the story reading activity samples in FD1. The episode, which was initiated by the caregiver and invoked by the content of the story, concerned if Maria should learn to swim in the summer. The caregiver asked a question and

Maria responded, that is, approved to the caregiver's suggestion. The caregiver confirmed Maria's reply.

Example 5.25: *Are you going to learn to swim this summer?* (FD1; story reading-unaided)

1. CA: ••• ska du lära dig å simma i sommar när vi är på semester  
– (*are you going to learn to swim this summer when we are on holiday*)
2. CH: < ng ng > – (*ng ng*)  
@ < meaning: probably yes >
3. CA: aa – (*yes yes*)
4. CH: < ng > – (*ng*)  
@ < feedback >

As observed for Tilde in the unaided interactions of FD2, when FD1 communicated about future actions and events, Maria was in a responding position. This does not mean that the contributions made by Tilde and Maria were not important to the development of meaning in interaction but that other communication strategies that were content wise narrower and less independent, than those that existed in the Bliss-word episode of FD2, were used when communication was unaided.

#### *The Bliss-word episode in FD2 versus episodes in the comparison dyads' interactions*

Eleven and 8 future time episodes, respectively, were identified in CD1 and CD2. Most of these episodes occurred at mealtime and in drawing activities (cf. Table 5.11). The future time Bliss-word episode in FD2 focused on a specific environment (after-school centre). The comparison dyads' future time episodes (e.g., Ex. 5.26 to 5.29) did not center on specific places to the same degree but rather on children's activities in relation to other people. Many of the comparison dyads' episodes also included talk about what was going to happen after the activity, the immediate future (e.g., Ex. 5.26, 5.28 & 5.29), but some concerned the next day and some an even more distant future. With regard to semantic content, future time episodes in the comparison dyads were more detailed than future time episodes in the focus dyads. In Example 5.26 for instance, the child and the caregiver in CD1 talk about buying birthday presents for the child's friends. It was not the activity of buying that was of primary focus in the episode, but what to buy.

Example 5.26: *Buying presents for your friends*. (CD1; drawing)

1. CA: ••• sen få vi gå å köpa present ti maria / (1 s.) maria < å > juliette  
– (later we have to go and buy a present for maria / (1 s.) maria < and > juliette)  
@ < BC: CA looks at CH; seems to hesitate >
2. CH: ja – (yes)
3. CA: har du tänkt [I på ]I vad du vill köpa  
– (have you thought [I about ]I what you want to buy)
4. CH: [I ä ]I – ([I ä ]I)
5. CH: nä inte riktigt / (2 s.) – (no not really / (2 s.))
6. CA: va gilla maria – (what does maria like)
7. CH: < > // (7 s.) gossedjur / (1 s.) na nä ja vet inte  
– (< > // (7 s.) stuffed animals / (1 s.) no no I do not know)  
@ < sounds >
8. CA: juliette da har du vart i hennes rum  
– (what about juliette have you been in her room)
9. CH: m < päler > – (m < beads >)  
@ < BC: CH looks at CA >
10. CA: päler – (beads)
11. CH: m – (m)
12. CA: m – (m)

Episodes in the comparison dyads were also structurally more complex than episodes in the focus dyads. Episodes included utterances that related to different times and often concerned many different issues at the same time<sup>51</sup>. Example 5.27 includes an episode from one of the drawing activities in CD2. The episode was initiated by the child and concerned what she should bring to eat on a trip the next day. The episode contained explanations (end of CA's contribution line 2 and lines 8 & 17) and related to other children (lines 11 & 13). The contribution in line 13 demonstrates how the comparison child was able to express her

---

<sup>51</sup> The comparison dyads' interactions, and the focus dyads' unaided interactions, also were more difficult to analyze in terms of episodes than were the Bliss-board interactions, an issue that I discuss in Chapter 6, 6.5.

own will independently (see also Ex. 5.28 and Ex. 5.29 below). In relation to the topic of the episode, references were also made to past events and experiences (lines 14 & 17).

Example 5.27: *What am I going to bring to eat for the trip tomorrow?* (CD2; drawing)

1. CH: va ska jag ha med mig i morrn – (*what am I going to bring tomorrow*)
2. CA: eh ja just de jag hade köpt cola dricka å sen kunde vi göra lite varm o'boy <>  
/ (1 s.) de kan ju va gott om de ä lite kyligt så  
– (*eh that is right I had bought coke a drink and then we could make some hot chocolate <> / (1 s.) that could be good if it is a bit cold*)  
@ < PA: CA comes from the stove to set the table >
3. CH: m – (*m*)
4. CA: och <> oj skålen – (*and <> oops the bowl*)  
@ < PA: unintentionally bangs a bowl into something >
5. CH: skål – (*cheers*)
6. CA: < ja > skål sen vi ha ett par smörgåsar kanske  
– (*< yes > cheers then we have a couple of sandwiches perhaps*)  
@ < chuckles >
7. CH: m – (*m*)
8. CA: jag har inga rullmackor men jag har sådana hära som man kan fylla / (1 s.)  
som de bl [1 vad ]1 kallas dom [2 vi ha ]2 vi har haft dom å fyllt med / (3 s. )  
eh [3 skinka ]3  
– (*I do not have any sandwich rolls but I have this kind that you can fill / (1 s.)  
like it [1 what ]1 are they called [2 we ha ]2 we have had them and filled with  
/ (3 s. ) eh [3 ham ]3*)
9. CH: [1 (...)]1
10. CH: [2 plock ]2 – (*[2 pick ]2*)
11. CH: [3 ja me kristina ]3 skulle ha med sig vad heter det eh hon skulle vad heter de  
ha med sig pannkaker  
– (*[3 yes bu kristina ]3 should bring what is it called eh she should what is it  
called bring pancakes*)
12. CA: jaha – (*okay*)

13. CH: så tror jag å så en hade makaroner / (3 s.) jag skulle gärna vilja ha köttbullar med mig  
 – (*so I believe and then one had macaroni / (3 s.) I would really like to bring meatballs*)
14. CA: jag har faktiskt jag har faktiskt köttbullar vi åt köttbullar förut idag så  
 – (*actually I have actually I have meatballs we ate meatballs before today so*)
15. CH: kan jag få – (*can I have*)
16. CA: kanske kan ta några såna ska du ha dom i på mackan då eller  
 – (*perhaps can have some like those are you going to have them in on the sandwich then or what*)
17. CH: nej med mig i en [4 sån här burk ]4 när jag var på blåsippsbacken / (1 s.) då [5 fi fick ]5  
 – (*no with me in this [4 kind of box ]4 when I was at the hill with hepaticas / (1 s.) then [5 go got ]5*)
18. CA: [4 ja så bara så ja ]4 – (*[4 okay only like that yes ]4*)
19. CA: [5 hade ]5 du fick en liten burk med dig [6 då ]6 < > oj m / (3 s.)  
 – (*[5 had ]5 you did you get a small can with you [6 then ]6 < > oh m / (3 s.)*)  
 @ < PA: drops a knife, comments the sound >
20. CH: [6 ja ]6 – (*[6 yes ]6*)
21. CH: så fick ja festis och sånt / (1 s.)  
 – (*and I got a drink and things like that / (1 s.)*)
22. CA: ja just det / (1 s.) fast jag har nog ingen [7 festis m vi ]7 får göra o'boy å cola ida då [8 iställ eller ]8 i morron å så lite frukt kan vara gott å ha med sig  
 – (*yes that is right / (1 s.) but I do not think that I have [7 that kind of drink m we ]7 have to do some chocolate and coke today then [8 instead or ]8 tomorrow and then some fruit could be good to bring*)
23. CH: [7 nej men det behövs inte ]7 – (*[7 no but that is not needed ]7*)
24. CH: [8 m ]8 – (*[8 m ]8*)
25. CH: ja en – (*yes a*)
26. CA: < ett äpple [9 eller nånting ]9 > – (*< an apple [9 or something]9 >*)  
 @ < PA: CA walks over to the stove >
27. CH: [9 ja ]9 / (3 s.) de räcker tror jag / (1 s.)



– (*19 yes* / *3 s.*) *I think that is enough* / (*1 s.*)

28. CA: *m* / (*3 s.*) <> – (*m* / (*3 s.*) <>)

@ < PA: comes back to continue to set the table >

The child's interest and engagement in the conversation was reflected in utterance structure and in numbers of different words used, but also in numbers and types of overlaps (lines 9, 10, 11, 17, 20, 23, 24 & 27). Similarly to past time episodes (in 5.4.3.1; Ex. 5.21), future time episodes could also be short and, as is shown in Example 5.28, concise in terms of how content and intentions were conveyed. In line 1, in the episode below, the child told the caregiver what she was going to do (i.e., watch a soap opera) then, she answered the caregiver's question and explained for the caregiver how things actually were (line 3); she taught her mother something.

Example 5.28: *I am going to watch this specific television program.* (CD2; drawing)

1. CH: ••• jag ska se på < skilda världar > idag

@ < name of tv show >

– (*I am going to watch < different worlds > today*)

2. CA: men jag tror inte det är nåt skilda världar är det de

– (*but I do not think there is any different worlds is it*)

3. CH: jo / (*1 s.*) det är det alltid / (*1 s.*) på måndagar

– (*yes / (1 s.) it always is / (1 s.) on mondays*)

The physical and communicative restrictions experienced by the focus children and their caregivers imply that, independent of whether communication is aided or unaided, the dyads mostly have to do one thing at a time. As is demonstrated in Example 5.29, the situation is different in the comparison dyads. The comparison children often combined speech and body communication with different kinds of physical actions. The following episode exemplifies how a comparison child requests an action from the caregiver, and answers a question and explains facts at the same time as she gets her teeth brushed.

Example 5.29: *Can you give me some salve later?* (CD2; teeth brushing)

1. CH: < k kan du smörja in mej sen / (*2 s.*) mä den där salvan insektssalvan >

– (< *c could you rub me later / (2 s.) with that salve the insect lotion* >)

@ < PA: CA brushes CH's teeth, CH talks with tooth brush in her mouth >

2. CA: < killar de fortfarande på benen > – (*does it still itch on your legs*)  
     @ < PA: brushes CH's teeth >
3. CH: < a på det största > – (*yes on the largest*)  
     @ < PA: CA brushes CH's teeth, CH talks with tooth brush in her mouth >
4. CA: m – (*m*)  
     @ < PA: brushes CH's teeth >
5. CH: < och på det lilla > – (*and on the little*)  
     @ < PA: CA brushes CH's teeth, CH talks with tooth brush in her mouth >

#### 5.4.3.3 Communication about the state of the mind and body

Two Bliss-word episodes, the episode in the game-Bliss sequence and one episode in the mealtime-Bliss sequence, were different from all other episodes in that they included communication about Tilde's emotions and mood. Example 5.30 presents the Bliss-word episode from the game-Bliss sequence. The episode occurred after the episode in which the caregiver attempted to talk with Tilde about her day (cf. Ex. 5.15). It involved 24 contributions and in terms of number of contributions, was the longest Bliss-word episode in the study. The content of the episode, the types of questions asked by the caregiver, and the way Tilde used different types of Bliss-words contributed to the development of the episode and were aspects that made the episode interesting.

Considering the lack of communicative success of the preceding episode (cf. Ex. 5.15), the episode in Ex. 5.30 could be seen as a continuation of attempts by the caregiver to understand why Tilde had not answered her questions. The caregiver initiated the episode by asking Tilde if she could tell what mood she was in (line 1). The caregiver used the noun *mood* in two initial questions and, thereafter, in a third question asked Tilde if she knew what *mood* was. At this stage, Tilde had already turned her attention to the Bliss-board. The caregiver provided Tilde with a frame for an utterance and at the same time prompted Tilde's selection of a Bliss-word (end of contribution, line 3). Responding to the caregiver's inquiry, Tilde told the caregiver that she was *sad*. The remainder of the episode concerned why Tilde was sad, that Tilde was *sick*, why Tilde was sick, that Tilde's *stomach* hurt, why Tilde's stomach hurt, that Tilde wanted an *ice cream* and that Tilde was *hungry*. In the final part of the episode (line 22) the caregiver returned to the initial topic of the episode and in this way tied the content of the episode together; Tilde was encouraged to say that if she

received an ice cream she would get happy (i.e., get a *happy* mood). This episode included several questions by the caregiver and several selections of Bliss-words by Tilde. The way the caregiver and Tilde at times, changed attention between each other's faces on the one hand, and the Bliss-board on the other hand, demonstrated the importance of body communication for the development of content within the Bliss-word episode. As can be seen in the transcript below, the caregiver's contributions typically involved several different types of requests for information. Many of the requests were direct questions, for instance, *what mood are you in today Tilde* (line 3), *are you sick* (line 7) and *where does it hurt* (line 9). Statements and comments by the caregiver in relation to Tilde's selections of Bliss-words often functioned as questions and were obligative in the sense of requiring confirmations and denials by Tilde (e.g., *a sad mood* and *ha*, line 5 and *no*, line 7). As it seemed, questions were a primary means for making conversation proceed. Some utterances (cf. Ex. 5.30) explicitly reflected that the dyad communicated by means of using graphic signs, for example, *can you point at where it hurts* and *look here should we turn* (line 9), *should I turn again then* and *look at the board or the chart then* (line 20), and *let mother see* (line 22).

Example 5.30: *What mood are you in?* (FD2; game-Bliss)

1. CA: ••• < kan du berätte vilket humör > du är på da  
 – (< could you tell what mood > you are in then)  
 @ < BC: CA looks at CH >
2. CH: < ng > – (ng)  
 @ < meaning: unclear; BC: seems dissatisfied, looks down to her left >
3. CA: <1 vilket humör är du på idag >1 <2 tilde >2 <3 [1 vet du vad humör är / (1 s.)  
 är du på ett / (1 s.) ]1 >3  
 – (<1 what mood are you in today >1 <2 tilde >2 <3 [1 do you know what  
 mood is / (1 s.) are you in a / (1 s.) ]1 >3)  
 @ <1 BC: CA looks toward the camera, CH looks down to her left >1, <2 BC:  
 CA looks at CH who lifts her head and looks at board, CH still has her left  
 hand toward CA's neck >2, <3 BC: CA looks at board >3
4. CH: <2 [1 <1 >1 ]1 LEDSEN >2 – (<2 [1 <1 >1 ]1 SAD >2)  
 @ <1 BC: active pointing at board >1, <2 5 s. >2
5. CA: ett lesset <1 humör >1 / (1 s.) <2 [2 ha varför de da / (4 s.) varför tilde ]2 >2

– (*a sad* <1 mood >1 / (1 s.) <2 [2 what why then / (4 s.) why tilde ]2 >2)

@ <1 BC: looks at CH, CH continues to look at board >1, <2 BC: CA looks at board as CH is pointing >2

6. CH: <2 [2 <1 >1 ]2 *SJUK* >2 – (<2 [2 <1 >1 ]2 *SICK* >2)

@ <1 BC: active pointing at board >1, <2 4 s. >2

7. CA: är du är <1 du sjuk / (3 s.) >1 <2 nä >2

– (*are you are* <1 you sick / (3 s.) >1 <2 no >2)

@ <1 BC: CA looks at CH, CH looks down >1, <2 BC: CA looks at board, CH looks down >2

8. CH: < ng > – (*ng*)

@ < meaning: probably yes; BC: very quiet, CH lifts her head a little and turns to look at CA >

9. CA: <1 asså / (2 s.) >1 <2 vad är det som gör att du är sjuk da har du ont nånstans eller >2 / (2 s.) [3 <3 ha >3 ]3 <5 aa / (2 s.) kan du peka [4 <4 >4 på / (1 s.) vart du har ont da / (1 s.) vart har du ont / (1 s.) <6 titta här ska vi vända >6 >5 / (3 s.) <7 vart har tilde ont da >7 <8 / (4 s.) <9 kommer det ett grann >9 / (1 s.) vart har du ont >8 ]4

– (<1 okay / (2 s.) >1 <2 what is it that makes you sick then does it hurt somewhere or >2 / (2 s.) [3 <3 what >3 ]3 <5 yes / (2 s.) can you point [4 <4 >4 at / (1 s.) where it hurts then / (1 s.) where does it hurt / (1 s.) <6 look here should we turn >6 >5 / (3 s.) <7 where does it hurt on tilde then >7 <8 / (4 s.) <9 it comes a bit >9 / (1 s.) where does it hurt >8 ]4)

@ <1 BC: CA and CH look at each other >1, <2 BC: CA looks at board, CH looks down to her left, lifts her head slightly at the end of CA's utterance, thereafter turns her head down again >2, <3 BC: looks at CH >3, <4 BC: CH lifts her head and starts to look at board >4, <5 BC: CA looks first at CH and then turns to look at board, CA points at board >5, <6 PA and BC: CA turns board, CH looks down at the table and seems to guide CA >6, <7 BC: looks at CH, CH looks at board >7, <8 BC: CH points at various places on board and CA follows CH's pointing >8, <9 CA comments CH's pointing >9

10. CH: [3 < > ]3

@ < meaning: probably yes; BC: eye gaze/looks at CA >

11. CH: <2 [4 <1 >1 ]4 *MAGE* >2 – (<2 [4 <1 >1 ]4 *STOMACH* >2)

@ <1 BC: active pointing at board >1, <2 20 s. >2

12. CA: i magen / (1 s.) <1 har du ont i magen >1 / (2 s.) <2 asså >2 / (2 s.) [5 varför  
 <3 tror du att du har ont i magen >3 <4 da >4 ]5  
 – (*in the stomach / (1 s.) <1 does your stomach hurt >1 / (2 s.) <2 really >2  
 / (2 s.) [5 why <3 do you think that your stomach hurts >3 <4 then >4 ]5*)  
 @ <1 BC: CA looks closely at CH's face, CH concentrates on the board and  
 seems to search for a Bliss-word >1, <2 BC: CA turns and looks at board, CH  
 looks at board >2, <3 BC: CA looks at CH, CH looks at board >3, <4 BC: CA  
 and CH look at board >4
13. CH: <2 [5 <1 >1 ]5 GLASS >2 – (<2 [5 <1 >1 ]5 ICE CREAM >2)  
 @ <1 BC: active pointing at board >1, <2 3 s. >2
14. CA: <1 glass >1 <2 / (2 s.) blir man bra utav glass i magen eller >2  
 – (<1 ice cream >1 <2 / (2 s.) does one get well from ice cream in the  
 stomach or what >2)  
 @ <1 BC: CA and CH look at board >1, <2 BC: CA looks at CH, at the end of  
 the contribution CH turns and looks at CA >2
15. CH: < ng > – (ng)  
 @ < meaning: yes; BC: looks at CA, CA looks at CH >
16. CA: < blir man bra i magen utav glass >  
 – (*does one get well in the stomach from ice cream*)  
 @ < BC: CA and CH look at each other >
17. CH: < ng > – (ng)  
 @ < meaning: yes; BC: CH and CA look at each other >
18. CA: < blir man det är det så att du är hungrig / (2 s.) är du hungrig >  
 – (*does one are you hungry / (2 s.) are you hungry*)  
 @ < BC: CA and CH look at each other >
19. CH: < >  
 @ < BC: CH continues to look straight at CA >
20. CA: <1 asså / (1 s.) vad skulle du vilja / (1 s.) vad skulle du vilja ha å äta >1 <2 da  
 / (2 s.) vad skulle du vilja ha å äta / (4 s.) <3 ska jag vända igen då >3 <4 / (1  
 s.) vad >4 skulle du vilja ha å äta da <5 / (2 s.) titta >5 på tavlan eller på kartan  
 då >2 <7 / (3 s.) <6 vill du ha nånting å >6 äta >7  
 – (<1 okay / (1 s.) what would you like / (1 s.) what would you like to eat >1  
 <2 then / (2 s.) what would you like to eat / (4 s.) <3 should I turn again then

>3 <4 / (1 s.) what >4 would you like to eat then <5 / (2 s.) look >5 at the board or the chart then >2 <7 / (3 s.) <6 do you want to have something to >6 eat >7)

@ <1 BC and PA: CA and CH look at board, CA moves board >1, <2 BC: CH looks down at the table to her right, head down >2, <3 PA: CA turns board >3, <4 BC: CA looks quickly at CH then back at board, CH looks down >4, <5 BC: CA looks quickly at CH then back at board, CH looks down >5, <6 BC: CA looks quickly at CH then back at board >6, <7 BC: CH raises her head and turns to look at board >7

21. CH: < GLASS > – (ICE CREAM)

@ < 3 s. >

22. CA: <1 glass / (2 s.) å då >1 <2 v vad >2 <3 blir tilde när hon har ätit glass da >3 <4 vad blir du för nånting då / (2 s.) får mamma se hur blir tilde >4 <5 i humöret då >5 <6 när du har ätit glass / (3 s.) vilket humör får >6 <7 tilde >7 <8 utav glassen / (3 s.) >8 <9 [6 förstår du vad jag menar / (1 s.) vad jag säger ]6 >9

– (<1 ice cream / (2 s.) and then >1 <2 w what >2 <3 happens with tilde when she has eaten ice cream then >3 <4 what do you become then / (2 s.) let mother see what happens with tilde's >4 <5 mood then >5 <6 when you have eaten ice cream / (3 s.) what mood does >6 <7 tilde >7 <8 get from the ice cream / (3 s.) >8 <9 [6 do you understand what I mean / (1 s.) what I say ]6 >9)

@ <1 BC: CA looks at CH, CH looks at board >1, <2 BC: CA turns and looks quickly at board, CH looks at board >2, <3 BC: looks at CH, CH looks at board >3, <4 BC and PA: CA turns and looks at board, CH looks at board >4, <5 BC: looks at CH, CH looks at board >5, <6 BC: CA and CH look at board >6, <7 BC: looks at CH, CH looks at board >7, <8 BC: CA and CH look at board >8, <9 BC: looks at CH, CH has started to point at board >9

23. CH: <2 [6 <1 >1 ]6 GLAD >2 – (<2 [6 <1 >1 ]6 HAPPY >2)

@ <1 BC: active pointing at board >1, <2 4 s. >2

24. CA: <1 <2 jasså där >2 blir du glad då >1 <3 / (1 s.) <4 ah >4 blir man glad utav glass >3 <5 så bra >5 <6 >6 <7 vilket undermedel / (1 s.) >7 •••

– (<1 <2 okay there >2 do you get happy then >1 <3 / (1 s.) <4 ah >4 does one get happy from ice cream >3 <5 that is good >5 <6 >6 <7 what a miracle medicine >7)

@ <1 BC: CA and CH look at board >1, <2 BC: CA comments on her own failure to see CH's pointing, CH looks at board >2, <3 BC: looks at CH, CH looks at board >3, <4 CA expresses surprise >4, <5 BC: CA and CH look at board >5, <6 BC: CA looks at CH, CH looks at board >6, <7 BC: CA and CH look at board >7

From the beginning, the episode focused how Tilde was feeling. The topic of the episode, initiated by the caregiver, must be considered in light of the preceding unsuccessful communication attempt by the caregiver (Ex. 5.15). Tilde participated actively in the process of constructing meaning as she immediately followed the caregiver's line and told her that she was sad. Thereafter, through the selection of different Bliss-words and body communication, Tilde managed to redirect the caregiver's attention and finally to tell the caregiver that she wanted an ice cream. Tilde responded correctly to the various questions posed by the caregiver and in this way had to take a rather complex route to reach what seemed to be her own goal (i.e., to get an ice cream). Undoubtedly, the caregiver's questions ruled the course of the interaction and contributed to the circumstantial pattern observed. However, given the situation at hand, the questions posed by the caregiver were both natural and rational. Further, one cannot ignore the fact that Tilde also was responsible for the development of the episode and that her choice of Bliss-words was interesting. By introducing the topic of disease and her being unwell, Tilde referred to a basis of care giving and in an elegant and successful way caught the caregiver's concern and interest<sup>52</sup>. In comparison to many other episodes, for an outside observer at least, this episode was rather unpredictable in terms of how communication developed.

The question about Tilde's mood was reinitiated at mealtime (cf. Ex. 5.31). In this situation, the episode was invoked by the fact that Tilde now had gotten her ice cream. As in other episodes (e.g., Ex. 5.15, line 6), Tilde was asked to show the caregiver what she wanted to say, or more specifically, to show what mood she was in (end of contribution, line 1 below). The episode in Example 5.31 below was more predictable in terms of content than was the game-Bliss episode (5.30) and there is reason to believe that, at the very moment of its initiation, the caregiver already knew what mood Tilde was in. Nevertheless, in this situation too, Tilde was given the opportunity to express herself independently.

---

<sup>52</sup> The caregiver's frequent use of Tilde's first name in this episode may at first have related to the fact that she realized that something was wrong with Tilde (line 3) and later to the fact that Tilde expressed that she was sad and sick (lines 5, 9 & 22).

Example 5.31: *What mood is Tilde in now?* (FD2; mealtime-Bliss)

1. CA: ••• <1 // (9 s.) >1 <2 vilket humör är tilde på nu da / (1 s.) ska vi se >2 <3 vise vilket humör du ä på >3  
– (<1 // (9 s.) >1 <2 what mood is tilde in now then / (1 s.) let us see >2 <3 show what mood you are in >3)  
@ <1 PA and BC: CA dries CH's mouth and looks at board, CH chews >1, <2 BC: CH and CA look at each other >2, <3 BC: CA turns to look at board, CH follows CA >3
2. CH: < GLAD > – (HAPPY)  
@ < 5 s.; BC: CA looks at board >
3. CA: ahh < det glada humöret > så bra ••• – (ahh < the happy mood > that is good)  
@ < BC: CA looks at CH, CH looks at board >

#### ***Guidelines for the analysis of interactions that did not involve Bliss-words***

The Bliss-board interactions of FD2, the unaided interactions of FD2 and FD1, and the interactions of CD1 and CD2, were investigated for episodes that resembled the Bliss-word episodes, in terms of relating to the state of the mind and body of the child. A purpose in the analysis was to find episodes with an inner state perspective. Thus, episodes like the report by the comparison child in Example 5.20, which focused on what had happened to her and her body were not included. Episodes that consisted of utterances focusing on the goals and the actions of the ongoing activity were disregarded<sup>53</sup>. Similarly, episodes including utterances concerning immediate needs such as, “är du kissenödig” (*do you need to go to the toilet*) and episodes consisting of comments that related to children's involuntary body movements were disregarded. A summary of the analysis is given in Table 5.12.

---

<sup>53</sup> For example, episodes consisting of the following types of utterances were not included in the analysis: “är du mätt” (*are you full*) in the mealtime activity, “är du trött på å spela” (*are you tired of playing*) in the game activity and, “jag orkar inte läsa mer” (*I am too tired to read more*) during story reading.



Table 5.12 Number of episodes about the state of the mind and body in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2

Dyads	Total	Mealtime	Game	Drawing	Teeth	Story
FD2	0	-	-	-	-	-
FD1	0	-	-	-	-	-
CD1	0	-	-	-	-	-
CD2	1	-	-	-	-	1

*Bliss-word episodes in FD2 versus episodes that did not involve Bliss-words in the focus dyads' and the comparison dyads' interactions*

Table 5.12 shows that episodes focusing on children's moods, on a level above involuntary body movements and physical actions and goals of the ongoing interaction, were rare in all interaction samples. Neither the Bliss-board sequences, nor the unaided interactions of FD2 and FD1 or the interactions of CD1 included episodes that resembled the Bliss-word episodes presented in Examples 5.30 and 5.31. Only 1 interaction sample, belonging to CD2, included an episode that concerned the kind of state of being we were concerned with here. The episode occurred in the beginning of a story reading activity sample. It included 3 contributions and was concise in terms of content; the caregiver asked the child if she was freezing and, thereafter, put a blanket over the child's legs (Ex. 5.32).

Example 5.32: *Are your legs cold?* (CD2; story reading)

1. CA: fryser du om bena – (*are your legs cold*)
2. CH: jag fryser – (*I am freezing*)
3. CA: gör du också det – (*are you also freezing*)

#### 5.4.3.4 World and Language

Any use of language relates to concepts, word meanings and knowledge. In the Bliss-word episodes of the preceding sections we have also seen concrete examples of how the caregiver questioned Tilde's knowledge and understanding of words, and in this way, for the purpose of managing communication it seemed, checked Tilde's language abilities and understanding. However, two Bliss-word episodes in the mealtime-Bliss sample were interesting in the way they contained language that dealt explicitly with the meanings of concepts and words. One episode concerned whether the ice cream was warm or cold and

included talk about Bliss-words and the language of Blissymbolics (Ex. 5.33). Another episode, initiated by Tilde, concerned her need for something to drink (Ex. 5.34). This episode was the only instance in the study where Tilde expressed immediate needs that related to the activity at hand by means of using Bliss-words. In other interactions, such needs were managed, often successfully, through vocalizations, word approximations, intonation, whole body movements and facial gestures. An interesting feature of the episode in Example 5.34 concerned the way the caregiver commented on Tilde's choice of Bliss-words on the board. Hence, both the Bliss-word episode in Ex. 5.33 and the Bliss-word episode in Ex. 5.34 involved meta-linguistic and language-learning components different from what was observed elsewhere in the present Bliss-board interactions<sup>54</sup>. Therefore, it was interesting to compare these episodes to episodes that did not involve Bliss-words.

In Example 5.33 below, the caregiver initiated the episode with a statement and by showing Tilde an ice cream. Then, the caregiver asked five questions, and half of a question that seemed to function as a starter for Tilde (cf. *ä glassen – is the ice cream*), which in different ways related to the features of the ice cream. The caregiver asked Tilde if she knew how the ice cream is (3 times), if they had talked about this at school and whether or not Tilde had a Bliss-word to show what the ice cream is. Tilde vocalized and pointed at the Bliss-word for *ice cream* and, in this way, showed that she had a Bliss-word for ice cream and that she was participating in communication. It was only in the final part of the first contribution that the caregiver specified what she was aiming at, namely, whether the ice cream was warm or cold. While the caregiver was interested in the Bliss-words on the board, and the fact that the Bliss-word for *cold* was missing, from here on, Tilde's interest decreased. She turned away from the Bliss-board and seemed more interested in eating the ice cream than in talking about it. When the caregiver suggested that the ice cream is cold

---

<sup>54</sup> The Bliss-word episodes included communication similar to what Perlmann (1984) called world and language, that is, they were concrete in terms of relating to the situation but at the same time abstract in terms of focusing on knowledge. According to Perlmann, communicative exchanges coded as world, "fall outside the realm of immediate practical concern, but the focus is on eliciting or conveying knowledge about how the world works" (p. 29). Such exchanges are, "often triggered by things which are right in front of the speaker, but the focus is not on achieving some immediate practical goal, but on imparting some general principle, making a generalization, or explaining a general phenomenon" (p. 29). Exchanges coded as language are, "Utterances which focus explicitly on the language used by the child either for teaching purposes, for correcting errors for questioning the child's use of a word, for play as in rhyming, inventing words and the like." (Perlmann, 1984, p. 30).

(end of contribution in line 1 & line 4) Tilde responded *no* twice (lines 3 & 5) and when the caregiver asked if the ice cream is warm (line 6) Tilde, in line with her previous responses, was consistent and said what seemed to be *yes* (line 7).

Example 5.33: *How is the ice cream?* (FD2; mealtime-Bliss)

1. CA: <1 här ser du har vi en glass / (1 s.) dubbelnougat >1 <2 /// (23 s.) >2 <3 å / (1 s.) öh >3 <4 va ä han för nåt va ä glassen för nånting / (2 s.) vet du va glassen ä för nånting har ni prata om de har du nåt tecken för de / (1 s.) <5 ä glassen >5 / (2 s.) [1 där är glass glass ä där ja just de där ä glassen ]1 <6 / (4 s.) >6 ska vi se här / (1 s.) >4 <7 där har du varm men du har inte kall det har du inte fått än >7 <8 annars kan en gisse på att glassen är / (1 s.) kall >8  
 – (<1 here you see we have an ice cream / (1 s.) double nougat >1 <2 /// (23 s.) >2 <3 oh / (1 s.) eh >3 <4 what is he what is the ice cream / (2 s.) do you know what the ice cream is have you talked about that do you have any sign for that / (1 s.) <5 is the ice cream >5 / (2 s.) [1 there is ice cream ice cream is there yes that is right there is the ice cream ]1 <6 / (4 s.) >6 let us see here / (1 s.) >4 <7 there you have warm but you do not have cold you have not got that yet >7 <8 otherwise one could guess that the ice cream is / (1 s.) cold >8)

@ <1 PA: CA gets the ice cream, CH sits by the table and waits for the ice cream, looks at CA >1, <2 PA: CA sits down on CH's left side, CH turns her head and looks at CA, CA opens the ice cream, unfolds board and puts it in an upright position in front of CH, starts feeding CH >2, <3 PA: CH starts eating, CA comments CH's eating >3, <4 BC: CA and CH look at board >4, <5 PA and BC: CA turns board, seems to have been directed by CH who was looking only at one side of the board, it is this side that CA turns >5, <6 PA and BC: CA turns board again >6, <7 PA and BC: CH raises her left hand a little and touches CA's hand as if she wants the ice cream, from this moment CH stops looking at board, CA continues to look at board >7, <8 BC: CA turns and looks at CH, CH and CA look at each other >8

2. CH: [1 <1 ng >1 <2 { ng GLASS } >2 ]1

– ([1 <1 ng >1 <2 { ng ICE CREAM } >2 ]1)

@ <1 BC: quiet >1, <2 3 s. >2

3. CH: < nä > – (no)

@ < BC: CH raises her head up and back to her left side and looks at CA, CH is still holding CA's hand >

4. CA: är den inte de – (*is it not*)
5. CH: nä – (*no*)
6. CA: ä han varm – (*is he warm*)
7. CH: < ng > – (*ng*)  
 @ < meaning: probably yes; BC: open mouth >
8. CA: ä han de ja smake på den får du se <1 / (3 s.) <2 åp >2 <3 >3 / (6 s.) <4 åp >4  
 >1 <5 va han varm >5 va han varm  
 – (*is he yes taste it and then you can see <1 / (3 s.) <2 ousps >2 <3 >3 / (6 s.)  
 <4 ousps >4 >1 <5 was he warm >5 was he warm*)  
 @ <1 PA: CA feeds CH >1, <2 comments CH's eating >2, <3 BC: laughs >3,  
 <4 comments CH's eating >4, <5 PA: dries CH's face >5
9. CH: nä – (*no*)
10. CA: nä ••• – (*no*)

The negotiation about whether the ice cream was warm or cold continued during the final contributions of the episode. The tone between Tilde and the caregiver was humorous, indicating that Tilde was joking and perhaps teasing the caregiver. Still, the episode is an example of explicit language learning in a naturalistic context. The caregiver used an object of the situation to talk about and explain the concepts of warm and cold. In order to learn more about its properties, Tilde even was asked to taste the ice cream. Example 5.34 presents an episode in which Tilde, when coaxed by the caregiver (lines 5 & 6) used Bliss-words to express that she wanted something to drink. The language phenomenon of interest in this episode occurred in the last contribution (line 13). Tilde had selected the Bliss-word for *fruit juice* and, in response to a question from the caregiver had confirmed that she was thirsty (i.e., through a word/word approximation). Then, in line 13, the caregiver told Tilde that she first should finish the ice cream (i.e., first eat then drink). At the time of this utterance, the caregiver changed her attention to the Bliss-board. She turned the board, looked at it, pointed at another Bliss-word, and told Tilde that, when she was thirsty, she could also use (i.e., light point at) the Bliss-word indicated by the caregiver. The caregiver looked at Tilde and asked her if she knew what the Bliss-word the caregiver pointed at meant and then, still looking at Tilde, told Tilde that it was the Bliss-word for *drink*. Tilde looked attentively at the board and, thereafter, finished the ice cream.

Example 5.34: *What is it?* (FD2; mealtime-Bliss)

1. CH: < m de må > – (*m de må*)  
@ < BC: CH looks at CA >
2. CA: < ha > – (*what*)  
@ < BC: CA leans forward and looks at CH, CH looks at CA >
3. CH: < mä mä mä mä de mam > – (*mä mä mä mä de mam*)  
@ < BC: CH leans her body backwards, raises her arms and puts them down again, looks at CA, CA looks at CH >
4. CA: vad är < det nu da > – (*what is < it now then >*)  
@ < BC: CA and CH turn to look at board >
5. CH: <1 >1 <2 / (5 s.) >2  
@ <1 BC: smacks distinctly on her lips three times, CA looks at CH, both turn to look at board >1, <2 BC and PA: CH and CA look at board, CA turns board, CH seems to search board >2
6. CA: peka du [1 på / (5 s.) m / (1 s.) nåt du vill peka på nåt du vill säga / (2 s.) ]1 ska vi vände nu igen det enda vi sysselsätter med å vända  
– (*are you point [1 at / (5 s.) m / (1 s.) something you want to point at something you want to say / (2 s.) ]1 should we turn now again the only thing we do turn*)
7. CH: [1 < > ]1  
@ < CH points to her right side, down toward the table >
8. CH: < JUICE/SAFT > – (*FRUIT JUICE*)  
@ < 8 s.; BC: CA closely follows CH's pointing >
9. CA: < juice soft > – (*fruit juice*)  
@ < BC: CA and CH look at board >
10. CH: < ah > – (*yes*)  
@ < BC: CH looks at board, CA looks at CH quickly and then back at board >
11. CA: < är du törstig > – (*are you thirsty*)  
@ < BC: CA looks at CH, CH looks at board >
12. CH: < a > – (*yes*)  
@ < BC: CH turns slowly and looks at CA >

13. CA: m <1 / (1 s.) a äter här >1 <2 vi äter upp glassen först / (3 s.) >2 <3 men där har du också >3 <4 där kan du lyse på den med vet du vad det är / (2 s.) >4 <5 *DRYCK* >5 <6 / (3 s.) >6 <7 dryck ä de >7 <8 /// (19 s.) >8 •••
- (m <1 / (1 s.) *finish this* >1 <2 *we finish the ice cream first* / (3 s.) >2 <3 *but there you have also* >3 <4 *there you can light point at that also do you know what it is* / (2 s.) >4 <5 *DRINK* >5 <6 / (3 s.) >6 <7 *drink is it* >7 <8 /// (19 s.) >8)
- @ <1 PA: CA gives CH ice cream >1, <2 PA: CA turns board >2, <3 PA and BC: CA points/shows CH a bliss-word, CH eats, does not look at board >3, <4 PA and BC: CA points, looks at CH and at board, CH looks at board >4, <5 BC: CA looks at CH, CH looks at board >5, <6 BC: CA and CH look at board >6, <7 PA and BC: CA gives CH to eat, CA and CH look at each other >7, <8 PA: CA feeds, CH eats >8

### ***Guidelines for the analysis of interactions that did not involve Bliss-words***

All other interactions of FD2, FD1, CD1 and CD2 were analyzed for episodes that did not involve Bliss-words and that, like the episodes in Examples 5.33 and 5.34, in explicit ways included meta-linguistic and/or other knowledge dimensions. Included in the analysis were episodes that were *about* language, for instance, communication about the pronunciations and meanings of words as well as rhyming and other play with words. Also included were episodes concerning properties of and relations between objects, persons, events and more abstract phenomena. A common characteristic of some samples (e.g., mealtimes; FD1 and FD2, games; FD2 and CD2, and story reading, CD1) was that they included meta-linguistic features which were strongly associated with activity goal fulfillment (i.e., were indispensable from a practical point of view and in this sense were closely tied to the ongoing activity). For example, comments on the comparison children's reading, counting and writing numbers concerned the actual performance of the activity and, therefore, were not included in the analysis. Communication that related to the characteristics of food and which, in the interaction, did not seem to concern feeding and eating primarily, was included in the analysis. Table 5.13 provides an overview of the results of the analysis.

Table 5.13 Number of episodes coded as world and language in interactions that did not involve Bliss-words in FD2, FD1, CD1 and CD2

Dyads	Total	Mealtime	Game	Drawing	Teeth	Story
FD2	9	3	1	-	-	5
FD1	2	-	-	1	1	-
CD1	15	9	-	4	-	2
CD2	8	6	-	1	-	1

*Note:* Two of the mealtime episodes in FD2 occurred in the mealtime-Bliss sample.

*Bliss-word episodes in FD2 versus episodes that did not involve Bliss-words in the focus dyads' interactions*

The interactions of FD2 and FD1, respectively, included 9 and 2 episodes that resembled the Bliss-word episodes in terms of having a world and language perspective (cf. Table 5.13). Two of the 9 episodes in FD2's interactions occurred in the mealtime-Bliss sample and both focused the meaning of a specific word. Although the episodes related to the immediate situation, they did not relate to the fulfillment of immediate activity goals. Tilde made funny faces when she ate the ice cream, which, on two occasions, led the dyad to talk about the word *grimace*. The grimace episodes are presented in Appendix F. The remaining 7 episodes in FD2, which were coded as world and language, occurred in the unaided mealtime sample (1), in a part of the game-Bliss sample in which the Bliss-board had been put away (1), and in one of the two unaided story readings (5). Apart from the short episode in the unaided mealtime sample, which consisted of a statement by the caregiver about a specific type of food being unhealthy and Tilde's acknowledging this caregiver statement, all the world and language episodes in FD2 were similar in initiation and participation structures. The caregiver asked Tilde if she knew the meaning of a particular concept or word. Tilde responded to the caregiver's question and thereafter, independently of whether or not Tilde knew what the word meant, the caregiver explained the word for Tilde (Ex. 5.35 to 5.37). Alternatively, Tilde commented vocally on the caregiver's saying a particular word and, the caregiver responded to Tilde's vocalization and non-vocal body communication by explaining the word (Ex. 5.38 & 5.39). In Example 5.35, the word focused was *baldheaded*, which was a characteristic of a person on a playing card.

Example 5.35: *Do you know what baldheaded means?* (FD2; game-Bliss, unaided part of sample)

1. CA: < vet du va flintskalli ä > – (*do you know what baldheaded means*)  
@ < PA: CA holds CH's playing card in front of the child >
2. CH: < ba ba ba > – (*ba ba ba*)  
@ < meaning: probably dad; BC: small movement with body backwards, lifts arms >
3. CA: <1 <2 pappa ä inte flintskalli >2 / (1 s.) [1 <3 >3 ]1 / (1 s.) >1 <4 flintskalli ä när man inte >4 har <5 hår på huvvet >5 •••  
– (<1 <2 dad is not baldheaded >2 / (1 s.) [1 <3 >3 ]1 / (1 s.) >1  
<4 baldheaded is when one does not >4 have <5 hair on the head >5)  
@ <1 PA: holds child's card in front of her >1, <2 BC: shakes her head >2, <3 quiet chuckling >3, <4 PA: puts cards on table >4, <5 BC: shows CH the hair on her own (CA's) head >5
4. CH: [1 < ng > ]1 – (*[1 < ng > ]1*)  
@ < very quiet >

The concept and word explained by the caregiver in Example 5.36 was *watchmaker*. The word related to a picture in a book the dyad was reading. The caregiver explained what a watchmaker does (line 3) and, in line 5, expanded the explanation as she told Tilde that the word *ur* (watch, clock) means *klocka* (watch, clock).

Example 5.36: *Do you know what a watchmaker is?* (FD2; story reading-unaided)

1. CA: ••• urmakare < vet du va de ä > – (*watchmaker < do you know what that is >*)  
@ < BC: looks at CH >
2. CH: < nä > – (*no*)  
@ < BC: very clear pronunciation, looks at CA >
3. CA: < lagar klockor en klockaffär lagar klockor å säljer klockor >  
– (*fixes clocks a clock shop fixes clocks and sells clocks*)  
@ < BC: looks at CH >
4. CH: < nä > – (*no*)
5. CA: ur betyder klocka ••• – (*watch means clock*)



The next episode (Ex. 5.37) concerned the meaning of the word *toyshop*. Again, as in the episode about the characteristics of the ice cream (Ex. 5.33) there is reason to believe that Tilde was joking when she denied that she knew what a toyshop was, as can be seen in line 2, she shook her head and at the same time smiled. The caregiver interpreted this communication to mean *no* (line 3). The episode was ended as Tilde, still smiling, confirmed that she knew what a *toyshop* is (line 4).

Example 5.37: *Do you know what a toyshop is?* (FD2; story reading-unaided)

1. CA: ••• också leksaksaffär < vet du va de är da >  
– (and toyshop < do you know what that is then >)  
@ < BC: looks at CH >
2. CH: < >  
@ < BC: shakes her head and smiles >
3. CA: <1 har du aldrig varit i en [1 leksaksaffär >1 / (2 s.)] jo du vet väl va en leksta ]1  
ja just de •••  
– (<1 have you never been to a [1 toyshop >1 / (2 s.)] yes you know what a  
toyshop ]1 yes that is right)  
@ < BC: looks at CH >
4. CH: [1 < > ]1  
@ < meaning: probably yes; BC: opens mouth and turns head slightly away  
from CA, smiles >

The episodes in Examples 5.38 and 5.39 included explanations of the words *lawyer* and *plumber*. As the preceding story reading episodes, the episodes below related to pictures in the book the dyad was reading.

Example 5.38: *This is what a lawyer is.* (FD2; story reading-unaided)

1. CA: ••• advokat – (lawyer)
2. CH: < a va va va > – (a va va va)  
@ < BC: looks at picture >
3. CA: a hjälp till å ordna papper å / (2 s.) grejs mä lagen  
– (yes helps to do things with papers and / (2 s.) things with the law)

Example 5.39: *This is what a plumber is.* (FD2; story reading-unaided)

1. CA: ••• < å rörmokare > – (*and plumber*)  
@ < BC: looks at CH >
2. CH: < aaa > – (*aaa*)  
@ < BC: looks at CA; mood: happy; increased stress and volume >
3. CA: a han greja mä rör han – (*yes he does things with pipes*)
4. CH: < mamma > – (*mum*)  
@ < BC: moves head and body slightly upwards >
5. CA: < ä mamma rörmokare > – (*is mum a plumber*)  
@ < BC: looks at CH >
6. CH: a – (*yes*)
7. CA: < nej de e dålit mä de mamma ä ingen rörmokare >  
– (*no not very much mum is not a plumber*)  
@ < BC: looks at CH >
8. CH: < (...) ba > – (*(...) ba*)  
@ < meaning: probably pappa; BC: first voiceless and then extremely quiet >
9. CA: < pappa kan greja mä rör ja > ibland  
– (*< dad can do things with pipes yes > sometimes*)  
@ < BC: looks at CH >
10. CH: mapa – (*mapa*)
11. CA: m ••• – (*m*)

In line 4 in Example 5.39, Tilde took her own initiative developing the conversation as she said *mother* (see also line 2 in Ex. 5.35 where Tilde brought her father into the conversation). The story reading episodes above clearly represent a special reading style, which relates to Tilde's receptive language, communication and reading abilities but which also depended on the type of book the dyad had chosen to read. There were no similar episodes in the other story-reading sample of FD2 where the dyad read a different type of book and there were no similar episodes in any of the story readings between Maria and her caregiver (FD1). A common feature of the world and language episodes in FD2 was that the caregiver initiated all episodes and was mainly in charge of providing explanations of words and concepts.

One of the episodes in FD1 that included a world and language focus related to Maria's pronunciation of a word in the teeth brushing activity and is discussed in relation to the dyad's use of person reference (cf. Chapter 6, 6.2.2). The other world and language episode in FD1 concerned writing the words *grandmother* and *grandfather* on paper in the drawing activity and is presented in Appendix F (see also Chapter 6; 6.2.2). The mealtime interactions of FD1 did include some talk about the characteristics of food but this communication always related to feeding and eating and for that reason was not included in the analysis.

*Bliss-word episodes in FD2 versus episodes in the comparison dyads' interactions*

As shown in Table 5.13, the comparison dyads' interactions contained 15 (CD1) and 8 (CD2) world and language episodes. Most episodes occurred at mealtimes (15) and in drawing activities (5). In Examples 5.40 to 5.45 below it is interesting to note the way the comparison children initiate episodes and participate in providing explanations. Further, although often invoked by an issue of the immediate situation, as they developed, the comparison dyads' world and language episodes were tied less to the situation and were more abstract than the focus dyads' world and language episodes were. By stating what she knows, the comparison child initiated the episode in Example 5.40 (see also line 19, which embeds another example of this child's ability to express herself and more specifically to talk independently about *what* she knows). From the beginning, this episode concerned the color of a particular car. As communication continued, the dyad talked about what kind of car it was, how it looked (lines 5, 6 and 7, note the child's gestures) and if the child knew someone else who had this type of car (line 8). In line 10, the dyad started to talk about what type of car a specific person had and in this way changed the direction of the conversation. This change, in turn, led to new explanations on the relations between the looks of another particular car and its nickname (lines 19, 20, 21 and 22).

Example 5.40: *What kind of car is it and what does it look like?* (CD1; mealtime)

1. CH: m < ja vet vilken färg de ä på bilen > – (*m I know what color the car has*)  
@ < eating >
2. CA: m – (*m*)
3. CH: röd – (*red*)
4. CA: va ä de för sort da – (*what type is it then*)
5. CH: < en så här pla > – (*a fl like this*)  
@ < playing voice >
6. CA: < platt > – (*flat*)  
@ < question intonation >
7. CH: m tillplattad // (7 s.) < så här ser den ut > så [1 i ]1  
– (*m flattened // (7 s.) < this is how it looks like > like this [1 i ]1*)  
@ < PA: eating; BC: gesture, describes the features of the car by using her hands >
8. CA: [1 finns ]1 finns de nåra som har en sån som du känner [2 mer ]2  
– (*[1 are ]1 are there any that have one like that that you know [2 more ]2*)
9. CH: [2 a ]2 nä / (3 s.) vet inte nä – (*[2 a ]2 no / (3 s.) do not know no*)
10. CA: så du va per hade för en bil igår  
– (*did you see what kind of car per had yesterday*)
11. CH: men de va inte en sån – (*but it was not one like that*)
12. CA: men såg du va de va för en – (*but did you see what kind it was*)
13. CH: ja – (*yes*)
14. CA: m – (*m*)
15. CH: en bubbla – (*a bug*)
16. CA: m – (*m*)
17. CH: < > de va de va cillas – (< > *it was it was cilla's*)  
@ < giggle >
18. CA: ja – (*yes*)
19. CH: ja vet varför dom heter bubbla – (*I know why they are called bug*)
20. CA: vet ja mä – (*I know too*)
21. CH: < dom ser ut som en bubbla > – (*they look like a bug*)

@ < eating >

22. CA: m // (7 s.) – (m // (7 s.))

Another type of language activity in CD1 namely rhyming, is exemplified in 5.41.

Note especially how the child asks her mother for another rhyme (line 20).

Example 5.41: *Rhyming*. (CD1; mealtime)

1. CA: m du ä bäst – (*m you are the best*)

2. CH: m – (*m*)

3. CA: mm – (*mm*)

4. CH: tjejerna ä bäst – (*the girls are the best*)

5. CA: tjejerna ä – (*the girls are*)

6. CH: bäst – (*best*)

7. CA: vassa – (*sharp*)

8. CH: < killarna har killarna ä > – (*the boys have the boys are*)

@ < eating >

9. CA: kassa – (*useless*)

10. CH: ja tjejerna är vassa killarna ä ä va heter de kassa

– (*yes the girls are sharp the boys are what is the name for it useless*)

11. CA: å vet du va killarna säger – (*and do you know what the boys say*)

12. CH: nä – (*no*)

13. CA: dom säger tvärtom – (*they say it the other way around*)

14. CH: ja killarna ä va heter de – (*yes the boys are what is the name for it*)

15. CA: vassa – (*sharp*)

16. CH: ha – (*yes*)

17. CA: killarna [1 ä ]1 vassa [2 tjejerna ]2 ä kassa

– (*the boys [1 are ]1 sharp [2 the girls ]2 are useless*)

18. CH: [1 a ]1 – (*[1 a ]1*)

19. CH: [2 ki ]2 – (*[2 bo ]2*)

20. CH: va heter den mä tårta ••• – (*what is the name for the one with the cake*)

Example 5.42 includes an episode from a story reading sample in CD1 in which the comparison child asked the caregiver about the meaning of a word.

Example 5.42: *What is a washcloth?* (CD1; story reading)

1. CA: < och > – (*and*)  
@ < PA: reading >
2. CH: ha – (*what*)
3. CA: < och > – (*and*)  
@ < PA: reading >
4. CH: < och > – (*and*)  
@ < PA: reading >
5. CA: < tvättlapp > – (*washcloth*)  
@ < PA: reading >
6. CH: < tvättlapp > – (*washcloth*)  
@ < PA: reading >
7. CA: m – (*m*)
8. CH: vad ä tvättlapp – (*what is washcloth*)
9. CA: de ä en liten hannduk som man blöter ner å tvättar sej mä < där ligger den >  
– (*it is a small towel that one soaks and cleans oneself with < there it is >*)  
@ < BC: points at picture in book >

After some hesitation (lines 1 to 5) the child read the word *washcloth* (line 6) and, thereafter, asked the caregiver what a washcloth is (line 8). The caregiver explained the word and pointed at a picture of a washcloth in the book. By means of a statement, the child in CD2 initiated the episode in Example 5.43. The episode originated from a multiparty mealtime interaction. In line 5, the child describes the features of an object for which she does not know the name, she talked about its color/material. The caregiver asked the child to give her more details (line 7). In line 8, the child complemented her description and told the caregiver about a typical function of the object. In line 9, the caregiver provided the child with the word *aluminum*, which the child approved (line 10). Thereafter, this episode developed into a show where the comparison child, by means of using aluminum foil, constructed her own braces and, thereafter, demonstrated its functions, advantages, and disadvantages for the caregiver and her younger sister.

Example 5.43: *What is the name for it?* (CD2; mealtime)

1. CH: ••• josefin har lärt mig hur man gör ett paplastandställning tandställning hur man gör  
– (*josefin has taught me how one makes a plasplasticbraces braces how one does*)
2. CA: ja så – (*okay*)
3. CH: m – (*m*)
4. CA: har josefin tandställning da nä – (*does josefin have braces then no*)
5. CH: nä asså sånt där du vet i silver hur man gör [1 sånt ]1 av det  
– (*no you know like that in silver how one make [1 such ]1 from that*)
6. CA: [1 m ]1 – (*[1 m ]1*)
7. CA: vadå för silver – (*what kind of silver*)
8. CH: du vet det silvret som man kan slå in massa sånt där kött å sånt  
– (*you know that silver that one can use to wrap lots of things meat and things like that*)
9. CA: ja så aluminiumfolie menar du – (*okay you mean aluminum foil*)
10. CH: ja – (*yes*)
11. CA: jaha – (*okay*)

The episode in Example 5.44 below comes from the same mealtime interaction as the preceding episode. In the transcript below, BR is the child's older brother. The brother introduced the episode by stating that televisions of a certain brand are always big. The content of the comparison child's contributions in lines 4, 7 and 10, indicate that she did not know what the brother and caregiver were talking about. In line 12, she asked what a Panasonic is, and in lines 13, 14 and 15, the brother and the caregiver explained the word *Panasonic*.

Example 5.44: *The size of the Panasonic and what is Panasonic?* (CD2; mealtime)

1. BR: mamma – (*mum*)
2. CA: m – (*m*)
3. BR: m alla panasonic öh öh tevear dom är alltid stora  
– (*m all panasonic tv's eh eh they are always big*)
4. CH: vadå – (*what*)

5. CA: inte alla – (*not all*)
6. BR: jag tycker det – (*I think so*)
7. CH: vadå / (5 s.) – (*what / (5 s.)*)
8. CA: finns det inte panasonic som är små da  
– (*are there no panasonic that are small then*)
9. BR: inte vad jag vet – (*not what I know of*)
10. CH: jo [1 panason ]1 – (*yes [1 panason ]1*)
11. BR: [1 vi har ]1 i alla fall en panasonic – (*[1 anyways ]1 we have a panasonic*)
12. CH: vad är panasonic / (1 s.) – (*what is panasonic / (1 s.)*)
13. CA: en det är namnet på / (1 s.) – (*a it is the name for / (1 s.)*)
14. BR: våran [2 teve ]2 – (*our [2 television ]2*)
15. CA: [2 märket ]2 på teven / (4 s.) – (*[2 the brand name ]2 of the television / (4 s.)*)

The last episode to be exemplified in the study comes from a drawing activity sample in CD2. The child asked the caregiver a question (line 1). In answering the question (line 2), the caregiver explained that things were different when she was a child (line 4).

Example 5.45: *Were you video recorded as a child?* (CD2; drawing)

1. CH: har du blitt filmad nån gång när du var liten / (2 s.)  
– (*were you ever video recorded when you were young / (2 s.)*)
2. CA: ä inte då ja va riktigt liten [1 m ] 1 – (*eh not when I was very young [1 m ]1*)
3. CH: [1 när ]1 du var i min ålder – (*[1 when ]1 you were in my age*)
4. CA: nä de tror jag faktiskt aldrig jag var nog större / (3 s.) de var inte så vanligt  
med filmkameror då mamma var liten / (2 s.) då var de mer att man tog kort  
– (*no I do not think that I ever was I believe I was older / (3 s.) video cameras  
were not very common when mum was young / (2 s.) it was more that one took  
pictures*)
5. CH: både titta på kort och kamera – (*both looked at pictures and camera*)
6. CA: m / (3 s.) (...) – (*m / (3 s.) (...)*)



#### **5.4.4 Summary**

Two sequences of Bliss-board interaction that occurred in a focus dyad including a child with disabilities and her caregiver (FD2) were the starting point for the analyses of this sub-study. The Bliss-board interactions were compared to the interactions of FD2, FD1, CD1 and CD2 that included natural communication modes only. Several interesting observations were made, the most important of which are summarized here. First, when FD2 used the Bliss-board in the game activity no goals were evident other than communication. The Bliss-board was used before, not during playing. Second, for FD2, whose meal was less complicated than the meals of FD1, it was possible to use the Bliss-board and perform other activity related actions at the same time. Third, although the Bliss-board was present all through the mealtime sample of FD2, it was used for talking about some specific issues and not for others. The actual use of the Bliss-board in FD2 resulted in communication that concerned what the child had done and should do as well as her mood and her knowledge in world and language issues. Bliss-board communication did not relate to the fulfillment of practical activity goals. Fourth, Bliss-board communication on specific themes in FD2 was less predictable in terms of content, to a larger degree involved the unknown and allowed greater independence on behalf of the child than did any communication on similar themes in either of the focus dyads' unaided interactions. In particular, the use of the Bliss-board in FD2 rendered significant chances for the focus child concerning independent expression in relation to issues other than those relating to the interaction situation. Yet, in terms of having the possibility to talk about whatever one wants at any time and with respect to participation structure, content complexity and the rights of the child to ask for, provide and receive different types of information, the Bliss-board communication in FD2 was qualitatively very different from the communication in the comparison dyads. Finally, an important issue raised in this analysis concerned the way the comparison children, but not the focus children, combined language with physical actions. These findings and other observations from the study are dealt with in detail in Chapter 6.

## **Chapter 6**

### **Discussion**

Sections 6.1 through 6.3 of this chapter answer the specific research questions and discuss the results of each sub-study. In Section 6.4, study findings are considered with regard to the support of children with severe speech and physical impairments and their caregivers. Study limitations are presented in Section 6.5. In Section 6.6, I return to the general purposes of the study and, based on the analyses done, reason about the focus children and caregivers' functioning in different activities.

#### **6.1 Mealtime Communication**

##### **6.1.1 Conversational topics at mealtime**

###### **6.1.1.1 Answering the research questions**

Four research questions were addressed in this sub-study, the first of which concerned the influencing background factors of the mealtime activity. Both collective and individual factors were described. The physical and communication restrictions that applied to Maria led to specific individual goals and roles in the focus dyad that were not part of the comparison dyad. From physical and communicative perspectives, the mealtime activity entailed considerable demands for Maria and her caregiver. From a collective point of view, the same activities were carried out in both of the dyads; from an individual factors perspective, however, there were large differences in mealtime activities across the two dyads.

The second, third and fourth research questions posed in this sub-study related to the dyads' conversational topics and concerned (a) types of topics, (b) lengths and occurrences of topics, and (c) topic initiation and change. For both dyads, ongoing activity topics concerned the goal of eating a meal. With regard to the content of other topics, there were large differences between the dyads. In the focus dyad, for example, the content of other topics related to the immediate situation; in the comparison dyad other topics were often removed from the immediate mealtime activity situation in terms of both time and space. That is, apart from relating to immediate issues, topics also included communication about past and future experiences which did not relate to the immediate mealtime situation. In

relation to the comparison dyad, interactions between the child and the caregiver in the focus dyad were characterized by fewer topics and topic segments, ongoing activity topic dominance and asymmetry in terms of topic initiation and change; the focus caregiver initiated most of the ongoing activity topic segments, while Maria initiated most of the other topics.

A purpose of the analysis was to describe the relationship between the contextual factors of the mealtime activity and the conversational topics shared. Hence, how the dyads' physical and communicative possibilities, goals, and roles influenced the content of their mealtime conversations in different ways were examined. A major finding concerned the focus dyad's dependence on situational cues and the more narrow focus developed. In line with her cognitive and receptive linguistic capabilities, Maria initiated several topics related to areas other than the immediate activity. Considering her disabilities and the caregiver's concentration on the present, this conversational style was noteworthy. At mealtime, Maria was not passive with regard to conversational content. With a restricted number of word approximations and with an abundance of body communication, she initiated a larger number of other topics than the caregiver did. In this respect, there was a different kind of asymmetry between Maria and her caregiver than is often reported in the literature (e.g., Light et al., 1985a; Pennington & McConachie, 1999; von Tetzchner & Martinsen, 1996). The caregiver was, however, in total control with regard to returning to topics that were related to the ongoing activity and in this way was both directive and dominant. There was also an immediate relationship between Maria's physical restrictions and the topics that were introduced. The subjects that were initiated were primarily a result of what Maria could see, hear, or feel; Maria's perceptual field determined what she and her caregiver talked about. Most importantly, the caregiver conformed to this pattern and restricted her own contributions to matters that could be managed given the constraints and possibilities within the situation.

As pointed out by Ninio and Snow (1996), "Once initiated, topics need to be developed." (p. 155). In a typical child-caregiver conversation (and in the present comparison dyad's interactions) the adult often guides the child's development of topics by, for example, affording appropriate repair and by asking suitable questions (Ninio & Snow, 1996). The present focus dyad's concentration on the here and now was problematic. First, other topics were not frequent, second, other topics were typically short and anchored to the

situation with regard to both initiation and content development. Clearly, the immediate objects, events and actions were momentarily useful as topic initiators but did not seem to function well for topic development and coherence, the effect being that subjects were mainly mentioned and other topics were never fully developed. Topics introduced by Maria were talked about by the caregiver and were, in this sense, not personal but emerged as talk about topics. When another topic had been explored to the fullest extent possible, the caregiver mostly redirected the conversation toward the activity. The focus caregiver had significant obligations in the overall communication process. Topical explorations were ultimately left to her, because she was primarily responsible for interpreting and making communicative content explicit. Perhaps this knowledge unconsciously restricted her communication, causing her to only attempt to converse about issues she knew were manageable (cf. von Tetzchner & Martinsen, 1996). As it seemed, shared background knowledge and visible or audible situational cues were a prerequisite for topic initiation and development in the focus dyad's unaided interactions.

The focus dyad's topic pattern mirrored the caregiver's obligations and demands in relation to the physical management of the mealtime activity. Maria had fewer obligations, more room for other thoughts, and more opportunities to guide the conversation away from the immediate activity goals. Maria's capabilities, curiosity, persistence, and needs seem to have been important personality factors that helped her to direct the conversation outward despite the difficulties involved. Still, because communication was unaided, Maria could not talk independently about herself other than in relation to mealtime issues and then only in a very restricted manner, mainly expressing basic needs. An important observation is that the caregiver adapted to this situation, she did not talk about herself either, thereby further restricting the content shared with Maria (see further 6.6). The final content decisions were in the hands of the caregiver, and Maria had few means by which to reject the content chosen. Maria and the caregiver talked about what was possible within the situation, which left them with little conversational variability.

Research has shown that the mealtime activity typically encourages conversation about a variety of topics other than those related to immediate mealtime issues (e.g., Aukrust & Snow, 1998; Beals, 1993; Beals & Snow, 2002, Ochs et al., 1992). This was also true for the present comparison dyad. The comparison child and caregiver were independent at mealtime and this independence was reflected in their topic pattern. Apart from focusing

immediate mealtime goals, their topics concerned people, places, things, and events removed from the immediate and familiar, and included generalizations about the world and meta-linguistic exercises (cf. Perlmann, 1984). Considering the situation observed in the focus dyad, four aspects of topics in the comparison dyad are especially interesting. First, in both dyads, ongoing activity topics concerned eating. However, whilst the behavioral directives that occurred in the focus dyad related to the actual management of the activity (e.g., swallow), the behavioral directives that occurred in the comparison dyad related to upbringing and learning of mealtime rules (e.g., use your knife). Behavioral directives and issues relating to politeness are common features of mealtimes involving children and adolescents without disabilities (e.g., Aukrust, 2002; Perlmann, 1984; Tulviste, 2000, 2001) and serve functions relating to children's socialization. Second, the comparison child, in contrast to Maria, was told about the caregiver's day and experiences. The comparison caregiver initiated topics that included information that was unknown to the child as well as topics that concerned shared experiences to which the caregiver added new perspectives. Third, the comparison dyad's mealtime interactions included play with language. The focus dyad's samples did not reveal any spontaneous experimentation with language, which suggests that, in this natural activity, Maria experienced different chances for meta-linguistic exercises than the comparison child. Fourth, the comparison child's mealtime interactions were rich in physical actions and body movements that were both related and unrelated to the topics and the practical goals of the mealtime activity. In all respects, Maria was physically restricted. Thus, from both communicative and physical perspectives, Maria's participation at mealtime was different from the comparison child's participation at mealtime.

## **6.1.2 Mealtimes and patterns of interaction**

### **6.1.2.1 Answering the research questions**

In answering the research questions and in discussing the results of the analysis of interaction patterns at mealtime, it is important to keep in mind that the focus dyad's interactions were unaided. Many studies that have reported about asymmetry in interactions between children and adolescents with disabilities and adults have examined interactions that involved communication aids (e.g., Björck-Åkesson, 1992; Light et al., 1985b; Pennington & McConachie, 1999; Smith, 1994). The fact that the present focus dyad's

mealtimes only included natural communication modes has given me the opportunity to examine what is talked about when a communication aid is not present and, importantly, to study how interaction is managed when communication is totally unaided.

The first question behind the analysis concerned numbers of pauses and overlaps in the dyads' interactions. The focus dyad had a smaller number of pauses than the comparison dyad and a larger number of the focus dyad's contributions, than the comparison dyad's contributions, included overlapping units. The second and third questions concerned causes and consequences of pauses and overlaps in the interactions and, as such, are intricately related to the main objective of the analysis, exploring the relationship between mealtimes and patterns of interaction in dyads that entered the activity on the basis of different possibilities. Qualitative analyses showed that the focus dyad's interaction strictly followed and depended on the highly repetitive procedures observed in this dyad. Mealtime procedures in the focus dyad included preparing meals, feeding, chewing, swallowing, lifting glass, and giving something to drink, drinking and eating. These procedures and sub-activities were the basis for the content shared (cf. 6.1.1.1) and influenced how Maria and the caregiver organized their communicative contributions in relation to time. The mean number of contributions per minute of interaction sample length was larger in the focus dyad than in the comparison dyad, the focus dyad data included a smaller number of tokens than the comparison dyad data, and the mean number of tokens per contribution was lower in the focus dyad than in the comparison dyad.

In the focus dyad, activity management centered around two main goals. One goal was related to pursuit of feeding, eating and drinking. This goal, in turn, depended on Maria's and the caregiver's ability to achieve sufficient understanding within the activity. Thus, the explicit co-construction of meaning in relation to mealtime issues became another major activity goal. None of these goals seemed to be achieved successfully independently of the other and the function of the activity as an interpretative framework was pronounced (cf. Goodwin, 1995). The focus dyad's restrictions and goals at mealtime, and the fact that communication was unaided, caused a situation where changes of contributions had a significant value within the immediate process; there was successful cooperation between Maria and the caregiver in this respect. The focus dyad's mealtimes were not compatible with long pauses within contributions and waiting during eating and drinking stimulated communication. In the focus dyad, mealtime procedures also increased the chance for

simultaneous communication. Overlaps, however, were not indicative of limitations in conversational symmetry between Maria and the caregiver but rather were indicative of interactive efficiency within the dyad.

The comparison dyad's pattern of interaction, with more pauses and fewer overlaps, reflected the less distinct activity demands posed on the comparison child and caregiver at mealtime. The comparison child and caregiver functioned independently, were less dependent on explicit feedback and interpretation of the speaking partner's communication and were therefore less dependent on changes in contributions in order to fulfill practical mealtime goals. As shown in the preceding analysis, the independence experienced by the comparison child and caregiver also meant that they had communication goals at mealtime that did not to the same extent exist in the focus dyad. The comparison dyad did not primarily talk about activity management and their pattern of pauses in particular, reflected the fact that they talked about issues other than the ongoing activity.

The collective goal of the activity, the reason for sitting down at the table at all, was to eat a meal. In light of this goal, the way the focus dyad interacted enabled Maria and her caregiver to have control over activity performance. With regard to handling mealtime issues and to interaction management in relation to these issues, the focus dyad functioned well. Given their individual goals and restrictions, Maria and the caregiver were proficient in their unaided communication at mealtime. However, their interaction pattern also reflected a situation where behaviors, feedback and obligations necessary for reaching the basic goal of understanding were of main concern<sup>55</sup>. The focus caregiver used more words and had longer contributions than Maria had. Apart from this, the present analysis is not indicative of communicative violations and inequalities between Maria and her caregiver at mealtime.

### **6.1.3 Summary**

Activity-based communication analysis has been applied to a natural interactive context. A major finding is that, for the focus dyad, the mealtime activity does not have the value and function it typically has in the culture to which the focus dyad belongs. Mealtime seems to

---

<sup>55</sup> A previous analysis of degree of understanding in the present interactions (Ferm, 2001a) also showed that although there was insufficient understanding in the focus dyad, there was no evidence of true misunderstandings (cf. Allwood & Abelar, 1984) in the focus dyad data.

be a socially important activity, but it has functions different from those typical of mealtime interaction. The focus dyad entered the mealtime activity based on different conditions than the comparison dyad and the different possibilities of the dyads were reflected in their communication. The focus dyad's pattern of interaction mirrored the goals involved in the dyad's management of the mealtime activity. With regard to both practical and communicative goals, the focus dyad managed the mealtime activity efficiently. However, the content spheres developed between Maria and the caregiver, were extremely narrow. Within the sphere of the immediate, the focus dyad's natural pattern of interaction indicates achievement of communication goals relating to basic understanding in interaction, communication of needs and wants, and what Light (1988) called intimacy and social closeness. We have also seen that on Maria's initiative, the dyad did manage to converse a little about topics that concerned things other than handling the activity. However, the most outstanding feature of the interactions was that the conversations between Maria and her caregiver were too restricted in content. Use of an aided communication system with a focus on topic development and narratives beyond the mealtime activity, could have contributed to increased conversational variability. Enhanced opportunity for topical exploration and more advanced discourse functions are assumed to be of relevance to Maria's development in terms of cognition, language and social identity.

## **6.2 Referring to People in Different Activities**

### **6.2.1 Answering the research questions**

The first research question of this sub-study, which explored how two dyads of caregivers and children with and without disabilities referred to people in different social activities at home, concerned the extent to which the dyads referred to people. For both dyads, numbers of person references varied across activities. Chi-square tests revealed that for all activities except teeth brushing, person references were distributed differently than what was expected from the model. The comparison dyad referred to people more often than the focus dyad at mealtime, during drawing and story reading activities, and the focus dyad referred to people more often than the comparison dyad in the game activity. The comparison dyad had a larger number of person references than the focus dyad in the teeth brushing activity but this difference in numbers of person references between the dyads was not significant. The fact



that almost all person references in the focus dyad were made by the caregiver while only a small number of person references were made by Maria is also relevant to the issue of frequency. In contrast, the distribution of person references between the caregiver and the child in the comparison dyad was almost equal. In reality, the focus caregiver referred to people much more often than the caregiver in the comparison dyad did and the comparison child referred to people much more often than Maria did.

The second research question concerned type of person reference in the dyads. The results of the analysis can be summarized as follows. There were similarities between the dyads concerning which categories of person reference were the most common. Speaking partner was the most common category for both dyads and, because story reading was one of the activities studied, reference to fictive person was the second most common category of person reference for both dyads. The most interesting differences between the dyads were observed in relation to four categories of person reference: self + speaking partner, self, family, and other child. In the focus dyad and the comparison dyad, respectively, 13.5% and 3.14%, of all person references related to self + speaking partner; the inclusive *we* was much more common in the focus dyad than in the comparison dyad. Self was one of the three most common categories of person reference in all of the comparison dyad's activities; as much as 22.40% of the total number of person references in the comparison dyad were references to self, moreover, the comparison child referred to self more often than the caregiver did. Not only were references to self less common in the focus dyad (11.53%), most of the references to self in the focus dyad occurred in the game activity and in all instances except one, were made by the caregiver. Reference to family members was more common in the focus dyad than in the comparison dyad and interestingly, 52% of all person references made by Maria concerned close family members. Both the comparison child and caregiver referred to other children frequently. In fact, other child was one of the three most common categories of person reference for the comparison dyad at mealtime, during drawing and during the teeth brushing activity. Looking at the percent of person reference for each dyad and category, reference to other child was almost as common in the comparison dyad as reference to self + speaking partner was in the focus dyad. The focus dyad never referred to other children; I will elaborate on this important finding in Sections 6.2.2 and 6.2.3, relating the dyads' use of person reference in the different activities to their interaction goals. With regard to numbers of different categories of person reference used,

mealtime, drawing and teeth brushing activities all were more varied for the comparison dyad than for the focus dyad. There were also significant differences between Maria and the comparison child in terms of numbers of different categories of person reference used; the comparison child data was more varied.

The third question concerned the extent to which the dyads referred to present and non-present person. For both dyads, and in all activities except story reading, reference to present person was more common than reference to non-present person. In all activities, the comparison dyad referred to non-present person more often than the focus dyad did. The comparison child referred to non-present person more often than she referred to present person in story reading but also in the drawing activity, and Maria referred to non-present persons more often than she referred to present ones. The results of the analysis of reference to present and non-present person are relevant because they demonstrate that there were strong similarities between the dyads in some activities (i.e., mealtime, game and story reading) and considerable differences between the dyads in other activities namely, drawing and teeth brushing.

What, then, do these findings say about the focus dyad's conditions for interaction and use of language in daily activities? The results of the analysis of person reference become meaningful as we turn our attention to the goals, procedures and individual roles of the dyads in the various activities. Besides discussing the most prominent differences between the dyads, it is necessary to examine the smaller distinctions that exist within and between the dyads' interactions. In Section 6.2.2 below, I concentrate on the relationship between activities and the dyads' referring to people during interaction.

## **6.2.2 Relations between activity types and person reference**

### ***Mealtime***

The results of the current analysis both support and extend on the results of the preceding mealtime analyses. The large number of words used to refer to different people in the comparison dyad at mealtime, and the variety of different categories of person reference used, relate to the considerable variability of conversational topics for this dyad at mealtime. The relatively large numbers of references coded as cited and fictive in the comparison dyad relate to the different sub-activities performed by the comparison child (e.g., play with language) in this activity and add to the picture of this child's communicative independence

at mealtime. Note that mealtime, and game, comprised the largest numbers of different categories of person reference for the focus dyad as well. For example, the 3 references to personnel, and the only reference to speaking partner + other in the focus dyad occurred at mealtime. Further, almost half of the person references made by Maria, 5 of 11 references to family members and 4 of her 5 references to other adults, occurred at mealtime. Looking at who Maria referred to and in what discourse contexts these references occurred, we find that 4 family references were involved in topics that related to the uncle or to food (i.e., concerned the same person and the same issue and was tied to the situation in terms of focusing food) and that all of the other adult references related to the incident outside topic and, again, concerned the same person, the man who was driving the car (cf. Chapter 5; 5.1.2.3).

The finding that the focus dyad's mealtimes were less varied regarding person reference than the comparison dyad's meals is not surprising. However, it is discouraging to find that with respect to person reference, the focus dyad's mealtimes are more varied than are any of the focus dyad's interactions in other activities. This means that, despite the restrictions observed for the focus dyad at mealtime, this activity, more than any of the other activities examined in the study, allows Maria and the caregiver to talk about other persons and about issues other than those that concern themselves in relation to immediate activity goals (i.e., the fictive references in the story reading activity relate to imaginary persons). Considering the linguistic phenomenon of person reference there are similarities between the focus and comparison dyad's mealtime activities.

### ***Game***

For both dyads, games were structured activities with strict inherent turn-taking rules. This feature of the dyads' game activities implied that there would be a strict focus on the immediate in both dyads; communication concerned playing (cf. Ninio & Snow, 1996). In no other activity do we find the kind of concentration on present persons for both dyads, as in the game activity. There were also large similarities between the dyads in types of references made; words pointing to self and to speaking partner dominate (i.e., *I, my, mine*, and *you, your, yours* and *proper names*) as well as the inclusive *we*. The question then is how these words are used. A detailed examination of the game interactions showed that not only did the focus dyad have a significantly larger number of person references; existing

person references were used for partly different reasons in the focus dyad and in the comparison dyad.

In the game activity, and only in this activity, the focus dyad used the light pointer. The light pointer was used for goals relating to (a) the selection of cards (Maria), and (b) the understanding of what cards to turn for Maria (caregiver). The focus caregiver was responsible for the realization of Maria's moves. She encouraged Maria to participate in independent ways and Maria was successful in fulfilling the goals associated with her role as a player. However, verbal guidance on behalf of the caregiver was necessary for the game to be pursued and it is in relation to these communicative sub-activities that we find most of the focus dyad's person references. Person references used by the focus caregiver related to comments and questions about the state of the game: how things were going, who was responsible for the next move and so on. The following utterances exemplify such common uses of person reference in the focus dyad's game activity: "m ska *vi ta vi tar två högar vi blanda också*" (m shall *we we* take two piles *we* mix them also), "a *din lägger dina där*" (yes *your* put *yours* there), "a *du har fyra stycken jag har inte en enda...*" (yes *you* have four pairs *I* don't even have one...), "nej nära nu ska *jag nej du tog mina*" (no close now *I* shall no *you* took *mine*), "...*jaså ska jag vända nu ä de jag*" (...really shall *I* turn now is it *me*), "ska *du ha två men det blir så jättemånga vi kan väl ta en först*" (do *you* want two but that becomes so many couldn't *we* start with one). The caregiver commented the playing, talked for Maria, and verbalized Maria's body communication. The focus caregiver's obligations regarding the dyad's communication, and the dependence between Maria and herself, were reflected in the caregiver's use of the inclusive *we*; 13% of all person references in the focus dyad's game activity related to self + speaking partner. The corresponding amount for the comparison dyad in the game activity was 5% (cf. Chapter 5, Section 5.3.2.2; Table 5.8).

Although the game activity was restricted in communication in terms of focusing on playing, it is also true that the structure of the game activity, and the way the caregiver talked about the activity, stimulated verbal-vocal participation by Maria. For example, the reference to self by Maria and 2 of her 3 references to her speaking partner occurred in the game activity as the dyad was debating moves: (a) CA: "*vem ska börja*" (*who* shall start) - CH: "*ngaa*" (*jag; I*) - CA: "*ska du börja...*" (shall *you* start); (b) CA: "...*vem ska börja*" (*who* shall start) - CH: "*dy*" (*du; you*) - CA: "*jag tack så mycket...*" (*me* thanks), and; (c) CA: "*ska du ha den*" (shall *you* have that one) - CH: "*ng d*" (BC: looks at CA, *du; you*) -

CA: “jaha jag tar igen då” (okay *I* choose again then). Other person references made by the focus caregiver were strictly related to the actual management of the game, for example, “...tar *du* bort handen litegrann” (move *your* hand a little), and some were involved in concrete and almost urgent requests, for example, “svara *mig* då” (answer *me*). Many person references in the focus dyad related to the process of understanding and to activity management and, thus, to the pursuit of the game. Several of the person references occurred in utterances that concerned Maria’s use of the light pointer, thus constituting types of directives which never occurred in the comparison dyad: “så *maria* oj ser *du* hit” (so *maria* oops could *you* look here), “...å så får *du* peka med lampan i stället” (...and now *you* have to point with the lamp instead), “lys på den *du* vill ha...” (point at the one *you* want...), “högre upp lys sakta då *maria*” (higher up point slowly then *maria*), “a vänta så tar *vi* på dom här då först nej nej nej nej vänta lite så trycker *vi* igång en är den på” (yes wait *we* will put these on first no no no no no wait a little *we* turn it on is it on), “...så nu får *du* visa da...” (...so now *you* have to show...), “a var lyser *du* nånstans...” (yes where are *you* light pointing...), “...om *du* pekar ordentligt då så så fatta *jag* kanske där” (...if *you* point properly so so perhaps *I* can understand there), “peka nu på vicken *du* ska ha...” (now point at the one *you* want...), “...va de den *du* just peka på” (...was it that one *you* pointed at).

Person references in the comparison dyad also related to management of the game (i.e., to playing) and occurred in utterances that concerned the turn taking structure (i.e., who was going to make the next move). However, a considerable number of the comparison caregiver’s person references occurred in regulatory speech, in attentional and behavioral directives that were more for the purpose of upbringing than the directives in the focus dyad were (cf. behavioral directives at mealtime; 6.1.1.1). Important issues for the comparison caregiver were (a) to get the child to follow the rules (e.g., “nu fuskar inte *du*” (now *you* don’t cheat)), (b) to make sure the child was physically present (e.g., “sätt *dig* ner” (seat *yourself*), “sätt *dig* på stolen Jessica” (seat *yourself* on the chair *jessica*)), and (c) to make sure the child was attentive and concentrated on the task at hand (e.g., CA: “nu såg *du* inte vilken *jag* vände på” (now *you* didn’t see which one *I* turned) - CH: “nä men *jag* ser inte de” (no but *I* don’t see that) - CA: “nä för *du* tittar på andra saker” (no because *you* look at other things). The caregiver’s directives concerned the child’s actual playing as well as the child’s learning how to participate in the activity of playing a game; communication related to learning social skills. When she wanted to, the comparison child used language to guide

development of the game, for example: CH: “så nu börjar jag” (so now *I* start) - CA: “nu kan *du* börja” (now *you* can start). In this sense, the comparison child participated in playing on grounds similar to those of the caregiver. The different goals in the game interactions of the focus dyad and the comparison dyad were reflected in their use of person reference. Although both dyads mainly referred to present people in their game activities, reference to people related to different purposes. Finally, despite a large focus on the present situation in the comparison dyad as well, the comparison dyad also referred to other children during the game activity. These other child references related to a conversation that was carried out between the child and the caregiver at the same time as the child talked to her friend on the phone and at the same time as she continued to play the game.

### ***Drawing***

In most respects, the drawing activity was different for the dyads. The distribution of reference to present and non-present person was almost even for the comparison dyad in the drawing activity, which is different from what was seen in other activities for this dyad as well as being different from what was observed in the focus dyad's data. The difference between the comparison dyad and the focus dyad, in terms of degree of reference to present and non-present person, is larger in the drawing activity than in any other activity. This result is relevant because it indicates that drawing is an activity that serves very different purposes for the dyads. The discourse excerpts presented in Appendix E10 contain typical communication for the focus dyad and the comparison dyad in the drawing activity and illustrate the kind of differences that existed.

In the focus dyad, person reference mainly occurred in talk that related to the physical management of the activity; the setting up of the activity (e.g., to secure the paper on the table), the actual drawing (e.g., to decide what colors to use and to secure crayons in Maria's hand), and a little about the drawing as such. This finding is consistent with that of Marvin (1994) who reported that parents to children with disabilities did communicate with their children whilst the children drew. However, as shown in Appendix E8, most of the references made by the caregiver pointed to Maria and consisted of the second person pronoun *you*. In addition, all references to non-present person concerned the grandmother and grandfather and most of these, 10 of 11, occurred as Maria expressed that she wanted to give the drawing to her grandparents. The caregiver's references to family members were

interpretations and repetitions of Maria's word approximations and thus mainly related to the process of understanding. In interactions involving children with the kind of disabilities that Maria has, it becomes difficult for caregivers and children to perform different physical actions in parallel, to be in different places and communicate at the same time. Other than in relation to paper, crayons, colors, tape and the actual drawing, communication was not a primary goal for the focus dyad in the drawing activity.

The comparison child and caregiver functioned independently during drawing and used the drawing activity as an opportunity to communicate about a variety of issues. There were 120 references to non-present people in the comparison dyad's drawing activity and all categories of person reference except third present person were represented. References to other children, self, self + speaking partner and personnel, as well as unspecific references and the exclusive *vi* (*we*) and *ni* (*you*) all related to detailed conversations about school (e.g., thoughts about the looks and personalities of teachers and the behaviors of friends), about what had happened in the morning and about what was going to happen in the afternoon (cf. Aukrust, 2002). For example, CA: "ha *ni* inte haft *olle* i da då" (did *you* not have *olle* today then) - CH: "nä" (no) - CA: "mä *han* ä väl bra" (but isn't *he* good) - CH: "a" (yes) - CA: "ä *han* snäll" (is *he* kind) - CH: "m" (m), and: CA: "vem va *du* me på rasten" (*who* were *you* with in the break) - CH: "*malin*" (*malin*) - CA: "inte *margareta*" (not *margareta*) - CH: "nä *hon* ä ju allri mä *mej*" (no *she* never plays with *me*). In the drawing activity (and at mealtime), the comparison caregiver often elicited talk and stories from the child by means of using questions, which often included references to people. The large number of fictive person references in the drawing activity reflected the fact that the comparison child also used the drawing activity as an opportunity to tell tales, to talk about songs and to discuss her drawing with the caregiver. The way the comparison dyad, but not the focus dyad, moved beyond the immediate situation while they communicated in the drawing activity, and referred to both real and imaginary persons, indicates that drawing is an activity type in which the possibilities for communication differ widely between the dyads. The drawing activity stimulates communication for the comparison dyad and restricts communication for the focus dyad.

### *Teeth brushing*

In the teeth brushing activity, reference to present person was the most common type of person reference for both dyads. However, despite the physical goals of the activity and despite the fact that teeth brushing was a short activity in terms of interaction length, the results of the interaction analysis of person reference indicate that in this activity too, the comparison dyad, but not the focus dyad, conversed about issues other than those that concerned immediate body related goals. In the comparison dyad's teeth brushing activity, there were 8 references to other children. All of these references, and 2 references to self and speaking partner, occurred in a conversation about how another child behaves towards the comparison child, where that child lived, to what family the child belonged and how the comparison child should handle the situation. The comparison dyad also talked about the child's going to a farm (involving 1 reference to speaking partner), about the child not wanting to go to bed (involving 2 references to self and 2 references to self and speaking partner) and about a fly creeping on the child's arm (involving 1 reference to self). This means that 18 person references, including references to present person, occurred in topics which were fairly unrelated to the collective and physical goal of brushing the child's teeth.

The difference in interaction length between the dyads reflected that teeth brushing was physically more demanding for the focus dyad than for the comparison dyad. All person references made by the focus dyad in the teeth brushing activity related to the child and the caregiver. A closer analysis showed that only 3 of these references related to aspects other than activity management; Maria said something and, interestingly, the caregiver commented on Maria's pronunciation as follows: "...nu sa *du* de så som *vi* ville att *du* skulle säga förut" (now *you* said it the way *we* wanted *you* to say it before). Besides demonstrating that Maria tries to communicate by means of using spoken words, the caregiver's utterance indicates that Maria's language is an important issue for the dyad, and that there is room for comment on language behavior in physically demanding activities as well. Nevertheless, a comparison of the dyads' interactions shows that Maria and her caregiver are disadvantaged regarding communication during the teeth brushing activity as well; using natural communication modes only, the dyad communicated about themselves in relation to the immediate interaction situation.



### *Story reading*

For both the focus dyad and the comparison dyad, the story reading activity seemed to provide important situations for intimacy. This was also the activity where the focus dyad spent some time talking about Maria's mother (cf. Appendix E8).

The distribution of different types of person references was similar between the dyads in the story reading activity. However, there were other qualitative differences between the dyads in this activity. The most significant differences related to the ways the activities were performed, to the total time spent in the activity and to the types of person references used. Relevant findings with regard to activity management were that the comparison dyad spent more time in the story reading activity than the focus dyad and that the comparison child and caregiver took turns in reading. The focus caregiver did all the reading in the focus dyad. Since the comparison child read, the child and the caregiver contributed with an equal number of person references. The comparison dyad talked about whose turn it was to read, where in the text to read, how many words to read, how to pronounce words, and what the meanings were of specific words. The comparison child is in the beginning of reading development and reading is not an easy task for her. The way the dyad chose to carry out the activity brought about considerable demands for the child. In fact, the way the comparison child and caregiver needed to verbalize activity management during story reading resembled the communication of the focus dyad in the game activity. The comparison dyad's goals during story reading were reflected in their use of person reference, for example; CA: "nu får *du* börja" (now *you* should start); CA: "fortsätt nu där är *du*" (now continue *you* are there); CA: "nu är de *du* /// här" (now it is *you* /// here); CH: "var ä *jag*" (where am *I*); CA: "*vi* tar vartannat ord" (*we* take every second word); CH: "nä *du* få säga där" (no *you* should say there); CH: "...sakerna sakerna natt natt sa *jag* där" (the things the things night night *I* said there), and; CH: "pöjan sa *jag*" (pöjan *I* said).

It is not the words used that makes a difference between the dyads in the story reading activity but rather the fact that the comparison child participates in producing fictive references. The reading style adopted by the focus caregiver left little room for communication about pictures and story content was not discussed. This can be taken to mean that the caregiver adjusted her reading to Maria's receptive language capabilities. However, the style adopted also led to highly asymmetrical interactions in the focus dyad's readings, a result that is in line with previous analyses of story reading between caregivers

and children with disabilities (e.g., Light et al., 1994). In most respects, Maria assumed the role of a receiver. The comparison child, on the contrary, acted both as a producer and as a receiver and, apart from reading and listening, took part in negotiating the structure of the activity; she contributed with ideas on procedures, reflected on her own reading of words, asked the caregiver about words and received explanations on pronunciations and word meanings. Hence, the language the comparison child experiences in the story reading activity is different from the language that Maria experiences during this activity.

### **6.2.3 Person reference in the focus dyad**

In this section, some specific phenomena of the focus dyad's interactions are brought to the fore and placed into the larger context of Maria's life. In discussing existing person references, and references that not were made by Maria, it is important to remember that what has been studied in the first place is who Maria can refer to by means of using natural communication modes. We do not know why Maria refers to certain people but not to others. However, based on the present analyses, we can speculate about what is behind the situation observed. We do not know who the focus dyad would have referred to had they used the Bliss-board or any other communication aid. What we do know from the present data, though, is how a child who uses conventional speech refers to people as she performs different types of activities together with a caregiver at home.

Reference to one's self and speaking partner using vocal language is a language skill acquired early that is relevant to a child's development of self and social identity. Provided that there is some kind of response, reference to self and to others, and reference to self in relation to others, is a way for the child to learn about others and to understand and structure herself (e.g., Ochs & Capps, 1996). Being able to refer to one's self is relevant to existing as well and future relations. Supposedly, the functions that person reference served for the comparison child would have been relevant to Maria as well. The finding that reference to self was the most common type of person reference for the comparison child is in line with the results reported of by Marvin et al. (1994b). The present comparison child referred to herself in varied ways and reference to self occurred in all activity types that were examined. Self was referred to in relation to past, present and future time. References concerned the child's wants and needs in relation to the activity and in relation to other issues. The comparison child referred to self with respect to what she possessed and felt,

thought and experienced in relation to things, activities and other people. These findings make the considerable lack of reference to self by Maria noteworthy. The only reference by Maria that was possible to identify as reference to self occurred in response to a question posed by the caregiver about whose turn it was in the game.

Why then does Maria not make references to self? Ninio and Snow (1996) discussed the fact that some of the first vocal expressions by young children are used to convey intents that are not possible to convey without spoken words. For example, Ninio and Snow (1996) argued,

how can one make a claim with points, eye movements, or facial expressions? ... A preverbal child can act out a pretend role, for example, play mommy by mimicking the actions of getting dressed and leaving for work, but cannot announce or declare that she is playing mommy without language. (p. 50)

Similarly, although possible (cf. Brekke & von Tetzchner, 2003), it is indeed difficult for a child like Maria to make unaided references to self. Maria is in the hands of the caregiver and reference to self in particular contradicts with the way the dyad communicates. As long as Maria does not produce words that are close to conventional words in pronunciation and as long as she does not point at herself physically (a type of gesture that Maria does not use) it is almost impossible for Maria to refer to herself. In order for the caregiver to understand what Maria is aiming at, it is important for her to use shared background knowledge together with various other factors. In order for Maria to manage to refer to herself by means of word approximations and body communication, her references would have to be done within a well-defined and comprehensive contextual frame. The caregiver, in turn, must want to, and be able to, make use of this context. For the caregiver to interpret Maria's communication as reference to self there must be a clear connection to the context of discourse; the reference must be relevant in relation to the structure and goals of the activity (cf. Maria's reference to self in the game activity, which also had a clear pronunciation). Further, from a deictical point of view it is supposedly very unnatural for a person to take the position of the speaking partner and, in unaided communication, use the word *I* in order to help the speaking partner to refer to self<sup>56</sup>. Moreover, even if Maria had referred to herself in the present interactions, she would not have had the means with which to develop the topic. In this sense, self-reference may not be very motivating for Maria, or for any other

---

<sup>56</sup> However, speaking partners do this when communicating with persons who use graphic signs.

child in a position resembling Maria's. An additional finding concerning reference to self in the focus dyad is that almost all of the caregiver's references to self occurred in the game activity and, hence, related to activity management. The fact that the caregiver mainly refers to herself in relation to what she is doing at the moment of interaction and rarely in relation to her other experiences further restricts the focus dyad's communication and the kind of input Maria receives in daily activities at home.

There is a total lack of reference to other children in the focus dyad. Reference to other children is common for both the comparison child and caregiver. In some of the comparison dyad's interactions, talk about other children almost come out as own sub-activities (cf. Aukrust, 2002). From the interviews and the logbook, we know that Maria has friends at school. Thus, we cannot treat this finding as merely reflecting a narrow social network on Maria's behalf. Instead, it is reasonable to believe that Maria has needs similar to that of the comparison child, to talk about other children. At mealtime, Maria is successful in the way she introduces conversational topics through eye gaze and other body communication in relation to objects and events in the immediate environment. To point to people, another child in particular, is different. Unless present in the situation it is difficult for Maria to refer to a specific child. Hypothetically, she could refer to a non-present child by first referring to an object or something else that is concrete and close at hand, which in some way connects to the person she has in mind, and which also is possible for the caregiver to understand. However, for both parties, this would be a circumstantial process to go through. Further, as pointed out previously, even if another child was referred to, the dyad would have had few means to develop the conversation.

Does referring to family members serve similar functions to Maria and her caregiver as referring to other children does for the comparison dyad? Most of Maria's non-present person references relate to members of the family and to another adult. As pointed out previously, the other adult references related to the same person and occurred in one interaction sequence in one activity sample. Maria's reference to relatives reflects that these people are important to her and that sufficient background knowledge exists between her and the caregiver for such reference to be successful. It seems that the caregiver knew when it was likely that Maria referred to non-present family members and, therefore, understood and interpreted Maria's talk about family members in a straightforward manner. This, in turn, indicates that Maria's reference to people, as much other communication by Maria,

may be governed partly by what prior knowledge tells her is manageable so that she only refers to persons that she knows that the caregiver will be able to interpret and understand; she talks about that which she knows it is possible for her to talk about. This, and the fact that fulfillment of practical activity goals are of primary concern in the focus dyad's interactions, contribute to conversations being restricted in content. Over time, similarly restricted conversations may have a negative impact on Maria's chances for development and for her and the caregiver's perceptions of themselves and of each other.

#### **6.2.4 Summary**

There were similarities between the focus dyad and the comparison dyad concerning their use of person reference in each activity type. For example, the story reading activity included large numbers of references to fictive people, the teeth brushing activity was short in terms of interaction length and included few person references, and the game activity was steered by the course of the game, therefore, including many references to people who were present. These findings suggest that the collective goal of the activity is a major factor influencing language use and considering the present results, person reference in interaction. Other results reveal that individual factors such as body functions, goals and roles of participants have great influence on communication and specifically on person reference, as demonstrated in this analysis. For example, even if there were similarities between the dyads with respect to a specific aspect of person reference (e.g., numbers or categories of person reference used); there were often large differences between the dyads in terms of how person references were used. Typical examples were the game, teeth brushing and story reading activities, where references to people who were present related to different interaction goals in the dyads. The influence of individual factors on communication was more evident in some activities than in others. For example, through the study of person reference, we have seen that the dyads had completely different possibilities and communication goals in the drawing activity. The results of this sub-study are indicative of considerable communicative independence for the present comparison child at home. In the support of children who use AAC, it is important not to underestimate the fact that a child without disabilities who uses conventional speech can take any opportunity, independent of activity, to talk about whatever comes to her mind.

## **6.3 Content and Goals in Naturalistic Communication with Blissymbolics**

### **6.3.1 Answering the research questions**

Four questions were examined in this sub-study. The first question concerned the situational characteristics of the Bliss-board interactions and how the use of the Bliss-board was integrated with the activities. A major difference between the two situations of Bliss-board use concerned the way communication with the Bliss-board was related to the performance of the activity. At mealtime, the Bliss-board was present during the entire activity and its use was well integrated with different procedures and goals. However, the activity was not a typical meal and contained few factors that had the potential to influence communication negatively. In the game sample, there were no links between the dyad's use of the Bliss-board and the activity the dyad was about to carry out. Communication with Bliss-words preceded playing of the game, but was not part of it. Similarities between the two instances of Bliss-board use were that both situations included few demands other than those that related to communication; existing physical goals never surpassed goals of communication. Bliss-board communication came out as an activity type in its own right, an activity with communication as a main goal including different individual goals, sub-activities and sub-goals (Allwood, 2000; Levinson, 1979). With regard to the actual use of the board, there were large similarities between the two situations. Tilde and the caregiver were skilful in handling Tilde's physical and communicative restrictions and the demands posed on interaction by the use of the Bliss-board and the light pointer. An important observation was that while Tilde mostly focused the Bliss-board (i.e., more than she focused the caregiver), the caregiver continuously shifted her attention between Tilde's face and the board. As it seemed, different individual goals were behind these strategies and both strategies were necessary for the total interaction outcome. Tilde needed to concentrate on planning her own communication, including the selection of Bliss-words, and perhaps also saved certain facial and larger body gestures for moments when she really needed them (e.g., to express content and discontent). The caregiver needed to observe and interpret Tilde's choices of Bliss-words on the board but also needed to look at Tilde's face in order to understand how to proceed with interaction. The caregiver provided lots of feedback to Tilde, feedback that sometimes, but not always, was obligative in terms of requiring some kind of response.

When needed, the caregiver also demanded feedback from Tilde in explicit ways and ensured that she received the feedback that she needed (e.g., looked at Tilde and asked more questions, the use and function of which is discussed further below). The various kinds of feedback within the dyad during Bliss-board interactions were a means to enhance understanding and to avoid and resolve insufficient understanding. The caregiver's great responsibilities in these issues and the doubts she seemed to have sometimes concerning communication were reflected in her language. At times, she even questioned some fundamentals for communication namely; contact, perception and understanding (cf. Allwood et al., 1993).

The second research question concerned what the Bliss-board interactions were about. Relevant findings were that use of Bliss-words related to communication on specific themes and that when the Bliss-board was present it was used for certain goals but not for others. In the two situations, the Bliss-board was available for use for a total time of 15 minutes and 40 seconds. For as much as 10 minutes and 7 seconds, Tilde and the caregiver used Bliss-words to talk about actions and events of past and future time, moods and feelings, and body related issues. By means of using Bliss-words Tilde also was able to express dissatisfaction as well as her wish for something to happen (Tilde expressed that she wanted an ice cream at a time when the dyad was about to play a game). Further, the interaction analysis showed that the dyad used the Bliss-board to talk about concepts and word meanings, and their relations to real objects in the world. Communication that related to immediate practical issues and needs of the situation (e.g., "I want more ice cream now") usually did not involve Bliss-words but was managed by means of Tilde's vocalizations and body movements, and spoken words by the caregiver. The instance where the caregiver encouraged Tilde to use Bliss-words to express that she wanted something to drink was an exception<sup>57</sup> that also included talk about language. The finding that certain communicative functions are expressed through word approximations, vocalizations and non-vocal body communication rather than through a communication aid concurs with existing findings concerning adults and children's use of aided communication systems (e.g., Culp, 1982; Falkman et al., 2002; Harris, 1982; Light et al., 1985c; Pennington & McConachie, 1999; Smith, 1994).

---

<sup>57</sup> Tilde's own choice of mode for expressing immediate needs and wants was vocalizations, eye gaze and facial expressions.

The third research question was whether the type of content that was shared between Tilde and the caregiver when they used Bliss-words also occurred in the focus dyads' unaided interactions and in the comparison dyads' interactions. Three of the four areas that comprised the content of Bliss-word episodes, communication about past and future actions and events and communication relating to world and language also occurred in other interactions. The type of content examined most often occurred at mealtimes, in drawing activities, and during story reading interactions. Overall, each area of content was talked about more often in the comparison dyads' interactions than in the focus dyads' unaided interactions. Hence, considering the degree to which communication on different themes occurred there were similarities between the focus dyads on the one hand, and between the comparison dyads on the other hand. This difference between focus dyads and comparison dyads is in line with the results of the preceding sub-studies of the thesis and suggests that unaided interactions between a caregiver and a child with severe disabilities allows for understanding but these are in relation to very restricted spheres of content. However, there also were differences between each of the two focus dyads and between each of the two comparison dyads. For example, altogether, Tilde and her caregiver had a larger number of episodes focusing on the themes examined than did focus dyad 1. Presumably, differences between the two focus dyads, and between the two comparison dyads, relate to individual factors of participants and to variations in procedures and objects used in each specific activity (e.g., type of book and reading style).

The considerable lack of episodes that concerned the mind and the body, in all interactions except those that involved Bliss-words is an unexpected and interesting finding. Apart from a short episode in a comparison dyad sample, episodes on this theme were specific to the Bliss-board communication between Tilde and her caregiver. The comparison children were independent with regard to body behaviors and communication and therefore expressed feelings in ways that were more obvious and easier for caregivers to understand, than the focus children's behaviors may have been for the focus caregivers. Using conventional speech, the comparison children expressed themselves and their state of mind spontaneously, what they wanted or did not want. These expressions were statements of facts that did not need to be considered further and were therefore not developed into episodes. That is, the comparison dyads did not need to communicate about the children's feelings. In the focus dyads' unaided interactions, caregivers, based on their own



assumptions, made comments about the focus children's feelings and experiences, comments that related to what the caregivers observed in their children at the very moment of interaction. Because the focus dyads were restricted regarding the means they had available for communication, these kinds of comments by focus caregivers were often only approved or rejected by the children and, hence, were not developed into episodes. When communication was unaided, the focus dyads did not talk about the children's feelings, contents and discontents (cf. Chapter 5; Ex. 5.17). Interestingly, when a communication aid was present such issues were worth considering. When the Bliss-board was there, the caregiver had and took the opportunity to ask Tilde how she felt. Tilde, in turn, was given and took the opportunity to express how she felt and to explain why she felt the way she did; she wanted something that she did not have. Episodes about emotions and mood seem to have occurred because there was a need to talk about such issues and because such communication was possible when the dyad had access to a communication aid. Considering the study data as a whole and the types of analyses that have been done, the way Tilde expressed herself and her own identity in the lengthy Bliss-word episode that related to her mood stood out as unique.

The fourth research question was largely qualitative in nature. Strategies that occurred in Bliss-word episodes were compared to strategies of interactions that did not involve Bliss-words. The discussion focuses on three issues: (a) the initiation and development of episodes, (b) the relationship between episode initiation and development, and contextual resources and (c) the use of questions in the different interactions. In the Bliss-board interactions and in the unaided interactions, the caregiver mostly initiated episodes in focus dyad 2. Maria, the child in focus dyad 1, initiated episodes more often than Tilde did (Tilde rarely initiated episodes). When Tilde and Maria initiated episodes, they did so by means of using body communication, vocalizations and word approximations (cf. Falkman et al., 2002; Light et al., 1985c; Pennington & McConachie, 1999; Smith, 1994). In the interactions, such initiations by the focus children aimed at getting the caregivers' attention. After episodes had been initiated, children and caregivers collaborated in figuring out and determining what the children were aiming at; the meaning negotiation process was started (cf. Brekke & von Tetzchner, 2003; Collins, 1996; Smith, 2003; von Tetzchner & Martinsen, 1996). The way the focus children initiated episodes contrasted sharply with the way the comparison children initiated episodes. Episode initiations by the comparison

children were common and were based on questions and statements with obvious meanings, which affected the content of the continued conversation immediately. The comparison caregivers' interests were not in figuring out what their children meant but, from the beginning, concerned what was actually said. As a result, communication proceeded according to the goals of the children. In addition, the comparison children could always change the direction of conversation similarly to the way they initiated conversation. Such changes, in turn, were easy for caregivers to understand and follow. Hence, a major difference between the focus dyads' unaided interactions and the comparison dyads' interactions concerned how episodes were initiated and how episode initiation and change influenced the subsequent communication. Although the focus caregiver initiated the Bliss-word episodes and in this sense was responsible for determining what the dyad should talk about, the findings of this sub-study suggest that when the Bliss-board was used, it was easier for Tilde to follow and to choose to not follow the caregiver's line than it was when communication was unaided.

The relationship between different contextual resources and episode initiation and development differed between the dyads. Overall, with regard to both initiation and development of episodes, Bliss-word episodes on different themes were more removed from the situation than were similar episodes in the focus dyads' unaided interactions. The Bliss-word episodes concerning Tilde's mood, and world and language episodes, were invoked by perceptually present objects and needs of the situation but as communication advanced, were more abstract and involved more participation on behalf of Tilde than did the dyad's unaided episodes on such themes (i.e., to the extent that such episodes at all existed when communication was unaided). In focus dyad 1, all episodes were invoked by issues in the immediate situation and in their development, continued to depend on objects and facts of the situation. In one mealtime sample, focus dyad 2 did communicate about Tilde's day by unaided means. However, considering the content of this conversational exchange, and the way Tilde contributed to the discourse, the episode was more restricted in content and child participation than was the episode in which the dyad used Bliss-words to communicate about past actions and events. Some of the comparison dyads' episode initiations related to facts, objects and events of the interaction situation. However, initiation of episodes in the comparison dyads, in all areas, and in more obvious ways than in the focus dyads, was also invoked by preceding topics of the present or prior interactions or, was the result of other

common background knowledge between children and caregivers. Thus, the comparison dyads' episodes were tied less to what was perceptually observable in the interactions than the focus dyads' episodes. The general impression is that episodes in the comparison dyads were more varied in content and more removed from the situation and the concrete, than any of the focus dyads' episodes were.

Future time episodes, in particular, differed between the dyads. All future time episodes in the focus dyads' unaided interactions were initiated with respect to objects of the activity and situation (e.g., book or television), or related to agenda-bound knowledge concerning what was going to happen after the ongoing activity. To the degree that episodes were developed, they continued to relate to the immediate future time and environment (e.g., soon we are going to bed) or they concerned an imaginary future (i.e., in the story reading activity). In this sense, the future time episodes in the focus dyads' unaided interactions were different from the Bliss-word episode in which Tilde and the caregiver talked about the next day's activities, and from the future time episodes in the comparison dyads, which were not tied to the situation and the immediate future to the same extent.

The numbers and types of questions asked, as well as the possibilities and rights to ask and answer questions, differed drastically between the focus dyads and the comparison dyads. The issue of speaking partner questions has received much attention in the literature on AAC (e.g., Basil, 1992; Björck-Åkesson, 1992; Colquhoun, 1982; Culp, 1982; Harris, 1982; Light et al., 1985b, Pennington & McConachie, 1999; Smith, 1994; Smith, 2003; von Tetzchner & Martinsen, 1996; Waller & O'Mara, 2003). Given the amount of data in this study, 18 samples of interactions between children with disabilities and their caregivers in natural contexts, the extent to which questions functioned differently within focus dyads and comparison dyads was remarkable<sup>58</sup>. In the focus dyads' interactions, direct and indirect questions seemed to be indispensable for caregivers to understand their children and the ongoing interaction. At times, the focus caregivers asked so many questions that the children were continuously in responding positions (cf. Harris, 1982). Questions were often repetitions, reformulations and interpretations of the children's preceding contributions and,

---

<sup>58</sup> An informal investigation of questions in the mealtime interactions of Maria (Ferm, 2001b), showed that the first (FD1a) and the second sample (FD1b), respectively, included 72 and 71 caregiver questions (i.e., in approximately 20 minutes of interaction). Sixty-six and 50 of these questions in FD1a and FD1b, respectively, concerned ongoing activity issues (i.e., to manage the meal).

as it seemed, were not always meant to be answered but served other interactive functions, for example, checking how the child understood and the caregiver's own understanding and, from a more general perspective, to make conversation cohere and proceed. Further, as was the case in the interactions reported by von Tetzchner and Martinsen (1996), Tilde's caregiver sometimes may have asked questions just to test Tilde's knowledge and memory.

Conversations between adults and children with severe speech and physical impairments often focus on what is known. Caregivers often ask questions to which they already have the answers and which require minimal responses from children (e.g., Basil, 1992; von Tetzchner and Martinsen, 1996). This is so because reference construction may be difficult and time consuming, both when communication is unaided and when a communication aid such as the Bliss-board is used (cf. Collins, 1996). Shared background knowledge makes communication easier (cf. Keenan & Schieffelin, 1976) and is sometimes a prerequisite to making conversation work at all. However, apart from making communication boring and affecting a child's general interest in communication (cf. McCabe & Peterson, 1991) such content and question-answer strategies also restrict the child's chances for experiencing new words and concepts, limit the child's worldview and risk affecting her development in language and cognition and social identity. The present study findings show that with regard to questions, communication with Bliss-words makes a difference. The questions that occurred in the Bliss-word episodes were partly different from the questions that occurred in the focus dyads' unaided interactions. The initial questions of Bliss-word episodes, and questions that related to shifts in topics within episodes, were requests for information that were often open to different kinds of answers. The many questions that followed, when Tilde was supposed to contribute, functioned as means for getting Tilde started and helping her continue, resulting in lengthy contributions on behalf of the caregiver<sup>59</sup>. These questions often concerned whether or not Tilde had understood what the caregiver had said, whether she knew what and how to answer, and if the caregiver needed to do something more to facilitate for Tilde and, in turn, also for herself. In other words, there were questions in the Bliss-word episodes that required minimal responses from Tilde and to which the caregiver already had the answers. Nevertheless, initial questions in Bliss-word episodes were not guided to the same degree by

---

<sup>59</sup> The caregiver's contributions were longer when the dyad used the Bliss-board than when the dyad used unaided communication only.

what was already common knowledge and were more open to different answers than were questions in the focus dyads' unaided interactions.

The most relevant observation regarding questions in the present analyses was that the caregivers asked all of the questions in the focus dyads. Tilde and Maria were respondents to questions and seldom had the possibility to ask questions themselves. This kind of uneven distribution of who asked and answered questions between the focus children and their caregivers was not seen in the comparison dyads. The fact that both the comparison children and their caregivers asked questions, and provided each other with answers contributed to the content of their episodes in important ways (e.g., number of different types of words used) and to the different communicative sub-activities performed by the comparison children and their caregivers. For example, the considerable difference between the focus dyads and the comparison dyads concerning the content of world and language episodes partly reflects differences in use and functions of questions. The ways the comparison children and caregivers asked questions about things they did not know, and received descriptions and explanations from each other, resulted in episodes that, to a much larger degree and in more abstract ways than in the focus dyads, contained world knowledge components (cf. Perlmann, 1984).

### **6.3.2 Achievements in Bliss-board communication**

Tilde's language in the Bliss-word episodes is different from all other uses of language by Tilde and Maria in the study. When the Bliss-board was used, Tilde had access to words which had a conventional meaning. Even if these words needed to go through the eyes, mind and mouth of an interpreter and translator, they were easier to make use of in communication than word approximations, vocalizations and non-vocal body communication were. As it seemed, the types of words and word meanings used by Tilde in the Bliss-word episodes were not used by Tilde elsewhere in the present interactions<sup>60</sup>.

Using Bliss-words, Tilde talked for herself and about herself, about what she had done and was going to do, as well as about what she wanted and how she felt. Although the caregiver largely governed topics of Bliss-word episodes, we have also seen that when the

---

<sup>60</sup> The Bliss-words selected by Tilde are also different from the word meanings that were possible to identify in the vocal output of Maria at mealtime in the sense that the meanings produced by Maria mainly related to the practical goals at hand (cf. Chapter 5; 5.1.2.2 and Appendices D1 & D2).

Bliss-board was present, Tilde did participate in topic decision and episode development. In addition, when Tilde and the caregiver used Bliss-words they introduced, communicated about, and followed up issues, which in the focus dyads' unaided interactions either, were not communicated about at all or, were abandoned. We have also seen that, in terms of content, communication with Bliss-words was more removed from the situation of interaction than the focus dyads' unaided communication was. When they communicated with Bliss-words, Tilde and her caregiver interacted in ways that were different from how they interacted when Bliss-words not were used, and in ways that were different from how Maria and her caregiver communicated.

When the dyad used the Bliss-board, Tilde had other possibilities and rights than when communication was unaided and her role was different. The personal and social goals that Tilde had the chance to achieve in the Bliss-word interactions related to information sharing, expression of wishes and social closeness. Goals relating to information sharing in particular were not achieved to the same degree when communication was unaided. When Tilde had the possibility to achieve these goals the dyad's communication supposedly became more difficult but also more rewarding.

### **6.3.3 Summary**

The Bliss-board communication that occurred between Tilde and her caregiver, and the unaided communication of both focus dyads, was considerably more restricted in terms of content and strategies, than the comparison dyads' communication. In fact, the focus dyads' communication was nowhere near the type of communication on the same themes that occurred in the comparison dyads' interactions. Considering factors such as type and degree of child involvement, dependence on shared background knowledge in interaction, and the chance for new and unknown content to be introduced to the discourse, however, there were larger similarities between the Bliss-board communication in FD2 and the comparison dyads' communication, than between the Bliss-board communication in FD2 and the focus dyads' unaided interactions. When the Bliss-board was used, various areas of content were communicated about in ways that differed from how the same areas were communicated about when the focus dyads communicated by unaided means. When a child like Tilde uses Bliss-words, she can steer communication and achieve goals different from those that she is able to achieve with natural communication modes. The present analysis has also shown

how communication with a low technological graphic sign system like the Bliss-board brings about different demands and, therefore, suggests that Bliss-board communication is as an activity that best is carried out when goals other than communication are not too complex. This issue is treated along with some other ones in Section 6.4 below where study findings are discussed from the point of view of clinical practices in the field of AAC.

## **6.4 Clinical Implications**

Clinical implications are discussed in light of the fact that the study included few participants and only one type of speaker constellation, a child (girl) and a caregiver (woman). Furthermore, the suggestions below concern young school age children who resemble Tilde and Maria, whose cognition and receptive language largely exceed abilities in spoken language, who cannot move independently to interact with other persons, and who cannot manipulate and use objects by themselves.

The clinical impressions of the analyses of conversational topics and patterns of interaction at mealtime are considered with respect to the following factors: (a) Interaction patterns vary depending on individual factors and speaking partners in ways that may not have been detected in the present analyses. (b) There is individual variation in children's topic manipulation skills (Brinton & Fujiki, 1984). (c) Mealtime conversations vary with individuals, number of participants, social class and culture (Pan et al., 2000). (d) Neither children with disabilities and their caregivers nor typical children and their caregivers represent homogeneous groups. Although the two mealtime studies comprised only two dyads, focused one activity type, and analysis of only four interaction samples, the results do point to some clinical implications. Further, the findings become relevant if we consider, first, that mealtime is a frequent activity that takes place with a significant person and in this sense meets important requirements for development of language and communication and, second, that Maria needs help in a variety of daily activities, which also may tend to exclude aided communication. The first clinical implication relates to the fact that limited use of aided communication systems in daily living appears to be common (e.g., Light, 1997; von Tetzchner et al., 1996). With regard to the mealtime interactions examined in these sub-studies, a question as to the direction of causality also arises: Was communication in the focus dyad unaided because of the significant level of activity demands or did the dyad

concentrate on mealtime issues because the lack of aided communication restricted what else could be talked about? A combination of these explanations is plausible. Moreover, habits and implicit agreements between Maria and her caregiver were also important factors that could have influenced the choice of communication mode at mealtime. It is easy to understand why the present focus dyad did not use the Bliss-board at mealtime. Yet, the combined results of the analyses of conversational topics and patterns of interaction indicate that there is a potential danger in accepting unaided communication based on observations such as, "conversations seem to function satisfactorily", a child and a caregiver seem to, "understand each other well," "manage the activity" and "have a nice time together." A rational ingredient of any communication is to talk about that which is possible. What really needs to be considered in interactions involving children with disabilities is how well fundamentals of communication such as efficiency and rationality are congruent with the personal and developmental needs of a child like Maria.

The focus dyad's interaction was greatly influenced by activity management, moreover, the dyad's topic pattern was similar to that observed between adults and much younger children (e.g., Foster, 1986; Keenan & Schieffelin, 1976; Ninio & Snow, 1996; Wanska & Bedrosian, 1986), which was qualitatively well below what was appropriate for Maria. Maria's attempts to guide the conversation outward indicate that she experienced conversational needs other than those that were fulfilled. Interestingly, she approached the mealtime activity in a typical way: as an opportunity to communicate and share ideas about issues other than those relating to immediate mealtime activity goals, thereby indicating that she experienced needs that could not be met satisfactorily by means of unaided communication alone. From a physical and perceptual perspective, Maria's communicative range at mealtime was restricted to what was in front and to the sides of her. Assuming that representation of the world through language is necessary for development, the restricted physical abilities and communication observed in the focus dyad suggest a need for more independent communication possibilities. Above all, Maria's cognitive capabilities and receptive language skills were judged to be age appropriate. This, in combination with her interest in communication suggests that even at mealtime there is a need for variability in the means by which Maria can exchange information about herself and her experiences in relation to different times and persons. That is, there are reasons to intervene also in an activity that on the surface seems to function well; there is a need for aided communication.



The present mealtime analyses also show that time is an important factor influencing interaction between caregivers and children with disabilities (cf. Light et al., 1985a). We have seen that a typical mealtime interaction can include a considerable number of pauses which relate to other functions than eating and drinking. Minor structural changes in the focus dyad's mealtime procedures, that is, less continuous focus on activity management, would render room for pauses that, in combination with a communication aid, could relate to communicative functions similar to those observed for the comparison dyad. At mealtime, Maria and her caregiver would have needed two types of pauses: (a) pauses that served activity management functions, and (b) pauses that served other communication functions.

The present focus dyad, and dyads with similar characteristics, could have been encouraged to develop their mealtime conversations by using a Bliss-board or another type of communication aid in the following ways: (a) before the actual initiation of the mealtime activity, as a way to lay the groundwork for topics that could be talked about by unaided or aided means during activity performance, (b) during natural or structured interruptions within the activity, in order to further develop topics talked about before the activity was initiated or that the child had introduced during the activity through word approximations and body communication and (c) after the completion of the activity, to summarize topics and to stimulate talk about other new topics that were unrelated to the ongoing activity. An important implication of the current mealtime analyses is that for dyads resembling the present focus dyad, use of communication aids at mealtime should primarily enable communication that relates to issues other than immediate practical goals. In this focus dyad, concrete mealtime issues were handled satisfactorily by means of natural communication modes.

Maria's data were restricted in terms of number and types of person references used. This finding is a reminder about the fact that although many issues can be managed by means of unaided communication, certain words and language functions are difficult or even impossible to express and understand, unless a communication aid is used. When communication is unaided, there is the possibility that a child uses a restricted number of words and meanings and, as this and the preceding analyses have revealed, refers to issues and persons that are well known to both the child and the caregiver and that are easy to refer to given the situation of interaction. The results of the analysis of person reference point to

the importance of including person referential items in communication aids and are in line with the proposals by Marvin et al. (1994b). In relation to the different activities examined, Maria would have needed a variety of words to refer to self (cf. Marvin et al.). Words to refer to self plus other people such as, for example, *we*, *us* and *our*, also could have been relevant to Maria. Talk about persons of extended social networks was a recurring sub-activity in the comparison dyad. A child with disabilities may also have a need to talk about persons of her own social network and not only, as was the case for Maria, about family members and persons that are part of the family's network. Proper names of persons that are important to the child must be included in the vocabulary of the child's communication aid (cf. McCord & Soto, 2004). Communication aids typically include words that the child can use to refer to people and such vocabulary is also easy to plan and provide in a communication aid. The impediment for the person who is responsible for constructing the aid is to organize vocabulary in ways that enable the child to refer to others in meaningful ways. That is, person reference in itself is useful only if the child has the means with which to initiate and sustain conversations on different issues and to tell stories that relate what the child and/or other children have experienced and done, or are about to do (cf. Waller & O'Mara, 2003; Waller et al., 2001). Personality traits and behaviors of self and others may be important issues for the child to talk about. Accordingly, the child should have access to vocabulary that enables such communication, including words like *who*, *what*, *when* and *why*, which can serve as starters for conversations about for example, the speaking partner's experiences (cf. Light & Binger, 1998; Light et al., 1999). In the present comparison dyad data, person reference also occurred in relation to telling of tales and in other play with language such as, for example, in rhyming (i.e., fictive references). In this respect, the word lists presented in the appendices of this thesis (e.g., E4 & E5) may be useful.

The results of the analysis of person reference tell about different needs to refer to person in different activities. Communication relating to the physical goals of care giving and activity management in general included reference to child and caregiver, respectively. How person was referred to in relation to activity management, however, varied depending on both activity goals and individual factors of the participants. In most respects, activity management was successful in the focus dyad and did not depend on Maria's ability to refer to self or speaking partner, that is, the dyad planned and structured its activities so that these

could be performed given the dyad's possibilities<sup>61</sup>. Person also was referred to in relation to issues other than activity management. For the comparison dyad, such communication occurred in relation to mealtime and drawing activities but also in other activities. Does this mean that dyads similar to the present focus dyad also should be able to communicate about a variety of issues independent of the goals of the activities they are carrying out? This question is addressed in the general discussion (6.6.3).

For Tilde, the main challenges involved in communication with Blissymbolics seemed to be to plan and manage communication (i.e., to find and choose, and point at Bliss-words on the board) and at the same time pay attention and respond to the caregiver's many questions and demands. Challenges for the caregiver were to follow and understand Tilde's communication while serving as interpreter. Hence, also when a communication aid like the Bliss-board is used (i.e., as when communication is unaided) a caregiver like the present focus caregiver has large obligations in management of communication. She is responsible for making explicit what is talked about and for making conversation proceed in coherent ways; she dominates interaction with regard to numbers of words used and length of contributions, number and types of indirect and direct questions and demands.

A complex pattern is discernible here. Although Tilde is provided with an abundance of information from the caregiver, the caregiver receives fairly little information from Tilde about how well she is following and comprehending Tilde's communication. When Tilde uses the Bliss-board, she provides little feedback to the caregiver<sup>62</sup>. Thus, at present there are obvious reasons for the interaction strategies employed by the caregiver; they are means for her to make herself comfortable within interaction and are necessary for conversation to work, to make meaning common. Similarly, apart from the physical and linguistic demands placed on Tilde when she uses the Bliss-board, there are also other obvious reasons for Tilde's behavior and communication. In order to communicate and behave appropriately, Tilde has to follow the caregiver's many inquiries; this is something she does well. With regard to the basic goal of understanding, both Tilde and the caregiver behave as efficient, rational and ethical agents; they show behaviors typical for any communication (cf. Allwood, 1976; Grice, 1989).

---

<sup>61</sup> Supposedly, if Maria had used a communication aid in the present activities, she may not have used the aid to refer to self or speaking partner in relation to activity management but with support from the caregiver, may have referred to self in relation to other situations and people.

<sup>62</sup> When Tilde communicates by unaided means, she gives the caregiver feedback.

Although natural, some of the strategies applied by Tilde and the caregiver when they used Bliss-words also may have restricted their chances for autonomous communication. Evidently, many times when the caregiver expressed uncertainty about communication Tilde was using the board. From Tilde's perspective, many of the caregiver's inquiries may not have been necessary. In fact, for Tilde to comply with the many questions and demands from the caregiver, and at the same time manage her own communication may have been cognitively demanding and may have restricted her chances for her own independent contributions. Tilde's unaided interactions, and the background information that we have about her language capabilities, suggest that she would have managed Bliss-board communication, and perhaps would have contributed more information of her own, had the caregiver been less assertive. Both Tilde and the caregiver may have needed to learn more about their own responsibilities as communication partners. Analyses of video-recorded samples of their interactions with a person trained in the area of interaction analysis would have enabled greater understanding of the potential influences of a communication aid on conversational strategies and content; what moves are favorable and what moves are adverse to the total interaction outcome. Such intervention strategies are in line with AAC training programs (e.g., Basil, 1992; Bruno & Dribbon, 1998; Light & Binger, 1998; Light et al., 1999) and are in accordance with the proposal by Collins (1996), to inform communicators about typical strategies of graphic sign communication.

Young school age children without disabilities, such as the comparison children of this study, ask questions about a variety of issues of personal interest whenever they want or need to and receive information about caregivers' experiences and opinions. Tilde, who may have little experience with such language usage, may not have felt a need to be able to ask questions. The comparison of interactions in the study suggests that in creating personal communication systems and in programs aiming at training communication, it is important to pay attention not only to the fact that adult partners tend to ask children too many questions but also that children with severe impairments may have extremely limited possibilities to ask questions themselves.

What properties of the comparison dyads' interactions would be relevant to consider in building communication systems for children like Tilde and Maria? The possibility to introduce and maintain conversations on themes that extend beyond the situation of interaction is an important feature of aided communication. Considerable parts of the Bliss-

board interactions were devoted to conversations that did not relate to physical handling of the activity, moreover, talk about issues other than immediate needs was infrequent during the focus dyads' unaided interactions. However, the present analysis also showed that certain language activities are difficult for a child and a caregiver to perform in fast, efficient and independent ways by means of using a Bliss-board. The analyses of the focus and comparison dyads' communication suggest that Tilde and Maria, and their caregivers, would have benefited from systems supporting fast use of words. A speech-generating device with a dynamic display and separate words as well as whole phrases, stories and questions programmed into it could have been a very useful complement to the Bliss-board (cf. Todman, 2000; Todman et al., 1995; Todman et al., 1999; Waller et al., 2001; Waller & O'Mara, 2003). If such a system was well organized according to various functions and goals (e.g., Porter, 2003) it would have encompassed many of the advantages of the Bliss-board and a number of other functions. Some of the possibilities for such a system include: (a) a larger number of words and phrases to choose from, (b) faster communication about the child's own thoughts and feelings, (c) telling pre-stored stories about past experiences, (d) talking about and planning future events, (e) asking and answering questions more easily and (f) providing explanations in more autonomous ways. The use of communication aids in different activities at home is discussed further in Section 6.6.3.

The study findings also suggest some more general implications. From a developmental perspective, for example, it is worthwhile to consider the degree to which caregivers and others who support children with severe disabilities are aware of factors that affect communication during daily activities. Naturally, the importance of communication to the development of a child's language and cognition, pragmatic skills, and social identity may not be evident to caregivers who are not trained in these areas, who must contend with many other demands beyond communication when they are with their children and, most importantly, who often experience intimacy, closeness and basic understanding while interacting with their children (e.g., Engwis & Sweeney, 1996; Goldbart & Marshall, 2004; McCord & Soto, 2004; Zake, 1997). The parents in the studies by Goldbart and Marshall (2004), and Engwis and Sweeney (1996), expressed a need for greater sensitivity from professionals concerning the demands they experience in relation to their children's communication. McCord and Soto (2004) raised similar issues. Children and caregivers, like Maria and Tilde and their caregivers, certainly are aware of the fact that unaided

communication is much faster and, from a time perspective, more efficient, than communication with a communication aid. Parents may not be equally aware of *what*, more specifically, they talk about with their children. One way to take the parental needs reported by Goldbart and Marshall, and by McCord and Soto into consideration would be for professionals and parents to openly reflect about the use of communication aids, not only with respect to why they are used/not used, but also with respect to what *content* is possible to share and *what goals can be fulfilled* by unaided and aided means, respectively. The present analyses suggest that it is important to acknowledge the fact that unaided communication suffices for the achievement of many basic goals of daily living. Overall, the study results support the view that caregivers need to participate in the work that concerns their children's communication. In addition, results suggest that caregivers need to be informed explicitly about how some activity requirements may restrict communication opportunities and different discourse functions. In clinical practice, use of authentic language samples in combination with collaborative problem solving (e.g., Björck-Åkesson et al., 1996; Zachrisson et al., 2002) would enable caregivers to reflect on their own discourse roles and, accordingly, to understand and identify communication possibilities for themselves and their children in daily living.

The results of the current analyses provide support for arguments concerning the relevance of context in relation to the support of children with severe disabilities (e.g., Beukelman & Mirenda, 2005; Calculator, 1997; von Tetzchner et al., 1996). However, the study findings also suggest that context is a too wide term to use by itself to describe and understand the various influences on and within interaction that children with special needs and their partners may experience. Further, with regard to the relationship between social activities and communication, we can conclude that, in the absence of a detailed analysis, activity labels (e.g., mealtime & drawing) provide little information about the detailed structure of activities and even less about their influence on communication. Several of the present findings that have implications for intervention would have been difficult to detect without the analytical framework used. Maria's spontaneous introduction of new content to the discourse at mealtime, for example, was accomplished by means that, in the absence of a detailed interaction analysis, could easily have been overlooked, or could have been overshadowed by the fact that so much of the conversation was devoted to talking about the ongoing activity. Furthermore, Maria and the caregiver's fine-tuned use of gestural deixis in

relation to immediate objects and events, supports the notion that, whether an interaction is aided or unaided, it is important to include environmental artifacts that could serve important communicative functions. Relevant analyses of non-vocal body communication demand that interaction-based analyses are performed. Similarly, the many differences in the dyads' practices for referring to people and in the dyads' communications on similar themes became evident only when interactions were detailed and explored with regard to goals of activities. Importantly, the different interaction analyses in the study helped to reveal the intricate relationships between activity goals and individual goals and communication.

A final general implication of the study concerns clinical resources and the fact that augmentative communication intervention may be complicated and time consuming, and often stretches over many years. The different analyses presented in this thesis indicate the need for extensive professional resources for supporting the communication situation and life experiences of school age children with severe speech and physical impairments.

The thesis presents a number of valuable observations that must be interpreted with respect to a number of limitations.

## **6.5 Study Limitations**

Methodological difficulties in the study relate to issues associated with the transcription of multimodal communication and disordered speech and to data interpretation, that is, issues that have general implications for research in AAC (Soto & Grove, 2001). In the study, the difficulty of transcribing communication involving high degrees of multimodality was dealt with through careful consideration before and during transcription, independent observer analyses and reliance on both video recordings and transcriptions in treatment of the data.

The mealtime activity varies with culture, social class and participant constellation (Pan et al., 2000) and interaction patterns and conversational topics depend on individual styles. The sub-studies focusing on mealtime communication include four interaction samples and one activity type; the analyses focus on the conditions observed for two specific dyads in relation to mealtime, thus, the results cannot be directly generalized to interaction in other activities or to child-caregiver/family interaction at mealtime in general. In the study on conversational topics, the focus child's vocal output was analyzed for

semantic meaning. The interpretations were performed with caution, and an independent observer carried out reliability coding for those parts of vocal expressions that were possible to interpret for meaning. Few different meanings were identified for the focus child, which suggests that there was no semantic over-interpretation on behalf of the analyst. As previously noted, a pragmatic function could have been discerned for most of the focus child's vocal expressions, if this had been the main focus of the analysis. Still, the focus child's data may include a larger number of different meanings than was reported in the sub-study on conversational topics. Another way to approach the question of validity would have been to invite the focus child and her familiar communication partners to assist in the analysis of her vocal output. It is a shortcoming of the sub-study that a member check was not conducted. Further, given the difficulties involved in transcribing and interpreting pauses and overlaps in data that are rich in body communication, physical actions and other body movements such as in the present data, involvement of the participants in the analysis of interaction patterns could have been useful.

The person reference study includes 5 activity types and 20 interaction samples. With regard to the type of analyses performed, the amount of data examined was extensive. However, a typical day at home includes many more activities than those examined in this sub-study, also, only two dyads have been studied. It is not possible to make generalizations in this situation. Yet, the various analyses illuminate different influences of activities on a specific language phenomenon in relation to interaction in a naturalistic environment and are indicative of issues that may be of relevance also for dyads other than those that have been examined here. One factor that may have influenced the results is that only explicitly expressed person reference was included in the analysis. As previously stated, speakers also refer to each other in more indirect ways. In this sub-study, it was argued that such references are not possible for an outside observer to detect reliably. Still, this way of treating data may have put the focus child at disadvantage. If the focus child did refer to people through body gestures, such references by the focus child (or by any other participant) were not included in the analysis. Further, it was determined that only vocal expressions by the focus child, for which there was explicit evidence in data (i.e., was confirmed by verbal interpretation by the caregiver, which in turn was approved of by the child) qualified as person reference. This means that there was little risk of over-interpretation of data on behalf of the analyst but also that, unless interpreted by the



caregiver, person references made by the focus child by vocal-verbal means have not been included in the analysis. Nothing in the data suggests that the focus child produced person references by means of gestures or other body communication. Person reference related the subjects contained in the dyads' communication. However, there are no definite relations between person reference and conversational content. A child and a caregiver could talk about issues other than those that relate to the immediate activity while referring only to self and speaking partner (i.e., topics that did not concern the ongoing activity did not necessarily have to involve reference to a non-present person). Further, hypothetically, a dyad could introduce and maintain conversational topics without referring to any person at all. Given the definition of person reference used and the careful treatment of data, such conversations could have neither been lengthy, nor contain extensive content. Finally, the fact that the focus child of the present study did not refer to herself does not mean that she did not express herself and her identity but that she lacked functions relating to self-expression by means of using words.

The Bliss-board interactions in the study are spontaneous uses of aided communication between a child and a caregiver at home and, as such, constitute unique and valuable data. However, since these only represent two situations of use between one particular child and her caregiver, the interactions may not be of general value. A fact that further restricts the value of the findings is that the analysis focuses on one graphic sign system (i.e., Blissymbolics) in relation to a low technological communication aid that does not generate speech (i.e., a Bliss-board). Although the results of the analysis of the Bliss-board interactions cannot be generalized to other aided interactions, they do point to factors that are relevant to consider in future interventions and research.

There were two main reasons for analyzing interactions into episodes. The first reason is examination of communicative content above the level of isolated words and contributions and study of conversation as a shared responsibility between the child and the caregiver. Towards this aim, episode analysis was useful. Second, at first glance, the transcripts of the Bliss-board interactions practically fell into episodes (Korolija & Linell, 1996). However, some comments regarding the episode analysis are warranted. The Bliss-board interactions were easier to analyze with regard to episodes than were the comparison dyads' interactions, and the focus dyads' unaided interactions. This finding is interesting and relates to the fact that meaning is constructed differently when graphic signs are used

than when communication is unaided or when conventional speech is used (Collins, 1996). In the analysis of unaided communication, meaning is less obvious to an outside observer. Thus, the focus dyads' unaided interactions were more difficult to segment into episodes than were the Bliss-board interactions. The comparison dyads' interactions were more detailed and advanced with regard to the development of meaning (e.g., to a larger degree included sub-episodes and more often were poly-topical (cf. Korolija, 1998)) and, for this reason, were more difficult to segment into episodes than were the Bliss-board interactions which, in comparison, had clearer structures. Difficulty segmenting different types of interactions into episodes was dealt with through independent observer analysis. In addition, episodes that did not involve Bliss-words were not specified with regard to length (i.e., numbers of contributions included) but were mainly treated as occurrences of communication which concerned the four focus areas. This was the most reliable way to treat the present data. As a result, differences between interactions in terms of length of episodes (e.g., the possibility of lengthy conversations on themes that did not relate to activity management in the comparison dyads) were given minor attention in the results. Analysis of communicative content within episodes was easier in some regards and more difficult in others (cf. Brown & Yule, 1983). Bliss-word episodes were much easier to analyze with respect to time than any of the other interactions; the episodes that did not involve Bliss-words were more indistinct with regard to time (cf. Ochs, 1994; Ochs & Capps, 1996). Remember that, according to the feature of main idea of episodes, the descriptions of content of the present interactions are the results of an outside observer's analysis. The fact that Bliss-board interactions were easy to segment into episodes does not mean that contributions within episodes were easy to understand and analyze in terms of meaning and intent. The Bliss-word episodes of the present interactions and the episodes of the other interactions may very well have included topics and other important features relating to content that have not been seen and discussed.

In particular, while interpreting the results of the sub-study on Bliss-word communication it is important to remember that the analyses of the interactions that did not involve Bliss-words were based on the communicative content, as analyzed by the researcher, of the Bliss-word episodes. This means that the analyses of the former are not exhaustive and that the dyads, and particularly the comparison dyads, did talk about issues

other than those that have been shown in this sub-study<sup>63</sup>. In the focus dyads, such other communication mainly related to activity management, that is, the Bliss-board interactions of focus dyad 2 were more varied in terms of content than the unaided interactions in the focus dyads were. The comparison dyads' interactions, however, included language activities and content that related neither to activity management, nor to any of the four areas of content that were examined. Thus, in reality, the differences in communicative content between the focus dyads and the comparison dyads in the activities examined were more extensive than has been reported in the study<sup>64</sup>.

The present analyses were carried out by one person, were discussed with two persons who were well acquainted with the research and were examined by independent observers. As pointed out by Olsson (2004) there always will be alternative interpretations to interaction data. However, if we want to understand what factors influence interactions involving children with severe impairments who use AAC, the risk of focusing on one interpretation at the expense of another, needs to be taken. Yet, in interpreting interaction-based analyses, as in most research related activities, a certain degree of skepticism is healthy. As regards the analyses of this study, no claims of generalizability have been made and analytical shortcomings are partly accessible to the reader through comprehensive discourse excerpts.

---

<sup>63</sup> The results of the independent observer analysis indicated that the researcher had analyzed data in a restrictive way. In any case, the present data have not been over-estimated.

<sup>64</sup> Content that not was treated included talk about what the caregivers experienced (this kind of talk almost did not exist in the focus dyads) and other talk in which the children were not a main focus (i.e., about what other persons had done, were doing or were experiencing). Further, activity related talk differed between the dyads and these differences have not always been a focus in this analysis. For example, talk about reading and counting in the comparison dyads, as well as communication about the content of the stories was not examined. Furthermore, contributions that were not developed into episodes could include comments about a child or a caregiver's looks or personality, or could include a comparison child's play with language (e.g., child in CD2 singing an alphabet song all through a teeth brushing activity sample). Such contributions differed between the dyads and would have been interesting to analyze.

## **6.6 General Discussion**

The general purposes of the study were to learn more about the daily interaction experiences of children with severe speech and physical impairments and to investigate the use of communication aids in these children's interactions with caregivers in different activities at home. In addressing these purposes, I have examined the interactions of two dyads of caregivers and children with severe impairments and have compared these to the interactions of two dyads of caregivers and children without impairments. Different data have been used in different analyses. Major assumptions behind the work have been that social interaction is a need common to all children and that interaction and social activity are keys to the understanding of how to support communication and development for children that have severe impairments and use augmentative and alternative communication. The thesis' framework is interactional and for that reason is in line with a main idea of the ICF (Simeonsson et al., 2003; WHO, 2006), to treat disability, not as a body or personality feature, but as a process between the child and the surrounding world. In the preceding sections of this chapter, the results of each sub-study have been discussed. In this section, I bring the study findings together, point at central observations and discuss these with regard to interaction, activity and development according to three main areas of concern: the focus dyads' situation, the relationship between social activities and interaction, and the use and function of communication aids at home.

### **6.6.1 The focus dyads' situation**

Guided participation, according to Rogoff (1990), is the natural processes between a child and a caregiver, in which the child learns through participation in communication and activities that are adjusted to be just challenging enough to stimulate the child's development. The child, with a natural drive to make the world comprehensible, takes active part in structuring interaction, in achieving different goals and, thus, in stimulating her own development. The notion of guided participation is in line with the Vygotskian (1978, 1986) perspective on the development of the child. According to Vygotsky, development of thought, language and socio-cultural identity depends on the child's participation in social situations and on her opportunities to act upon tasks that embed functions that are slightly more sophisticated than those that she already masters.

### *Restricted interactions and restricted possibilities for development*

The present analyses have revealed that, for the focus dyads, natural communication modes suffice for dealing with matters in and around the situation. However, natural communication modes are not compatible with decontextualized topics and functions such as asking questions, referring to oneself and other children, telling about one's own thoughts and experiences, reasoning about and solving problems by means of using language, or explaining and planning. The focus dyads' natural communication modes do not function for language activities that are standard in interactions between adults and preschool and young school age children who do not have impairments. The overall picture shows close, comfortable but contentually and physically restricted interactions for the children in the focus dyads. A discouraging observation concerns the degree to which focus caregivers conform to the children's expressive output and do not tell the children their own stories and opinions on any matters other than those that can be managed by unaided means.

A summary of the focus children's physical functioning is also relevant. Maria and Tilde cannot walk and will remain seated where they are placed. In these positions, they perform larger movements with arms, hands and heads, although not always in the ways they perhaps would like to. From a physical point of view, they are left with narrow spatial fields. Visually and auditively, they have independent access to the parts of the room that are in front of them. Often, but not always, they have also independent access to the parts of the room that are on their immediate right and left sides. The parts of the room that are behind them are outside their visual field and are only auditively accessible. Even if Maria and Tilde can hear what happens behind their backs they cannot integrate this information with other perceptual information because they cannot turn their bodies around to look or to touch. Maria and Tilde are able to see and feel when the caregiver touches them, or when the cat strikes their legs, and they can feel the main features of the objects that are placed in their hands. However, they cannot independently get and hold objects and therefore miss out on chances for natural and autonomous integration of visual and sensory impressions. Further, when objects are put in their hands, restrictions in fine motor skills and coordination may affect both the quality of separate impressions and how impressions from different modalities can be worked with. In addition, they cannot talk independently about what they see, hear and feel. That is, they cannot integrate visual, auditive and sensory impressions with their own production of words. According to cognitive semantics,

concepts are constructs created and continuously restructured by the human brain depending on the individual's experiences with the world (e.g., Johnson, 1987). If the child creates and stores concepts as image schemas, this means that her knowledge about words and their meanings relates to other encyclopedic knowledge and that there is an immediate connection between her physical possibilities and her possibilities to structure the world via language. In most respects, Maria and Tilde lack access to very basic means for experiencing and structuring relations between the environment and their own bodies, accordingly, they have restricted chances for constructing and organizing concepts in terms of image schemas.

The interactions of the focus dyads are restricted because of restrictions in the children's functioning but also, in fact, because the caregivers are very sensitive and efficient in following their children (cf. Bruner, 1978, 1983) while managing the ongoing activity. As it seems, focus caregivers act upon what they see in their children in the situation and because the children cannot take the lead, communication comes to center around immediate practical goals and understanding in relation to such issues. The fact that the focus caregivers typically do not challenge their children with physical and communicative tasks that are more demanding or otherwise different from what the children already *do* in each situation, and that the children can not guide their own participation, results in interactions that pose restrictions on the children's chances for development (cf. Rogoff, 1990). The focus dyads' strategies, concentration on action negotiation in relation to ongoing activities and discussion of that which is perceptually present<sup>65</sup>, are similar to interaction strategies of caregivers and very young children (Halliday, 1975; Keenan & Schieffelin, 1976; Ninio & Snow, 1996). Accordingly, there are large discrepancies between the strategies used in the focus dyads and the capabilities and needs of Maria and Tilde. In addition, the ways the present focus dyads interact may influence not only the children's perceptions of themselves but also the caregivers' perceptions of their children, now and in the future, as well as the caregivers' perceptions of themselves. We can conclude that, when interacting with caregivers in the present activities at home, the focus children function within developmental zones that are restricted (cf. Vygotsky, 1978, 1986). As regards guided participation (Rogoff, 1990), we can also conclude that the focus caregivers'

---

<sup>65</sup> The dyads did not discuss the perceptually internally present, i.e., the focus children or caregivers' feelings when communication was unaided.

knowledge of the receptive language capabilities and cognitive functions of their children is not enough. As it seems, to play a role in terms of stimulating more advanced communication, such capabilities in children must be *shown* in interaction. This study suggests that a way to let such capabilities play their role and, thus, for caregivers and children to work with more advanced communication tasks that could stimulate development and be socially and emotionally rewarding, is for caregivers and children to use their communication aids.

### ***Important exceptions to the picture of restricted interactions in the focus dyads***

There are a few important exceptions to the picture of restricted interactions in the focus dyads, the most important being the Bliss-board communication between Tilde and her caregiver. When Bliss-words are available, the focus caregiver does guide her child concerning the introduction of new information into the discourse and the child's chances for independent and more complex communication increases. Furthermore, when using Blissymbolics, Tilde is involved in a type of co-constructive problem solving, which, although mainly focuses on her own language production and interaction rather than everyday world knowledge, may be important just because it demands something concerning language and thinking that extends beyond solving issues relating to basic understanding and physical activity goals. Although communication is still very restricted when the dyad uses the Bliss-board, Tilde has the chance to guide her own participation. The caregiver in turn, apart from responsibilities relating to the actual use of the Bliss-board, has the opportunity to share something with her child that is not given beforehand.

Another interesting exception concerning the focus caregivers' tendency to act according to skills the children *show* that they have is how Maria is encouraged to act independently in the teeth brushing activity<sup>66</sup>. Further, with respect to the introduction of topics, we have seen how Maria, by unaided means, at times manages to take the lead in interaction (cf. Rogoff, 1990). However, the analysis also showed that Maria's topics are only partly developed. Rather than expanding on Maria's communication and guiding her towards more complex language activities, the caregiver retreats and starts talking about that which the dyad manages well with natural communication modes. In so doing, she

---

<sup>66</sup> The caregiver does so in both activity samples. Interestingly, Tilde is also encouraged to brush her own teeth. The comparison children do not brush their own teeth are not encouraged to do so.

concentrates on existing functions and not on what could develop within the interaction situation and within Maria. The observation that Maria proceeds according to her own will, although these attempts by her are demanding and rewarding only for short periods, is interesting. Certainly, such determined behaviors by Maria have been and will continue to be positive to her development. Moreover, we have seen that Tilde's caregiver does talk with Tilde about her day at school even when the Bliss-board is not present. However, in these conversations, Tilde responds to the closed questions posed by the caregiver in ways that are typical for children with severe impairments who do not have access to their communication aids, that is, by confirming and denying. A final exception, concerning restricted communication in the focus dyads, is that Maria manages to refer to non-present family members without using a communication aid. These references, however, occur in conversations that are invoked by and relate to the activity or, as it seems, are a result of other thinking by Maria in relation to the auditory and visual observations that she makes in the situation.

### *The focus dyads' interactions in light of the comparison dyads' interactions*

The picture of restricted interactions in the focus dyads becomes even clearer when these are compared to the interactions that take place in the comparison dyads. The comparison children, with great possibilities for independent action and communication, function within developmental zones that are more challenging than the focus children's are. Using conventional words, the comparison children express what they want in the way they want and whenever they want in relation to a number of different language activities. They are skilled in conversation and express content and intentions in much the same ways as previous research has shown is common for children of their age, and for younger children. They talk about the most concrete and share basic experiences and thoughts with their caregivers but they also talk about special events, about how objects are and function and about how different phenomena relate. Other children play an important role in their telling<sup>67</sup>, they ask many questions and they receive many answers. Overall, there is considerable variation in the content they express and, as a result, in the content the

---

<sup>67</sup> This was detailed for the first comparison dyad in the sub-study on person reference but also was obvious in the episodes of the second comparison dyad that were presented in the sub-study on Bliss-board communication.



comparison dyads share (Aukrust, 2002; Aukrust & Snow, 1998; Blum-Kulka, 2002; Matre, 1997; Ninio & Snow, 1996; Ochs et al., 1996; Ochs et al., 1992; Perlmann, 1984; Preece, 1987).

It is also relevant to reflect upon the physical independence of the comparison children. The comparison children participate in the activities by carrying out actions required for activity goals to be fulfilled and also often move their bodies in more or less focused ways (e.g., change seating position, stand up or jump around while playing a game, and look at themselves in the mirror while brushing their teeth). In addition, they perform different movements with their mouths, play with their hands and mouths, and manipulate their hair, fingernails and face, sometimes for fun and sometimes for no obvious reasons at all. They use activity objects but also other objects in the environment and many of their physical actions relate to play with voice and language or singing. Moreover, the comparison children use hand, arm and larger body gestures to accompany speech and telling about events (cf. Ochs & Capps, 1996). The most sophisticated example in this respect, which included goal directed physical actions and objects that did not relate to the activity, is when a comparison child talks about and constructs her own braces using aluminum foil during mealtime. The comparison children are able to perform different physical actions at the same time as well as physical and communicative actions in parallel. The preceding example represents such parallel actions by a child, as does the instance when a comparison child stands up, talks and plays the game with the mother and at the same time talks with a friend on the phone. The physical freedom of the comparison children is an important ingredient in the comparison dyads' activities. They are means for children and caregivers to participate independently in the activities and for children to express themselves through channels other than words. The differences that exist between the focus children and the comparison children with respect to physical participation are important and somewhat surprising findings. Not because I was not aware of the focus children's physical restrictions, but because I had never before compared the physical participation of children of the same ages with and without impairments in the same activity types but also because the comparison children were much more active than I had thought they would be.

The comparison caregivers behave as is typical for caregivers to children without disabilities and, as we have seen in this study, for caregivers to children with disabilities;

they closely follow the communication and behaviors of their children. Because the comparison children are independent and physically active speakers, there are many natural opportunities for the comparison caregivers to guide their children with respect to communication and physical behavior. In response to children and on own initiatives, comparison caregivers ask their children open questions on different issues, make comments, relate events and experiences from their own day, and present and explain their own and others' opinions. In this way, comparison caregivers bring new content into the discourse. It is with respect to such contributions by caregivers, and with regard to their independence in speech and physical functioning, that the comparison children are able to take the lead in guiding their own participation and development (cf. Rogoff, 1990).

### ***Interaction goals more specifically***

The focus dyads fulfill interaction goals that relate to reaching understanding during interaction and, using the terminology of Light (1988), fulfill goals relating to basic needs, intimacy and social closeness. Intimacy, in particular, seems easy to achieve using facial gestures, eye contact, sounds and laughter. Goals relating to social etiquette, as described by Light, are not a high priority in the focus dyads. This can be understood with respect to the restricted content shared and the restricted physical actions performed in these dyads. Further, the child-caregiver relationship is close and may not require the kind of etiquette Light described. Yet, etiquette is important in the comparison dyads; the focus children do lack chances to learn about socio-cultural conventions, values, expectations and norms in general, and with regard to interaction specifically. Evidently, goals relating to information sharing are not fulfilled in ways that are reasonable for daily interactions between caregivers and young school age children that have the cognitive and receptive language capacities that Maria and Tilde have. The focus children have restricted chances for learning new concepts and words as well as for developing an understanding of self, other people, and the world at large. Moreover, also with respect to information sharing the focus children receive little guidance concerning social and cultural conventions. Keeping the goal of information sharing in mind, it is also worthwhile to consider the focus children's possibilities to reflect upon and share with caregivers philosophical issues that are not treated in the interaction analyses of this study but, which, the comparison children would have had the ability and the possibility to talk about if they had needed to. What I have in mind is thoughts that are

relevant for children of this age such as reflection about processes relating to life and death (cf. Matre, 1997).

Todman and Alm (2003) discussed communication goals from a time perspective and with regard to different types of strategies used for producing messages with communication aids. I suggested that these goals could be relevant also with respect to the analysis of unaided interactions. We have seen that the focus children and caregivers of this study achieve short-term goals such as enjoyment and impression but in and through interaction are only partly able to project personality. Considering the communicative content and interaction strategies used, medium and long-term goals such as self-esteem, status, and participation in activities, independence and self-fulfillment, which all relate to learning of language and social and pragmatic skills, are not to the same degree stimulated in the focus dyads' interactions. The focus dyads concentrate on the present, not on the future. As regards transactional and interactional goals (Brown & Yule, 1983; Cheepen, 1988), I have not found this distinction to be of any value in understanding the present interactions. The focus dyads' interactions center on the sharing of information in relation to practical goals of activities and in this way, are transactional. At the same time, the interactions are emotional and personally oriented and thus, very interactional. Overall, I find it awkward to think of some goals in interaction as interactional and of other goals in interaction as something else. Is it at all possible to divide goals according to functions such as expression of factual information and expression of personal attitude? Is it possible to express factual information without at the same time conveying some kind of personal attitude? Can a person not have the intent to express a personal attitude and achieve this goal by conveying facts?

### *Considering other and future interactions of children like Maria and Tilde*

This study has emphasized communicative content in the important relationship between caregiver and child. There is a significant gap between the content of the present focus dyads' interactions and the type of conversations children like Maria and Tilde may be assumed to participate in outside home, both now and when they get older, with persons that they do not know as well as they know their caregivers. In this regard, the finding that the focus children are not told their caregivers' personal stories and views and that the children have limited chances to participate in communication on issues that may enhance an

understanding of self and others, social practices and culture seems particularly relevant. If the content shared in the present interactions is representative of the focus dyads' interactions at home, and perhaps of interactions between other children with disabilities and caregivers, how can we expect children and adolescents who use AAC to know the social and pragmatic rules that apply to conversation? More specifically, given the restricted content of the focus dyads' interactions, how can we expect children like Maria and Tilde to know what is relevant to talk about, what topics to introduce, what stories to tell and what questions to ask? The results of this study suggest that in and through interaction with close partners, children like Maria and Tilde may have few chances to develop the knowledge and competencies needed for relevant, autonomous and rewarding interactions with other people (cf. Falkman, 2005; Hjelmquist & Dahlgren Sandberg, 1996; Light, 1989; Light et al., 1999; von Tetzchner & Grove, 2003).

## **6.6.2 The relationship between social activities and interaction**

The combined results of the analyses done in the study support the assumption that there is a strong relationship between social activities and interaction and that the influence of activities on interaction may be especially relevant to a child whose participation is characterized by both physical and communicative dependence on others. In Sections 6.1 through 6.3 of this chapter, specific influences of activities on children, caregivers and dyads have been detailed. In this part of the discussion, I give an overview of the relationships that exist between the present activity types and communication in the focus and comparison dyads. In doing this, I concentrate on how different activities influence what becomes the main area of concern in communication.

In all activity types examined, interaction is more demanding for the focus dyads than for the comparison dyads. Further, in all activity types and in all respects, communication in the focus dyads is less varied in content than communication in the comparison dyads. For all dyads, games and story reading activities bring about language and communication that relate to playing and to reading a story. For the comparison dyads, mealtime, drawing and teeth brushing activities stimulate communication that relates to eating, drawing and teeth brushing but also other types of communication, in particular, communication concerning the sharing of personal thoughts and experiences. For the focus dyads, the mealtime activity primarily brings about communication that relates to practical goal fulfillment. However,

more than any other activity type examined in the study, mealtime stimulates focus children and caregivers to talk about issues other than those that relate to practical activity goals. For the focus dyads, drawing and teeth brushing bring about communication that relate to the physical goals of drawing and brushing of teeth. Altogether, three of the five activity types examined in the study, more than the others, stimulate the comparison children and their caregivers to engage in conversation that focus issues beyond practical activity management. According to the analyses done, only one of the five activity types examined in the study (mealtime) seems to stimulate such talk in the focus dyads. In examining the influences of activities on communication, it is relevant to divide the five activity types into two groups, the first including game and story reading activities and the second including mealtime, drawing and teeth brushing activities.

Both the game activity and the story reading activity embed collective goals that pertain to physical actions and language; in the story reading activity, language is of primary concern. For both focus dyads and comparison dyads, and to a greater degree than can be seen in relation to any of the other activity types, the collective activity goals of the game and story reading activities are strong as it comes to determining the main area of concern in communication namely, playing and reading. This means that independent of who participates and what the participation of this individual means to collective goal fulfillment, communication in game and story reading activities is closely related to playing and reading, respectively, and to the objects used for fulfilling these goals. The differences that exist in communication between the dyads in game and story reading activities, respectively, concern the function of language in interaction, that is, how language is used to carry out collective and individual goals.

Mealtime, drawing and teeth brushing are grouped together because there are less evident and more varying patterns concerning how these activities influence communication. There are also interesting similarities and differences between the activities. A similarity between the mealtime activity and the teeth brushing activity, which is indicative of a potential value concerning communication between children and caregivers at home, is that both are routine activities that occur on a daily basis. A difference between the two activities concerns time. Independent of who participates, it will take a significantly longer time for a child and a caregiver to have a meal than to brush the child's teeth. Thus, considering time only, there is more room for communication at

mealtime than in the teeth brushing activity. In this regard, it is interesting and in line with previous research findings that, for all of the study dyads, mealtime is an opportunity for children and caregivers to move beyond immediate concerns. The collective goal of eating does influence what a child-caregiver dyad talks about but does not determine topics to the same degree as the collective goals of playing and reading. Now, an important difference between the dyads is the degree to which the mealtime activity allows for varied communication. For example, mealtime is the activity in which Maria and her caregiver communicate the most about issues other than activity management. Still, most of their communication at mealtime concerns reaching understanding in relation to practical goals. In contrast, at mealtime, the first comparison dyad communicates as much about other issues as they communicate about activity goal fulfillment<sup>68</sup>. These findings indicate that individual factors (i.e., who participates) also have a strong influence on communicative content at mealtime.

In teeth brushing, activity goals of brushing and cleaning influence communication for all dyads. However, the degree to which the goals influence communication differs greatly between the focus dyads and the comparison dyads and is different from what was observed for the dyads in relation to the mealtime activity. During the teeth brushing activity, speech and physical functioning in children had great influence on interaction and on communicative content. Teeth brushing was performed faster by the comparison dyads than by the focus dyads (cf. Appendix B)<sup>69</sup>. Yet, for both comparison dyads, the teeth brushing activity allowed for communication about past and future events (cf. Tables 5.10 & 5.11) and for sub-activities such as singing. Apart from a short comment by a caregiver on a child's pronunciation of a word, in the focus dyads' teeth brushing activities language was used exclusively for fulfilling the goals of getting the children's teeth brushed, and hands and faces washed. Although we are dealing here with only a few minutes of interaction and a few instances of communication about past and future events, the differences between the dyads, concerning communicative content in the teeth brushing activity are important.

---

<sup>68</sup> The analyses performed in the sub-study on Bliss-board communication indicated that also for Tilde and her caregiver and for the second comparison dyad, mealtime was an important communication activity (cf. Tables 5.10, 5.11 & 5.13).

<sup>69</sup> As previously mentioned the focus caregivers also encouraged the children to brush their teeth by themselves, a factor that contributed to more complicated and longer activity procedures than would have been necessary.

Although only one of the focus dyads performed the drawing activity, I consider the observations made in relation to drawing as main findings of the study. To begin with, as performed in this study, and in comparison to all other activity types examined, drawing is characterized by a rather vague collective goal and loose procedures. In this activity, many different individual goals and procedures function parallel to each other. In the drawing activity, more than in any of the other activities, children and caregivers do different things. At the same time, each dyad concentrates on the child and her drawing. Drawing is not a basic routine activity. Yet, drawing may represent a typical interaction situation in caregivers and young school age children's daily life at home, that is, children and caregivers communicate with each other also, or perhaps mainly, in situations where they are not centered on a main common goal. If the drawing activity is representative of the type of unorganized interaction that occurs between children and caregivers at home, which I believe it is, the finding that drawing brings about such different communication in the focus dyad and the comparison dyads becomes relevant. For the comparison dyads, the fact that the children and the caregivers were not sitting close to each other focusing on a main goal seems to have invoked communication about issues other than drawing. That is, apart from talking a little about the pictures and about drawing, the comparison dyads primarily used the drawing activity to talk about other things. For the focus dyad, the goal of drawing became central to both the child and the caregiver and therefore had direct influence on communicative content; the focus dyad's communication mainly concerned the actual act of drawing. Accordingly, for both the focus dyad and the comparison dyads, individual factors had large and opposite influences on communication. Restrictions on physical functions hindered independent drawing for the focus child and restrictions in speech functions, together with the fact that the caregiver was cooking in another part of the kitchen, meant that the child and the caregiver could not easily communicate. For the comparison dyads, independence in physical actions and speech, and the fact that children and caregivers were just there together, led to drawing activities that were rich and varied in communicative content.

There may be alternative interpretations of the present activity data and some factors may have been overlooked in this discussion. Yet, if I had to make a simplified value judgment rating concerning how the different activities influence the focus dyads with regard to communicative content, my answer would be as follows. Maria and her caregiver

are particularly disadvantaged in relation to the two activity types that are the most physically demanding for them, that is, in relation to drawing and teeth brushing. Tilde and her caregiver are also disadvantaged in relation to the teeth brushing activity. Although the situation is more positive and indicative of possibilities for both dyads with respect to mealtime, it is also true that the focus dyads experience mealtimes that are very different from those of the comparison dyads. The game activity poses larger demands on the focus dyads than on the comparison dyads and the physical challenges involved for the focus dyads influence their communication. However, as regards communicative content there are smaller differences between the focus dyads and the comparison dyads in the game activity than in drawing, teeth brushing and mealtime activities, thus, from larger communication and developmental perspectives, the focus dyads' communication in the game activity is less discouraging than is their participation in the other activities. Similarly, although the focus children participate differently in the story reading activity than the comparison children do, both focus dyads and comparison dyads reach the goal that seems to be of primary interest to all of them, namely to read and listen to a story. Hence, there is less reason for worry about the focus dyads' use of language in the story reading activity than there is reason for worry about their communication in some of the other activities. This is not to say that the differences observed between the focus dyads and the comparison dyads in the game and the story reading activities are not important, only that with respect to what content is shared, the differences observed between the dyads in the other activities were different and more pronounced.

### **6.6.3 Use and function of communication aids at home**

Keeping the restrictions that apply to the present data in mind, that communication with Blissymbolics only occurred twice, what does this thesis add to existing knowledge concerning the use of communication aids in daily activities at home? Talk for talk's sake plays an important role in children's development (Ninio & Snow, 1996). Therefore, the finding that this kind of interaction, where a child and a caregiver contribute on similar terms and communicate for the sole purpose of sharing whatever comes to their minds only occurs when Tilde and her caregiver use the Bliss-board is relevant. Given that a large part of the study deals with what caregivers and children with and without severe speech and physical impairments may talk about at home when communication aids are not used, the



contrast between unaided and aided communication has been illuminated. The dilemma is this: When the Bliss-board is not used, the focus dyads only talk about what they are able to talk about and there are many issues that Tilde and Maria and their caregivers cannot talk about using natural communication modes. The fact, for example, that there are few misunderstandings and fluency in the unaided interactions between Maria and her caregiver at mealtime reflects that they do not communicate about that which can pose communicative problems. When the focus dyads run into problems, which happens when something outside the present situation is approached (i.e., which rarely happens), the topic is dropped. It has been proposed in the literature (e.g., von Tetzchner & Martinsen, 1996) that communication aids sometimes may be used for solving misunderstandings rather than for actual talking. The present focus dyads do not get their Bliss-boards to solve communication problems or to reach increased understanding on specific issues and most of the time do not use their communication boards for the purpose of talking and for making communication more rewarding in terms of communicative content. When the focus dyad chooses to use the Bliss-board, few and rather simple goals other than interaction are put in focus. The Bliss-board is not used in activities that are physically demanding. Thus, the study supports the notion that for some children and caregivers at least, use of a communication aid depends on conscious planning. Altogether, the limited occurrence of Bliss-board communication in the present data confirms previous findings concerning restricted use of communication aids and are also suggestive concerning the impact of aided communication systems on daily activities at home (e.g., Goldbart & Marshall, 2004; McCord & Soto, 2004).

What functions could the Bliss-board or any other communication aid have played for the present focus dyads at mealtime, during game activities, in drawing, teeth brushing and story reading activities? For children like Maria and Tilde and their caregivers, who manage the game activity fairly well, and who do not need to practice turn taking, it is difficult to see what function a communication aid could have played in this activity. In fact, in the game activity, use of a communication aid probably would have made the performance of the activity more complicated while adding little regarding communicative goal fulfillment. We have also seen that Tilde and her caregiver used the Bliss-board before playing but not while they played. The story reading activity, however, is a language activity in which both Maria and Tilde mainly are receivers and where the comparison caregivers and children

participate on more equal grounds. More active participation by the focus children in the story reading activity would have been profitable. At the same time, as long as caregivers and children with severe speech and physical impairments actually do read stories together, the fact that story reading is a language activity means that independent of how the children participate, the activity provides them with a rich and varied language that is similar to that which children without impairments receive in this activity.

What the present focus dyads, and other dyads alike, risk missing regarding communication in relation to mealtime, drawing and teeth brushing activities, can only be compensated for by the dyads' use of communication aids in these or in other activities. As previously suggested (Section 6.4), for dyads including caregivers and children like Maria and Tilde, the mealtime activity may very well be compatible with Bliss-board communication. Mealtime in particular, is an activity in which children and caregivers spend much time and in this sense have great opportunities for planned communication with Blissymbolics. Similarly, to be able to communicate about all those things that are not managed sufficiently by unaided means, Maria and her caregiver could have benefited from using a communication aid in relation to the drawing activity. In the drawing activity, Maria would have needed to be able to talk a little about what she was drawing and a little about the kind of assistance she needed but, above all, would have needed an expressive vocabulary that allowed her to talk about issues other than those that related to drawing. In the drawing activity in particular, because Maria and her caregiver were often not in the same place, a speech-generating device would have been valuable. Finally, it may have been difficult and of little value for the present focus dyads to use even the simplest communication aid while performing the teeth brushing activity.

All through the study, we have seen how focus children and caregivers act according to the tasks they have at hand. Together, the focus children and caregivers, are competent in managing what both of them know needs to be done. Observable tasks and goals of activities have great influence on the focus dyads' interactions. As it seems, the need to talk for talk's sake, is not strong enough for the focus dyads to engage in such communicative activity. For example, the need for the children to be able to point at pictures in the game activity make both focus dyads to use light pointers when they play games because if they don't, they cannot fulfill main activity goals. The need to make communication a goal or to

communicate about what happened at school or at work is not obvious and when fulfilled, does not bring about any immediate effects in relation to the tasks at hand. The fact that communication about other things than that which has to be done does not come out as a basic need is problematic. I believe that when communication aids are not used at home this is so because it is practically demanding, tiring and slow, but also because what *appears* necessary to talk about in activities is exactly that which is managed well by unaided means. An important implication of this reasoning is that, more than may be the practice today and, to a larger degree than some clinicians may suggest, caregivers and children may need to construct activities that have communication, and nothing else, as a main goal.

## Chapter 7

### Contributions of Thesis and Future Research

In this final chapter, I summarize the results of the study first in relation to previous research and second with respect to what I consider are the most valuable contributions of this work. I end the thesis by making suggestions for future work.

#### 7.1 Results in Relation to Previous Work

Several of the findings of this study coincide with previous research findings and with reports from augmentative and alternative communication practices (e.g., Basil, 1992; Björck-Åkesson, 1992; Culp, 1982; Light et al., 1985a,b,c; Pennington & McConachie, 1999; Smith, 1994; Soto & Seligman-Wine, 2003; von Tetzchner & Martinsen, 1996; Wexler et al., 1983). For example, the focus dyads mainly communicate through word approximations, vocalizations and non-vocal body communication. Focus caregivers use more words and a larger number of word types than children do and have longer contributions than children have. Focus caregivers ask many questions that often concern what is already shared knowledge and that often serve the general function to get conversation going rather than to develop conversation in relation to specific issues. In this sense, focus children and caregivers interact on unequal grounds. The Bliss-board interactions in this study confirm existing knowledge concerning aided communication and are similar to the graphic sign interactions that have been presented in the literature (e.g., Brekke & von Tetzchner, 2003; Collins, 1996; Smith, 2003; von Tetzchner & Martinsen, 1996; Waller & O'Mara, 2003). Communication is slow; there are large responsibilities and many questions on behalf of the caregiver and few selections of Bliss-words on behalf of the child. The words selected on the board by the child determine how conversation develops and guide the dyad in the co-construction of messages, the focus child's communicative possibilities increase with the use of the Bliss-board (e.g., Wexler et al., 1983). In line with previous assumptions concerning the role of context in augmented interactions, the study has shown that for a caregiver and a child with severe impairments in particular, activities influence communication to a large extent (e.g., Calculator, 1997; Kraat, 1985; Light, 1997; Rowland & Schweigert, 1993; Smith, 2003; von Tetzchner & Grove, 2003). The convergence of the present findings with findings from previous work is

an important result in itself, suggesting that the observations done in the study may apply to interactions other than those that have been examined and that future work to facilitate and improve communication between caregivers and children with severe speech and physical impairments is needed.

The study results also confirm assumptions concerning different relationships between activities and communication (e.g., Allwood, 1976, 1995, 2000; Levinson, 1979). The study acknowledges mealtime to be an important communication activity (e.g., Aukrust & Snow, 1998; Blum-Kulka, 2002), finds games to be highly ritualized activities (e.g., Davidson & Snow, 1996; Ninio & Snow, 1996), and story reading to be an important language activity for caregivers and children with and without disabilities (e.g., Hoff-Ginsberg, 1991; Light & Kelford Smith, 1993). Finally, the study indicates that routines and less structured activities may be particularly relevant to the communication of children and caregivers at home (e.g., Hasan, 2000; Ochs et al., 1992; Rogoff, 1990).

## **7.2 Main Contributions of the Study**

The thesis expands on existing knowledge by offering detailed activity-based analyses of interactions between young school age children with and without severe speech and physical impairments and caregivers at home. Departing from interaction data, I have shown that when interacting with caregivers at home children with severe impairments may experience opportunities for language and communication that differ significantly from those of children who do not have impairments.

First, an important contribution of the study is that comparisons of interactions across activities have revealed that practical goals of activities have a strong influence on the focus dyads' interactions, resulting in communication that mostly focuses on the visible, overall content is narrow. The study has also illustrated how different activities influence focus dyads and comparison dyads in like and dissimilar ways and how the dyads use language for different purposes in the activities. A most significant observation is that the activities that seem to stimulate the comparison dyads to engage in extended discourse, mealtime, drawing and teeth brushing, do not have equivalent effects on the focus dyads. In all the activities, but the drawing activity in particular, dyads like the present focus dyads may be especially disadvantaged with respect to communication. Although the focus dyads do not

come near the possibilities of the comparison dyads, the analyses show that mealtime is an important communication activity for the focus dyads as well. Hence, the view of mealtime as a complicated activity in which there is little or no room for varied communication between caregivers and children with severe impairments needs to be reassessed. The finding that the activities that render natural possibilities for the present comparison dyads to engage in the type of communication that has proven relevant to the development of cognition, language, communication skills and social identity may not render such possibilities for children with severe impairments is of course a main contribution of this work. If activities such as mealtime and drawing are incompatible with the use of communication aids, activities offering similar communication opportunities must be found or created.

Second, with respect to the interactions examined, the study has provided a comprehensive picture of *what* more specifically caregivers and children with severe impairments may talk about at home when communication is unaided. The study has also illustrated what communication can look like in dyads of caregivers and children without disabilities. Despite similar cognitive and receptive language capacities in children, the content of everyday communication in a dyad including a child with severe impairments can differ immensely from the content of everyday communication in a dyad that includes a child without impairments. I am especially concerned with two facts: (a) In the focus dyads, natural communication modes seemed to function well for dealing with the most concrete subjects in the different activities. (b) Considering the content of the comparison dyads' interactions, when natural communication modes are used, very many issues are not dealt with at all in the focus dyads. Talk about the visible is managed fairly well, although it is not discussed in detail. Talk about something that is not visible, that is not a shared experience or otherwise shared background knowledge seems to be almost unattainable with unaided communication. It is not only the case that the focus dyads rarely approach issues that relate to personal thoughts and experiences of the past, as the comparison dyads frequently do, and for these reasons miss important chances for dealing with present concerns (Ochs & Capps, 1996). When communication is unaided, there is also no planning for the future and almost no talk about social practices, about causality or about how people and things function in the social and physical world. Additionally, the study has pointed to the fact that during interaction with close partners, children with severe impairments may

have limited possibilities to create self-identity and to become members of the cultures that pertain to the societies in which they live. When caregivers to children like Maria and Tilde say that they understand what their children say this is most probably correct and needs not be questioned. What needs to be questioned, however, is *what* more precisely it is that is understood.

Third, despite comprising a very limited amount of data involving Blissymbolics, the study has demonstrated what a child and caregiver can achieve when a communication aid such as the Bliss-board is used as compared to when communication is unaided. The use of Blissymbolics influenced the individual contributions and opportunities of the child and the caregiver, respectively, but also significantly altered the focus of the dyad's communication. The uses of the Bliss-board in the study were the only occurrences of communication in the focus dyads that resembled that of extended discourse in the comparison dyads. By focusing on conversational content, the study has illuminated the differences that can exist between aided and unaided communication; not only *that* but also *why* communication aids are needed. In addition, the study has pointed to factors in aided interaction that are not usually detailed. For example, analyses showed that the focus child gave her caregiver little feedback whilst using the Bliss-board, a finding that explains a lot of caregiver behavior and suggests that very explicit instructions to both children and caregivers about the differences between natural communication modes and aided communication may be needed (cf. Collins, 1996).

Fourth, the relevance of body communication in the focus dyads has been detailed. At the same time, the study has shown that there are other communication modes apart from spoken words that the focus children cannot and do not use in interaction, for example, different physical actions. Overall, the thesis has thrown light on the contrast between what a child with severe speech and physical impairments is able to do and express by unaided and aided means in different activities and what a child without impairments is able to do and express physically and by means of using conventional words in the same activities. In the study samples, the focus children never approach the comparison children's level of expression of ideas and personalities using body and language.

Finally, this study has focused on interaction, the interplay between children and caregivers in relation to the activities they perform. In terms of the framework of ICF-CY (WHO, 2006), many different parallel components, body functions, activity and

participation, and contextual factors have been considered. In particular, I have shown that there are many factors in the interactions of caregivers and children with severe impairments that have the potential to influence a child's chances for development (cf. Simeonsson et al., 2003). Importantly, I have shown that the focus children of this study are not passive but rather, considering the many difficulties involved, participate actively in the interactions. Of particular interest is the persistency with which they have been shown to manage to introduce new content to the discourse by means of using natural communication modes and Bliss-words. Yet, the focus children act under many restrictions and a problem that has been brought to the fore is the mutual influence that exists between children and caregivers in relation to goals of activities. The content of the focus dyads' interactions is not merely a result of focus children not being able to express themselves independently. Apparently, because the children cannot relate thoughts and experiences and because caregivers have large responsibilities directing activities and understanding the children's communication, caregivers do not contribute with their own stories and reflections beyond those which relate to the situation at hand. This is a very important finding of the study.

An issue that has been raised in the study is to what extent it is reasonable to expect communication aids to be integrated with naturally occurring activities. In order for caregivers and children with severe impairments to engage in extended discourse on a daily basis they must be encouraged to use their communication aids in already existing activities but also, and perhaps mainly, to create situations in which communication becomes a main goal. Put simply, clinicians must support caregivers and children in finding the time to sit down and talk. A cumulative effect of such talk may be the need to talk for talk's sake.

### **7.3 Future Research**

The current findings give rise to questions worthy of further consideration, of which the most important relate to the relationship between daily activities and the achievement of different communication goals for caregivers and young school age children that have severe speech and physical impairments and who use AAC. To what extent, during a typical day in a child's life, are existing activities compatible with different communication goals and what goals are unattainable because of existing activities? Because participants in the present focus dyads experience communication different from that which is typical in the



activities examined, it is necessary to consider these activities in relation to other naturally occurring activities in the lives of children like Maria and Tilde in order to determine (a) which activities might support the kind of communication they miss in relation to for example mealtime, drawing and teeth brushing, and (b) to what extent activities can be changed so that desired communication goals can be achieved. For several good reasons many clinical practices focus almost exclusively on naturally occurring activities. Yet, just as is the case, indeed, for caregivers who support children without disabilities, caregivers who support children with severe speech and physical impairments may sometimes also need to create situations in which conversation is a primary goal. More than is common today, studies within the field of AAC could emphasize interaction. Interaction analysis aimed at determining how aided systems are best implemented in different activities, identifying and compensating for communication goals that are not achieved in specific activities and promoting participation in other natural or constructed activities in which these goals can be supported, could be useful. Reliable assessments of multimodal communication in interaction are crucial and the observations done in the sub-studies of the thesis suggest that this too is an area of inquiry for future research.

Factors other than those investigated in this study may have influenced the dyads' interactions. In particular, personality factors such as will, motivation and attitudes exert strong influence on communication and, accordingly, on a person's health condition. The present focus children have severe speech and physical impairments that influence their participation in activities in very similar ways. However, Tilde and Maria are different individuals and accordingly, independent of the similarities that exist concerning their disabilities, use different strategies in interaction. The relevance of such individual strategies for communication and different aided systems should receive more attention in the future. In such work, self-assessment should play a larger role than has been the case in this study. Further, other factors than those that have been emphasized in this study are important to development. In this regard, I am particularly concerned with the fact that although it manifested itself differently, there was much intimacy in both focus dyads and comparison dyads. As it seemed, social closeness did not depend on the use of a communication aid and was not a result of the use of particular words. Similarly, although it was not dealt with in the same way from a linguistic point of view, humor was an important feature of both the focus and comparison dyads' interactions. The fact that the present focus

dyads achieve certain goals without using conventional words warrants for caution in the interpretation of studies that focus on the existence of specific words in discourse and was a primary reason for me to not only focus on the word level in this research.

Several researchers practicing within the field of AAC have done comprehensive analyses of conversational topics of children and adults without disabilities. This study demonstrates the need to turn the attention to the conversational content of the daily life of children, adolescents and adults with severe speech and physical impairments. What aspects are shared in the interactions of persons who communicate by augmented means across activities and environments, and across the day, the week and the year? Studies including more participants are needed. The present results also suggest that there may be a need to look more closely at specific aspects of communication. For example, both the focus children and the comparison children in this study were targets for different behavioral directives from caregivers but the kind of directives they received were different, played different functions in interaction and supposedly have different effects on socio-cultural identity and pragmatic skills. In the development of methods for intervention, particular attention should be paid to aided communicators' experiences of participating in extended discourse. What content spheres are these persons used to functioning within and what areas of content need to be approached?

The study explored dyadic interactions. Considering the gap in knowledge concerning the content of daily interactions between children with severe impairments and their close partners and, considering the knowledge that children who use AAC risk being dominated in interaction the decision taken in the study, to concentrate on the child-caregiver dyad, was motivated. However, much of today's research on child-language and interaction concentrates on the role of multiparty discourse to children's development. For children without disabilities interactions involving several persons may be as common as or even more common than dyadic interactions and may include more varied language and greater communication opportunities (Blum-Kulka & Snow, 2002). With respect to own output, it is not difficult to see how a child with severe speech and physical impairments risks getting less out of multiparty interactions rather than more. There is a need for studies focusing on the role of multiparty discourse in the lives of children with severe speech and physical impairments who communicate by augmented means. To what extent do these children's

interactions include more than two persons? What do these interactions look like and how are children who use AAC best supported in activities that involve several persons?

The interactions examined in the study were natural in the sense that they occurred in the home environments of children and caregivers and in the sense that no specific instructions were given concerning what the dyads should talk about and how. As a result, communication within the focus dyads was mostly unaided and the study has contributed with analyses of what such communication can be about and how it can relate to factors of different activities. A natural next step would be to examine and compare activity-based interactions of caregivers and children with and without disabilities in which the former were asked to use their communication aids. Further, this thesis presents valuable information concerning real life possibilities for development but says nothing about development as such. The need for longitudinal studies focusing on the development of children who use AAC remains large (cf. von Tetzchner & Grove, 2003; Soto & Seligman Wine, 2003).

Given severe restrictions in speech and physical functioning, how do children with severe impairments build and structure concepts? For example, if image schemas exist, how do the schemas for physical containment and balance described by Johnson<sup>70</sup> (1987) look for children like Maria and Tilde? Are concepts represented differently in the minds of children with severe impairments than in the minds of children without impairments? If so, then, in what ways are the concepts represented? Considering the proposal by Vygotsky (1986) about children reaching or not reaching the highest stages of thinking, are there any such things as delayed or even deviant image schemas of concepts? Are different body experiences of different value and importance in the creation and development of image schemas? Johnson emphasizes the collaboration between different body experiences and stresses the role of visual perception. Do children like Maria and Tilde compensate for restrictions in other body functions by developing strong visual channels? Such compensatory strategies would be useful in the situations they participate in but cannot compensate for their lack of participation and gaining of experiences in different social environments and activities. Image schemas are mental representations of concepts at the same time as they form the basis for the child's creation of her conceptual system. Severe

---

<sup>70</sup> See Chapter 2; footnotes 7 and 8.

speech and physical impairments may affect the child's chances for acquiring concepts and for constructing image schemas and, accordingly, the child's chances for development of relations between concepts, thus affecting her chances for developing language and understanding the world. The results of this study demonstrate a need for further reflection concerning the role of the body as a conceptual tool in children with severe speech and physical impairments.

In closing, this work has strengthened my opinion concerning the three assumptions that are behind the thesis and has given me a refined view of the interaction situation of children with severe speech and physical impairments and their caregivers. An all embracing and most significant observation made in the study, which calls for future work in a number of areas relating to augmentative and alternative communication, concerns the magnitude of the differences in child actions and conversational content between the present focus and comparison dyads.

## References

- Ahlsén, E. (1991). Body communication as compensation for speech in a Wernicke's aphasic: A longitudinal study. *Journal of Communication Disorders*, 24, 1-12.
- Ahlsén, E. (1995). Activity demands and communication ability in aphasia: A protocol and a case study. In I. Moen, H. Gram Simonsen, & H. Lødrup (Eds.), *Papers from the XVth Scandinavian Conference of Linguistics* (pp. 1-12). Oslo, Norway: Oslo University, Department of Linguistics.
- Akman, V., & Bazzanella, C. (2003). The complexity of context: guest editors' introduction. *Journal of Pragmatics*, 35, 321-329.
- Allaire, J., Gressard, R., Blackman, J., & Hostler, S. (1991). Children with severe speech impairments: Caregiver survey of AAC use. *Augmentative and Alternative Communication*, 7, 248-255.
- Allwood, J. (1976). Linguistic communication as action and cooperation. *Gothenburg Monographs in Linguistics*, 2. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Allwood, J. (1984). On relevance in spoken interaction. In S. Bäckman & G. Kjellmer (Eds.), *Papers on Language and Literature* (pp. 18-35). Göteborg, Sweden: Acta Universitatis Gothoburgensis.
- Allwood, J. (1995). Language, communication and social activity: Towards an analysis of the linguistic communicative aspects of social activities. In K. Junefelt (Ed.), Special session on activity theory, Proceedings of the XIVth Scandinavian conference of linguistics and the VIIIth conference of Nordic and general linguistics, *Gothenburg Papers in Theoretical Linguistics*, 73. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Allwood, J. (1999). Semantics as meaning determination with semantic-epistemic operations. In J. Allwood & P. Gärdenfors (Eds.), *Cognitive Semantics: Meaning and Cognition* (pp. 1-17). Amsterdam: John Benjamins.
- Allwood, J. (2000). An activity based approach to pragmatics. In H. Bunt & B. Black (Eds.), *Abduction, Belief and Context in Dialogue: Studies in Computational Pragmatics* (pp. 47-80). Amsterdam: John Benjamins.

- Allwood, J., & Abelar, Y. (1984). Lack of understanding, misunderstanding and language acquisition. In Extra & Mittner (Eds.), *Proceedings of the AILA-Conference in Brussels*.
- Allwood, J., Björnberg, M. (2000). *Addressee, turn and sequence management* [Coding manual 2.0]. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Allwood, J., Björnberg, M., Grönqvist, L., Ahlsén, E., & Ottesjö, C. (2000, December). The spoken Language Corpus at the Department of Linguistics, Göteborg University [55 paragraphs]. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* [On-line Journal], 1(3). Available at: <http://qualitative-research.net/fqs/fqs-eng.htm>.
- Allwood, J., Nivre, J., & Ahlsén, E. (1990). Speech management - On the non-written life of speech. *Nordic Journal of Linguistics*, 13, 3-48.
- Allwood, J., Nivre, J., & Ahlsén, E. (1993). On the semantics and pragmatics of linguistic feedback. *Journal of Semantics*, 9, 1-26.
- Andrews, N. (1980). The use of Blissymbolics in a special school [Unpublished master's dissertation]. In A. W. Kraat (Ed.), *Communication interaction between aided and natural speakers A state of the art report* (pp. 170-171). Toronto, Canada: International Project on Communication Aids for the Speech-Impaired, Canadian Rehabilitation Council for the Disabled.
- Angelo, D. (2000). Impact of augmentative and alternative communication devices on families. *Augmentative and Alternative Communication*, 16, 37-47.
- Angelo, D., Jones, S., & Kokoska, S. (1995). Family perspectives on augmentative and alternative communication: Families of young children. *Augmentative and Alternative Communication*, 11, 193-201.
- Arthur, G. (1952). *The Arthur adaptation of the Leiter international performance scale* [Test material. Swedish translation. Leissner, I., Nilsson, B., Nyström, G., & Wastensson, B. (1997). *Leiter klossstest: svensk version 3-6 år*. Stockholm: Psykologiförlaget AB]. WA: Psychological Service Center Press.
- Aukrust, V. (1992). *Fortellinger fra stellerrommet To-åringene i barnehage En studie av språkbruk - innhold og struktur* [Narratives from the nursery Two year olds in the day nursery: A study of language use - content and structure, Doctoral dissertation]. Oslo, Norway: Oslo University, Pedagogisk forskningsinstitutt.

- Aukrust, V. (1996). Learning to talk and keep silent about everyday routines: a study of verbal interaction between young children and their caregivers. *Scandinavian Journal of Educational Research*, 40, 311-324.
- Aukrust, V. (2002). What did you do in school today? Speech genres and tellability in multiparty family mealtime conversations in two cultures. In S. Blum-Kulka & C. Snow (Eds.), *Talking to Adults The Contribution of Multiparty Discourse to Language Acquisition* (pp. 55-83). Mahwah, NJ: Lawrence Erlbaum.
- Aukrust, V., & Snow, C. (1998). Narratives and explanations during mealtime conversations in Norway and the U.S. *Language in Society*, 27, 221-246.
- Austin, J. L. (1962/1976). *How to do things with words*. Oxford, UK: Oxford University Press.
- Bailey, D., Harms, T., & Clifford, R. (1983). Social and educational aspects of mealtimes for handicapped and nonhandicapped preschoolers. *Topics in Early Childhood Special Education*, 2, 19-32.
- Bailey, P., & Shane, H. (1983). Interactional strategies with and without an augmentative communication device: A case study [Unpublished master's project in communication disorders]. In A. W. Kraat (Ed.), *Communication interaction between aided and natural speakers A state of the art report* (pp. 172-173). Toronto, Canada: International Project on Communication Aids for the Speech-Impaired, Canadian Rehabilitation Council for the Disabled.
- Baker, B., Hill, K., & Devylder, R. (2000). *Core vocabulary is the same across environments*. Retrieved May, 2004, from <http://www.csun.edu/cod/conf/2000/proceedings/0259Baker.htm>.
- Balandin, S., & Iacono, T. (1998a). Topics of meal-break conversations. *Augmentative and Alternative Communication*, 14, 131-146.
- Balandin, S., & Iacono, T. (1998b). A few well-chosen words. *Augmentative and Alternative Communication*, 14, 147-161.
- Basil, C. (1992). Social interaction and learned helplessness in severely disabled children. *Augmentative and Alternative Communication*, 8, 188-199.
- Beals, D. (1993). Explanatory talk in low-income families' mealtime conversations. *Applied Psycholinguistics*, 14, 489-513.

- Beals, D. (1997). Sources of support for learning words in conversation: evidence from mealtimes. *Journal of Child Language*, 24, 673-694.
- Beals, D., & Snow, C. (1994). Thunder is when the angels are upstairs bowling: Narratives and explanations at the dinner table. *Journal of Narrative and Life History*, 4, 331-352.
- Beals, D., & Snow, C. (2002). Deciding what to tell: Selecting and elaborating narrative topics in family interaction and children's elicited personal experience stories. In S. Blum-Kulka & C. Snow (Eds.), *Talking to Adults The Contribution of Multiparty Discourse to Language Acquisition* (pp. 15-31). Mahwah, NJ: Lawrence Erlbaum.
- Bedrosian, J. (1997). Language acquisition in young AAC system users: Issues and directions for future research. *Augmentative and Alternative Communication*, 13, 179-185.
- Bedrosian, J., Wanska, S., Sykes, K., Smith, A., & Dalton, B. (1988). Conversational turn-taking violations in mother-child interaction. *Journal of Speech and Hearing Research*, 31, 81-86.
- Beukelman, D., McGinnis, J., & Morrow, D. (1991). Vocabulary selection in augmentative and alternative communication. *Augmentative and Alternative Communication*, 7, 171-185.
- Beukelman, D., & Mirenda, P. (2005). *Augmentative and Alternative Communication Supporting Children and Adults with Complex Communication Needs* [3<sup>rd</sup> ed.]. Baltimore: Paul H. Brookes.
- Bishop, D.V.M. (1983). *The test for reception of grammar* [Swedish translation. Holmberg, E., & Lundälv, E. (1998). Göteborg, Sweden: SIH Läromedel]. Manchester, UK: University of Manchester, Age and Cognitive Performance Research Centre.
- Björck-Åkesson, E. (1992). *Samspel mellan små barn med rörelsehinder och talhandikapp och deras föräldrar - en longitudinell studie* [Communicative interaction between young nonspeaking children with physical disabilities and their parents - a longitudinal study]. Göteborg Studies in Educational Sciences, 90. Göteborg, Sweden: Acta Universitatis Gothoburgensis.
- Björck-Åkesson, E., Brodin, J., & Fälth, I. (1997). *Åtgärder - Samspel - Kommunikation En modell för tidig familjeorienterad intervention* [Measures Interaction Communication A model for early family oriented intervention]. Rockneby, Sweden: WRP International.



- Björck-Åkesson, E., & Granlund, M. (2004). Delaktighet - ett centralt begrepp i WHO:s klassifikation av funktionstillstånd funktionshinder och hälsa (ICF) [Participation - a central concept in WHO's classification of functioning, disability and health (ICF)]. In A. Gustavsson (Ed.), *Delaktighetens språk* [The language of participation] (pp. 29-48). Lund, Sweden: Studentlitteratur.
- Björck-Åkesson, E., Granlund, M., & Olsson, C. (1996). Collaborative problem solving in communication intervention. In S. von Tetzchner & M. H. Jensen (Eds.), *Augmentative and Alternative Communication European Perspectives* (pp. 324-341). London: Whurr.
- Blissymbolics Communication International (2005). Retrieved June, 2005, from <http://www.blissymbolics.org/>
- Blissymbolics Communication International (2006). Retrieved January, 2006, from <http://www.blissymbolics.org/>
- Blum-Kulka, S. (2002). Do you believe that Lot's wife is blocking the road (to Jericho)?: Co-constructing theories about the world with adults. In S. Blum-Kulka & C. Snow (Eds.), *Talking to Adults The Contribution of Multiparty Discourse to Language Acquisition* (pp. 85-115). Mahwah, NJ: Lawrence Erlbaum.
- Blum-Kulka, S., & Snow, C. (Eds.). (2002). *Talking to Adults The Contribution of Multiparty Discourse to Language Acquisition*. Mahwah, NJ: Lawrence Erlbaum.
- Blum-Kulka, S., Huck-Taglicht, D., & Avni, H. (2004). The social and discursive spectrum of peer talk. *Discourse studies*, 6, 307-328.
- Bornstein, M. (1989). Between caretakers and their young: Two modes of interaction and their consequences for cognitive growth. In M. Bornstein & J. Bruner (Eds.), *Interaction in Human Development* (pp. 197-214). Mahwah, NJ: Lawrence Erlbaum.
- Bowerman, M., & Levinson, S. (2001). Introduction. In M. Bowerman & S. Levinson (Eds.), *Language Acquisition and Conceptual Development* (pp. 1-16). Cambridge, UK: Cambridge University Press.
- Brekke, K. M., & von Tetzchner, S. (2003). Co-construction in graphic language development. In S. von Tetzchner & N. Grove (Eds.), *Augmentative and Alternative Communication Developmental Issues* (pp. 176-210). London: Whurr.
- Brinton, B., & Fujiki, M. (1984). Development of topic manipulation skills in discourse. *Journal of Speech and Hearing Research*, 27, 350-358.

- Brown, M., & Gordon, W. (1987). Impact of impairment on activity patterns of children. *Archives of Physical Medicine and Rehabilitation*, 68, 828-832.
- Brown, G., & Yule, G. (1983). *Discourse analysis*. Cambridge, UK: Cambridge University Press.
- Brown, J., & Dunn, J. (1996). Continuities in emotion understanding from three to six years. *Child Development*, 67, 789-802.
- Bruner, J. (1978). The role of dialogue in language acquisition. In A. Sinclair, R. J. Jarvella, & W.J.M. Levelt (Eds.), *The Child's Conception of Language* (pp. 241-256). Berlin: Springer-Verlag.
- Bruner, J. (1983). *Child's Talk Learning to Use Language*. Oxford, UK: Oxford University Press.
- Bruno, J., & Dribbon, M. (1998). Outcomes in AAC: Evaluating the effectiveness of a parent training program. *Augmentative and Alternative Communication*, 14, 59-70.
- Budwig, N. (1989). The linguistic marking of agentivity and control in child language. *Journal of Child Language*, 16, 263-284.
- Buzolich, M. J., & Wiemann, J. M. (1988). Turn taking in atypical conversations: The case of the speaker/augmented-communicator dyad. *Journal of Speech and Hearing Research*, 31, 3-15.
- Calculator, S. (1997). Fostering early language acquisition and AAC use: Exploring reciprocal influences between children and their environments. *Augmentative and Alternative Communication*, 13, 149-157.
- Carpendale, J. I. M., & Lewis, C. (2004). Constructing an understanding of mind: The development of children's social understanding within social interaction. *Behavioral and Brain Sciences*, 27, 79-151.
- Chaiklin, S., & Lave, J. (Eds.). (1996). *Understanding practice Perspectives on activity and context*. Cambridge, UK: Cambridge University Press.
- Cheepen, C. (1988). *The Predictability of Informal Conversation*. London: Pinter.
- Clark, E. (1993). *The Lexicon in Acquisition*. Cambridge, UK: Cambridge University Press.
- Clark, H. (1996). *Using language*. Cambridge, UK: Cambridge University Press.
- Collins, S. (1996). Referring expressions in conversations between aided and natural speakers. In S. von Tetzchner & M. H. Jensen (Eds.), *Augmentative and Alternative Communication European Perspectives* (pp. 89-100). London: Whurr.

- Colquhoun, A. (1982). Augmentative communication systems: The interaction process [Unpublished independent study]. In A. W. Kraat (Ed.), *Communication interaction between aided and natural speakers A state of the art report* (pp. 186-187). Toronto, Canada: International Project on Communication Aids for the Speech-Impaired, Canadian Rehabilitation Council for the Disabled.
- Comparini, L. (2001). Constructing self and other: A language socialization approach to latina mother-child conflict talk. Abstract and preview retrieved from *Dissertation Abstracts International*, 61 (9), 5025B.
- Culp, D. (1982). Communication interactions Nonspeaking children using augmentative systems [Unpublished independent study]. In A. W. Kraat (Ed.), *Communication interaction between aided and natural speakers A state of the art report* (pp. 190-191). Toronto, Canada: International Project on Communication Aids for the Speech-Impaired, Canadian Rehabilitation Council for the Disabled.
- Dahlgren Sandberg, A. (1998). Reading and spelling among nonvocal children with cerebral palsy: Influence of home and school literacy environment. *Reading and Writing: An Interdisciplinary Journal*, 10, 23-50.
- Davidson, R., & Snow, C. (1996). Five-year-olds' interactions with fathers versus mothers. *First Language*, 16, 223-242.
- Deutsch, W., Wagner, A., Burchardt, R., Schulz, N., & Nakath, J. (2001). Person in the language of singletons, siblings, and twins. In M. Bowerman & S. Levinson (Eds.), *Language acquisition and conceptual development* (pp. 284-315). Cambridge, UK: Cambridge University Press.
- Duncan, S. (1972). Some signals and rules for taking speaking turns in conversations. *Journal of Personality and Social Psychology*, 23, 283-292.
- Dunn, J. (1994). Changing minds and changing relationships. In C. Lewis & P. Mitchell (Eds.), *Children's Early Understanding of Mind Origins and Development* (pp. 297-310). Hove, UK: Lawrence Erlbaum.
- Dunn, L. M., & Dunn, L. M. (1981). *Peabody Picture Vocabulary Test*. Circle Pines, MN: American Guidance Service.
- Dunn, J., Wooding, C., & Hermann, J. (1977). Mothers' speech to young children: Variation in context. *Developmental Medicine and Child Neurology*, 19, 629-638.
- Duranti, A., & Goodwin, C. (1992). Rethinking context: An introduction. In A. Duranti &

- C. Goodwin (Eds.), *Rethinking context: Language as an interactive phenomenon* (pp. 1-42). Cambridge, UK: Cambridge University Press.
- Engwis, P., & Sweeney, L. (1996). Perspectives on life and communicating: a dynamic family interview. In E. Björck-Åkesson & P. Lindsay (Eds.), *Communication Naturally Theoretical and Methodological Issues in Augmentative and Alternative Communication Proceedings of the Fourth ISAAC Research Symposium, Vancouver, Canada, 1996* (pp. 231-240). Västerås, Sweden: Mälardalen University Press.
- Erickson, F. (1990). The social construction of discourse in a family dinner table conversation. In B. Dorval (Ed.), *Conversational Organization and its Development* (pp. 207-238). Norwood, NJ: Ablex.
- Evans Morris, S. (1981). Communication/interaction development at mealtimes for the multiply handicapped child: Implications for the use of augmentative communication systems. *Language, Speech, and Hearing Services in Schools, 12*, 216-232.
- Falkman, K. (2005). *Communicating Your Way to a Theory of Mind The development of mentalizing skills in children with atypical language development* [Doctoral dissertation]. Göteborg, Sweden: Göteborg University, Department of Psychology.
- Falkman, K., Dahlgren Sandberg, A., & Hjelmquist, E. (2002). Preferred communication modes: Prelinguistic and linguistic communication in non-speaking preschool children with cerebral palsy. *International Journal of Language and Communication Disorders, 37*, 59-68.
- Ferm, U. (2001a). *Cooperation and Non-understanding in Child-Caregiver Conversations: Constraints of Speech and Physical Impairments* [Unpublished manuscript presented at the 8<sup>th</sup> Biennial Congress of IADA, Göteborg, Sweden, 2001, and at the 10<sup>th</sup> Biennial ISAAC Conference, Odense, Denmark, 2002]. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Ferm, U. (2001b). *Questions in the Mealtime Interactions of a Child with Severe Speech and Physical Impairments and her Caregiver* [Independent study]. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Ferm, U., Ahlsén, A., & Björck-Åkesson, E. (2005). Conversational topics between a child with complex communication needs and her caregiver at mealtime. *Augmentative and Alternative Communication, 21*, 19-40.

- Ferm, U., Amberntson, B., & Thunberg, G. (2001). Development and evaluation of a Minspeak™ application using Blissymbols: Experiences from two case studies. *Augmentative and Alternative Communication, 17*, 233-244.
- File, P., & Todman, J. (2002). Evaluation of the coherence of computer-aided conversations. *Augmentative and Alternative Communication, 18*, 228-241.
- Foster, S. (1986). Learning discourse topic management in the preschool years. *Journal of Child Language, 13*, 231-250.
- Fried-Oken, M., & More, L. (1992). An initial vocabulary for nonspeaking preschool children based on developmental and environmental language sources. *Augmentative and Alternative Communication, 8*, 41-55.
- Gallagher, T., & Craig, H. (1982). An investigation of overlap in children's speech. *Journal of Psycholinguistic Research, 11*, 63-75.
- Garfield, J. L., Peterson, C. C., & Perry, T. (2001). Social cognition, language acquisition and the development of the theory of mind. *Mind and Language, 16*, 494-541.
- Garman, M. (1990). *Psycholinguistics*. Cambridge, UK: Cambridge University Press.
- Georgakopoulou, A. (2002). Greek children and familiar narratives in family contexts: En route to cultural performances. In S. Blum-Kulka & C. Snow (Eds.), *Talking to Adults The Contribution of Multiparty Discourse to Language Acquisition* (pp. 33-54). Mahwah, NJ: Lawrence Erlbaum.
- Goldbart, J., & Marshall, J. (2004). Pushes and pulls on the parents of children who use AAC. *Augmentative and Alternative Communication, 20*, 194-208.
- Goldfield, B., & Snow, C. (1992). 'What's your cousin Arthur's mommy's name?': Features of family talk about kin and kin terms. *First Language, 12*, 187-205.
- Goodwin, C. (1995). Co-constructing meaning in conversations with an aphasic man. In R. Sanders & S. Sigman (Eds.), and S. Jacoby & E. Ochs (Guest Eds.), *Research on Language and Social Interaction, 28* (pp. 233-260) [Special issue].
- Goodwin, C. (2000). Action and embodiment within situated human interaction. *Journal of Pragmatics, 32*, 1489-1522.
- Grice, P. (1989). *Studies in the way of words*. London: Harvard University Press.
- Grimm, H. (1995). Mother-child dialogues: a comparison of preschool children with and without specific language impairment. In I. Marková, C. Graumann, & K. Foppa (Eds.), *Mutualities in Dialogue* (pp. 217-237). Cambridge, UK: Cambridge University

Press.

- Grönqvist, L. (1998). *Beskrivning av TraSA 0.8: Ett användarvänligt grafiskt verktyg för automatisk statistik på transkriptioner* [Description of TraSA 0.8: A user guide to the TranscriptionalStatistics with Automatics]. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Halliday, M. A. K. (1975). *Learning how to mean Explorations in the development of language*. London: Edward Arnold.
- Harris, D. (1982). Communicative interaction processes involving nonvocal physically handicapped children. *Topics in Language Disorders*, 2, 21-37.
- Hasan, R. (2000). The uses of talk. In S. Sarangi & M. Coulthard (Eds.), *Discourse and Social Life* (pp. 28-47). Essex, UK: Pearson Education.
- Heath, S. (1986). What no bedtime story means: narrative skills at home and school. In B. Schieffelin & E. Ochs (Eds.), *Language socialization across cultures* (pp. 97-124). Cambridge, UK: Cambridge University Press.
- Hekstra, D. (1993). *BlissProcessor* [Computer program 4.0]. Harderwijk, The Netherlands: Handicom.
- Hérot, C. (2002). Socialization of affect during mealtime interactions. In S. Blum-Kulka & C. Snow (Eds.), *Talking to Adults The Contribution of Multiparty Discourse to Language Acquisition* (pp. 155-179). Mahwah, NJ: Lawrence Erlbaum.
- Hicks, D. (1991). Kinds of narrative: Genre skills among first graders from two communities. In A. McCabe & C. Peterson (Eds.) *Developing Narrative Structure* (pp. 55-87). Hillsdale, NJ: Lawrence Erlbaum.
- Higginbotham, D. J., Wilkins, D., Leshner, G., & Moulton, B. (1999). Frametalker: A communication frame and utterance-based augmentative communication device. *Proceedings of the RESNA '99 Annual Conference*, 52-54, Arlington, VA: RESNA Press.
- Hjelmquist, E., & Dahlgren Sandberg, A. (1996). Sounds and silence: Interaction in aided language use. In S. von Tetzchner & M. H. Jensen (Eds.), *Augmentative and Alternative Communication European Perspectives* (pp. 137-152). London: Whurr.
- Hoff-Ginsberg, E. (1991). Mother-child conversation in different social classes and communicative settings. *Child Development*, 62, 782-796.
- Holmberg, E., & Sahlén, B. (1986). *NELLI - Neurolingvistisk undersökningsmodell för*

- språkstörda barn* [A model for neurolinguistic investigation of children with severe language disorders]. Malmö, Sweden: Utbildningsproduktion AB.
- Huer, M. B., & Lloyd, L. (1990). AAC users' perspectives on augmentative and alternative communication. *Augmentative and Alternative Communication*, 6, 242-249.
- Iacono, T. (2002). Words [Editorial note]. *Augmentative and Alternative Communication*, 18, 215-216.
- Johnson, M. (1987). *The body in the mind The bodily basis of meaning, imagination, and reason*. Chicago: University of Chicago Press.
- Karmiloff-Smith, A. (1986). Some fundamental aspects of language development after age 5. In P. Fletcher & M. Garman (Eds.), *Language acquisition* (pp. 455-474). Cambridge, UK: Cambridge University Press.
- Keenan, E., & Schieffelin, B. (1976). Topic as a discourse notion: A study of topic in the conversations of children and adults. In C. Li (Ed.), *Subject and Topic* (pp. 335-384). New York: Academic Press.
- Kendon, A. (2000). Language and gesture: unity or duality? In D. McNeill (Ed.), *Language and Gesture* (pp. 47-63). Cambridge, UK: Cambridge University Press.
- Kertoy, M., & Vetter, D. (1995). The effect of conversational setting on topic continuation in mother-child dyads. *Journal of Child Language*, 22, 73-88.
- King, J., Spoeneman, T., Stuart, S., & Beukelman, D. (1995). Small talk in adult conversations: Implications for AAC vocabulary selection. *Augmentative and Alternative Communication*, 11, 260-264.
- Koppenhaver, D., Evans, D., & Yoder, D. (1991). Childhood reading and writing experiences of literate adults with severe speech and motor impairments. *Augmentative and Alternative Communication*, 7, 20-33.
- Korolija, N. (1998). *Episodes in talk Constructing coherence in multiparty conversation* [Doctoral dissertation]. Linköping, Sweden: Linköping University, Department of Communication Studies.
- Korolija, N., & Linell, P. (1996). Episodes: Coding and analyzing coherence in multiparty conversation. *Linguistics*, 34, 799-831.
- Kraat, A. (1985). *Communication interaction between aided and natural speakers: A state of the art report*. Toronto, Canada: International Project on Communication Aids for the Speech-Impaired, Canadian Rehabilitation Council for the Disabled.

- Lagergren, C., & Larsson, A. (1992). *Språklig medvetenhet hos förskolebarn - ett prövningsmaterial* [Linguistic awareness in preschool children - an assessment material]. Göteborg, Sweden: SIH Läromedel.
- Lakoff, G. (1988). Cognitive semantics. In U. Eco, M. Santambrogio & P. Violi (Eds.), *Meaning and Mental Representations* (pp. 119-154). Bloomington, IN: Indiana University Press.
- Landis, J., & Koch, G. (1977). The measurement of observer agreement for categorical data. *Biometrics*, 33, 159-174.
- Lantz, C., & Melén, K. (1983). *Finmotoriskt utvecklingsstatus* [Developmental test of fine motor skills]. Stockholm: Stockholm University, Department of Education.
- Lave, J. (1996). The practice of learning. In S. Chaiklin & J. Lave (Eds.), *Understanding practice Perspectives on activity and context* (pp. 3-32). Cambridge, UK: Cambridge University Press.
- Levinson, S. (1983). *Pragmatics*. Cambridge, UK: Cambridge University Press.
- Letto, M., Bedrosian, J., & Skarakis-Doyle, E. (1994). Application of Vygotskian developmental theory to language acquisition in a young child with cerebral palsy. *Augmentative and Alternative Communication*, 10, 151-160.
- Liberg, C., Espmark, L., Wiksten, J., & Bütler, I. (1997). *Upplevelsepresenterande, Händelsetecknande, Berättande och Språkinläring* [Observations, recounts, narratives and language learning]. Uppsala, Sweden: Uppsala University, Department of Linguistics.
- Light, J. (1988). Interaction involving individuals using augmentative and alternative communication systems: State of the art and future directions. *Augmentative and Alternative Communication*, 4, 66-82.
- Light, J. (1989). Toward a definition of communicative competence for individuals using augmentative and alternative communication systems. *Augmentative and Alternative Communication*, 5, 137-144.
- Light, J. (1997). Communication is the essence of human life: Reflections on communicative competence. *Augmentative and Alternative Communication*, 13, 61-70.
- Light, J. (1997). Let's go star fishing: Reflections on the contexts of language learning for children who use aided AAC. *Augmentative and Alternative Communication*, 13, 158-171.



- Light, J., & Binger, C. (1998). *Building Communicative Competence with Individuals Who Use Augmentative and Alternative Communication*. Baltimore: Paul H. Brookes Publishing.
- Light, J., Binger, C., Agate, T., & Ramsay, K. (1999). Teaching partner-focused questions to individuals who use augmentative and alternative communication to enhance their communicative competence. *Journal of Speech, Language, and Hearing Research, 42*, 241-255.
- Light, J., Binger, C., & Kelford Smith, A. (1994). Story reading interactions between preschoolers who use AAC and their mothers. *Augmentative and Alternative Communication, 10*, 255-268.
- Light, J., Collier, B., & Parnes, P. (1985a). Communicative interaction between young nonspeaking physically disabled children and their caregivers: Part I - Discourse patterns. *Augmentative and Alternative Communication, 1*, 74-83.
- Light, J., Collier, B., & Parnes, P. (1985b). Communicative interaction between young nonspeaking physically disabled children and their caregivers: Part II - communicative function. *Augmentative and Alternative Communication, 1*, 98-107.
- Light, J., Collier, B., & Parnes, P. (1985c). Communicative interaction between young nonspeaking physically disabled children and their caregivers: Part III - Modes of communication. *Augmentative and Alternative Communication, 1*, 125-133.
- Light, J., Drager, K., McCarthy, J., Mellott, S., Millar, D., Parrish, C., Parsons, A., Rhoads, S., Ward, M., & Welliver, M. (2004). Performance of typically developing four- and five-year-old children with AAC systems using different language organization techniques. *Augmentative and Alternative Communication, 20*, 63-88.
- Light, J., & Kelford Smith, A. (1993). Home literacy experiences of preschoolers who use AAC systems and of their nondisabled peers. *Augmentative and Alternative Communication, 9*, 10-25.
- Linell, P. (1998). *Approaching dialogic Talk, interaction and contexts in dialogical perspectives*. Amsterdam: John Benjamins.
- Linell, P., & Korolija, N. (1995). On the division of communicative labour within episodes in aphasic discourse. *International Journal of Psycholinguistics, 11*, 143-165.

- Magnusson, E., & Naucmér, K. (1993). *Bedömning av språklig medvetenhet hos förskolebarn och skolbarn* [Assessment of linguistic awareness in preschool children and school children]. Löddeköpinge, Sweden: Pedagogisk Design.
- Martinovsky, B. (2000). The role of repetitions and reformulations in court proceedings - A comparison of Sweden and Bulgaria. *Gothenburg Monographs in Linguistics, 18*. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Martinsen, H., & von Tetzchner, S. (1996). Situating augmentative and alternative language intervention. In S. von Tetzchner & M. H. Jensen (Eds.), *Augmentative and Alternative Communication European Perspectives* (pp. 37-48). London: Whurr.
- Marvin, C. (1994). Home literacy experiences of preschool children with single and multiple disabilities. *Topics in Early Childhood Special Education, 14*, 436-454.
- Marvin, C., Beukelman, D., & Bilyeu, D. (1994a). Vocabulary-use patterns in preschool children: Effects of context and time sampling. *Augmentative and Alternative Communication, 10*, 224-236.
- Marvin, C., Beukelman, D., Brockhaus, J., & Kast, L. (1994b). What are you talking about?: Semantic analysis of preschool children's conversational topics in home and preschool settings. *Augmentative and Alternative Communication, 10*, 75-86.
- Matre, S. (1997). *Munnlege tekstar hos barn Ein studie av barn 5-8 år i dialogisk samspel* [Oral texts among children: A study of children 5-8 years of age in dialogical interaction, Doctoral dissertation]. Trondheim, Norway: Noregs Teknisk-Naturvetenskaplege Universitet, Institutt for Nordistikk og Litteraturvitskap.
- McCabe, A., & Peterson, C. (1991). Getting the story: A longitudinal study of parental styles in eliciting narratives and developing narrative skill. In A. McCabe & C. Peterson (Eds.) *Developing Narrative Structure* (pp. 217-253). Hillsdale, NJ: Lawrence Erlbaum.
- McCord, S., & Soto, G. (2004). Perceptions of AAC: An ethnographic investigation of Mexican-American families. *Augmentative and Alternative Communication, 20*, 209-227.
- McDermott, R. P. (1996). The acquisition of a child by a learning disability. In S. Chaiklin & J. Lave (Eds.), *Understanding practice Perspectives on activity and context* (pp. 269-305). Cambridge, UK: Cambridge University Press.
- McNeil, M., & Prescott, T. (1978). *Revised token test*. Baltimore: University Park Press.

- Mentis, M., & Prutting, C. (1991). Analysis of topic as illustrated in a head-injured and a normal adult. *Journal of Speech and Hearing Research*, 34, 583-595.
- Mey, J. L. (2001). *Pragmatics An Introduction* [2<sup>nd</sup> ed.]. Oxford, UK: Blackwell.
- Miller, M., & Kraat, A. W. (1984). Hey you, I've got something to say: A study of the attention-getting ability of a nonspeaking, physically disabled pre-schooler [Experimental study for partial fulfillment of Master of Arts degree]. In A. W. Kraat (Ed.), *Communication interaction between aided and natural speakers A state of the art report* (pp. 223-225). Toronto, Canada: International Project on Communication Aids for the Speech-Impaired, Canadian Rehabilitation Council for the Disabled.
- Moerk, E. (1985). Picture-book reading by mothers and young children and its impact upon language development. *Journal of Pragmatics*, 9, 547-566.
- Müller, E., & Soto, G. (2001). Capturing the complexity of aided interactions: a conversation analysis perspective. In S. von Tetzchner & J. Clibbens (Eds.), *Understanding the Theoretical and Methodological Bases of Augmentative and Alternative Communication Proceedings of the Sixth Biennial Research Symposium of ISAAC, Washington, DC, 2000* (pp. 64-83). Toronto, Canada: ISAAC.
- Månsson, A. (2003). The relation between gestures and semantic processes A study of normal language development and specific language impairment in children. *Gothenburg Monographs in Linguistics*, 23. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Nelson, K., Hampson, J., & Shaw, L. (1993). Nouns in early lexicons: evidence, explanations and implications. *Journal of Child Language*, 20, 61-84.
- Nevat-Gal, R. (2002). Cognitive expressions and humorous phrases in family discourse as reflectors of and cultivators of cognition. In S. Blum-Kulka & C. Snow (Eds.), *Talking to Adults The Contribution of Multiparty Discourse to Language Acquisition* (pp. 181-208). Mahwah, NJ: Lawrence Erlbaum.
- Newman, L., & Pratt, S. (1990). Adaptive self-stabilization in adult-child interactions: Temporal congruence with varied switch-pause durations. *Discourse Processes: A Multi-Disciplinary Journal*, 13, 363-374.
- Ninio, A., & Bruner, J. (1978). The achievement and antecedents of labelling. *Journal of Child Language*, 5, 1-15.
- Ninio, A., & Snow, C. (1996). *Pragmatic Development*. Oxford: Westview Press.

- Nivre, J. (Ed.) (1997). *Transcription standard: Semantics and spoken language 5.1* [Manual]. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Norrby, C. (1996). *Samtalsanalys Så gör vi när vi pratar med varandra* [Conversation Analysis/Discourse Analysis This is how we talk to one another]. Lund, Sweden: Studentlitteratur.
- Nordenfelt, L. (2004). Aktivitet, delaktighet och ICF - en vetenskapsteoretisk bakgrund [Activity, participation and ICF - a theory of science background]. In A. Gustavsson (Ed.), *Delaktighetens språk* [The language of participation] (pp. 49-60). Lund, Sweden: Studentlitteratur.
- Nordenskiöld, U., & Grimby, G. (1992). Grip force in patients with rheumatoid arthritis and fibromyalgia and in healthy subjects. A study with the Grippit instrument. *Rheumatology*, 22, 14-19.
- Nordqvist, Å. (2001). Speech about speech A developmental study on form and function of direct and indirect speech. *Gothenburg Monographs in Linguistics*, 19. Göteborg, Sweden: Göteborg University, Department of Linguistics.
- Ochs, E. (1994). Stories that step into the future. In D. Biber & E. Finegan (Eds.), *Sociolinguistic perspectives on register* (pp. 106-135). New York: Oxford University Press
- Ochs, E., & Capps, L. (1996). Narrating the self. *Annual Review of Anthropology*, 25, 19-43.
- Ochs, E., Smith, R., & Taylor, C. (1996). Detective stories at dinnertime: Problem solving through co-narration. In C. Briggs (Ed.), *Disorderly Discourse Narrative, Conflict, and Inequality* (pp. 95-113). New York: Oxford University Press.
- Ochs, E., Taylor, C., Rudolph, D., & Smith R. (1992). Storytelling as a theory-building activity. *Discourse Processes*, 15, 37-72.
- Olsson, C. (2004). Dyadic interaction with a child with multiple disabilities: A system theory perspective on communication. *Augmentative and Alternative Communication*, 20, 228-242.
- Pan Alexander, B., Perlmann, R., & Snow, C. (2000). Food for thought: Dinner table as a context for observing parent-child discourse. In L. Menn & N. Bernstein Ratner (Eds.), *Methods for studying language production* (pp. 205-224). Mahwah, NJ: Lawrence Erlbaum.

- Pennington, L., & McConachie, H. (1999). Mother-child interaction revisited: communication with non-speaking physically disabled children. *International Journal of Language and Communication Disorders*, 34, 391-416.
- Pennington, L., & McConachie, H. (2001). Predicting patterns of interaction between children with cerebral palsy and their mothers. *Developmental Medicine and Child Neurology*, 43, 83-90.
- Perlmann, R. (1984). Variations in socialization styles: Family talk at the dinner table. *Dissertation Abstracts International*, 44 (11), 3556 B. (University Microfilms No. 8403811)
- Piaget, J. (1926/1959). *The language and thought of the child* (M. Gabain & R. Gabain, Trans.). London: Routledge & Kegan Paul.
- Pino, O. (2000). The effect of context on mother's interaction style with Down's syndrome and typically developing children. *Research in Developmental Disabilities*, 21, 329-346.
- Porter, G. (2003). A pragmatic approach to the organization of vocabulary in dynamic displays [Handout from seminar]. Stockholm: Sweden.
- Preece, A. (1987). The range of narrative forms conversationally produced by young children. *Journal of Child Language*, 14, 353-373.
- Reese, E., & Cox, A. (1999). Quality of adult book reading affects children's emergent literacy. *Developmental Psychology*, 35, 20-28.
- Renner, G. (2003). The development of communication with alternative means from Vygotsky's cultural-historical perspective. In S. von Tetzchner & N. Grove (Eds.), *Augmentative and Alternative Communication Developmental Issues* (pp. 67-82). London: Whurr.
- Rogoff, B. (1990). *Apprenticeship in Thinking Cognitive Development in Social Context*. New York: Oxford University Press.
- Rogoff, B., & Gardner, W. (1984). Adult guidance of cognitive development. In B. Rogoff & J. Lave (Eds.), *Everyday Cognition Development in Social Context* (pp. 95-116). Cambridge, MA: Harvard University Press.
- Rogoff, B., & Lave, J. (Eds.) (1984). *Everyday Cognition Development in Social Context*. Cambridge, MA: Harvard University Press.
- Rowland, C., & Schweigert, P. (1993). Analyzing the communication environment to

- increase functional communication. *The Journal of the Association for Persons with Severe Handicaps*, 18, 161-176.
- Rydberg, S., & Höghielm, R. (1974). *SPIQ - Snabbt performance test på intelligens* [Quick performance test of intelligence]. Stockholm: Psykologiförlaget AB.
- Sacks, H., Schegloff, E. A., & Jefferson, G. A. (1974). A simplest systematics for the organization of turn-taking for conversation. *Language*, 50, 696-735.
- Schegloff, E. (1996). Some practices for referring to persons in talk-in-interaction: A partial sketch of a systematics. In B. Fox (Ed.), *Studies in Anaphora* (pp. 437-485). Amsterdam: John Benjamins.
- Schiffrin, D., Tannen, D., & Hamilton, H. (2001). Introduction. In D. Schiffrin, D. Tannen, & H. Hamilton (Eds.), *The Handbook of Discourse Analysis* (pp. 1-10). Oxford, UK: Blackwell.
- Simeonsson, R. J., Leonardi, M., Lollar, D., Björck-Åkesson, E., Hollenweger, J., & Martinuzzi, A. (2003). Applying the international classification of functioning, disability and health (ICF) to measure childhood disability. *Disability and Rehabilitation*, 25, 602-610.
- Sinha, C. (1988). *Language and Representation A Socio-Naturalistic Approach to Human Development*. Hemel Hempstead, UK: Harvester Wheatsheaf.
- Sinha, C., & Jensen de López, K. (2000). Language culture and the embodiment of spatial cognition. *Cognitive Linguistics*, 11, 17-41.
- Smith, M. (1992). Reading abilities of nonspeaking students: Two case studies. *Augmentative and Alternative Communication*, 8, 57-66.
- Smith, M. (1994). Speech by any other name: the role of communication aids in interaction. *European Journal of Disorders of Communication*, 29, 225-240.
- Smith, M. (2003). Environmental influences on aided language development: the role of partner adaptation. In S. von Tetzchner & N. Grove (Eds.), *Augmentative and Alternative Communication Developmental Issues* (pp. 155-175). London: Whurr.
- Snow, C. (1977). Mothers' speech research: From input to interaction. In C. Snow and C. Ferguson (Eds.), *Talking to children Language input and acquisition* (pp. 31-50). Cambridge, UK: Cambridge University Press.
- Snow, C., & Blum-Kulka, S. (2002). From home to school: School age children talking with adults. In S. Blum-Kulka & C. Snow (Eds.), *Talking to Adults The Contribution of*

*Multiparty Discourse to Language Acquisition* (pp. 327-341). Mahwah, NJ: Lawrence Erlbaum.

Snow, C., & Goldfield, B. (1983). Turn the page please: situation-specific language acquisition. *Journal of Child Language*, 10, 551-569.

Socialstyrelsen (2003). *Klassifikation av funktionstillstånd, funktionshinder och hälsa* [Swedish version of the International classification of Functioning, Disability and Health (ICF)]. Stockholm: Socialstyrelsen.

Sorsby, A., & Martlew, M. (1991). Representational demands in mothers' talk to preschool children in two contexts: picture book reading and a modelling task. *Journal of Child Language*, 18, 373-395.

Soto, G., & Grove, N. (2001). Multi-modal transcription in augmentative and alternative communication: Theoretical and methodological considerations. In S. von Tetzchner & J. Clibbens (Eds.), *Understanding the Theoretical and Methodological Bases of Augmentative and Alternative Communication Proceedings of the Sixth Biennial Research Symposium of ISAAC, Washington, DC, 2000* (pp. 12-14). Toronto, Canada: ISAAC.

Soto, G., & Seligman-Wine, J. (2003). Child-driven development of alternative communication: a case study. In S. von Tetzchner & N. Grove (Eds.), *Augmentative and Alternative Communication Developmental Issues* (pp. 211-228). London: Whurr.

Soto, G., & von Tetzchner, S. (2003). Supporting the development of alternative communication through culturally significant activities in shared educational settings. In S. von Tetzchner & N. Grove (Eds.), *Augmentative and Alternative Communication Developmental Issues* (pp. 287-299). London: Whurr.

Stuart, S., Beukelman, D., & King, J. (1997). Vocabulary use during extended conversations by two cohorts of older adults. *Augmentative and Alternative Communication*, 13, 40-47.

Stuart, S., Vanderhoof, D., & Beukelman, D. (1993). Topic and vocabulary use patterns of elderly women. *Augmentative and Alternative Communication*, 9, 95-110.

Sweeney, L. (1996). Family issues in alternative and augmentative communication. In E. Björck-Åkesson & P. Lindsay (Eds.), *Communication Naturally Theoretical and Methodological Issues in Augmentative and Alternative Communication Proceedings*

- of the Fourth ISAAC Research Symposium, Vancouver, Canada, 1996 (pp. 217-230). Västerås, Sweden: Mälardalen University Press.
- Tanz, C. (1980). *Studies in the acquisition of deictic terms*. Cambridge, UK: Cambridge University Press.
- Todman, J. (2000). Rate and quality of conversations using a text-storage AAC system: Single case training study. *Augmentative and Alternative Communication*, 16, 164-179.
- Todman, J., & Alm, N. (2003). Modelling conversational pragmatics in communication aids. *Journal of Pragmatics*, 35, 523-538.
- Todman, J., Elder, L., & Alm, N. (1995). Evaluation of the content of computer-aided conversations. *Augmentative and Alternative Communication*, 11, 229-234.
- Todman, J., Rankin, D., & File, P. (1999). The use of stored text in computer-aided conversation: A single-case experiment. *Journal of Language and Social Psychology*, 18, 287-309.
- Todman, J., & Rzepecka, H. (2003). Effect of pre-utterance pause length on perceptions of communicative competence in AAC-aided social conversations. *Augmentative and Alternative Communication*, 19, 222-234.
- Tolson, T. (1991). Sequential analysis of mealtime conversation patterns in two- and three-generational African American families (family structure). Abstract and preview retrieved from *Dissertation Abstracts International*, 54 (05), 2788B.
- Tomasello, M. (2000). First steps toward a usage-based theory of language acquisition. *Cognitive Linguistics*, 11, 61-82.
- Tomasello, M. (2001). Perceiving intentions and learning words in the second year of life. In M. Bowerman & S. Levinson (Eds.), *Language acquisition and conceptual development* (pp. 132-158). Cambridge, UK: Cambridge University Press.
- Tsui, A. B. M. (1994). *English Conversation*. Oxford, UK: Oxford University Press.
- Tulviste, T. (2000). Socialization at meals: A comparison of American and Estonian mother-adolescent interaction. *Journal of Cross-Cultural Psychology*, 31, 537-556.
- Tulviste, T. (2001). Can variation in mother-child interaction be explained by context and collectivistic attitudes? *Applied Psycholinguistics*, 22, 541-553.



- Turnbull, W., & Carpendale, J. I. M. (1999). A social pragmatic model of talk: Implications for research on the development of children's social understanding. *Human Development*, 42, 328-355.
- von Tetzchner, S. (1996). The contexts of early aided language acquisition. *Proceedings of the Seventh Biennial ISAAC Conference, Vancouver, Canada, 1996* (pp. 198-199). Toronto, Canada: ISAAC.
- von Tetzchner, S., & Grove, N. (2003). The development of alternative language forms. In S. von Tetzchner & N. Grove (Eds.), *Augmentative and Alternative Communication Developmental Issues* (pp. 1-27). London: Whurr.
- von Tetzchner, S., Grove, N., Loncke, F., Barnett, S., Woll, B., & Clibbens, J. (1996). Preliminaries to a comprehensive model of augmentative and alternative communication. In S. von Tetzchner & M. H. Jensen (Eds.), *Augmentative and Alternative Communication European Perspectives* (pp. 19-36). London: Whurr.
- von Tetzchner, S., & Martinsen, H. (1996). Words and strategies: Conversations with young children who use aided language. In S. von Tetzchner & M. H. Jensen (Eds.), *Augmentative and Alternative Communication European Perspectives* (pp. 65-88). London: Whurr.
- von Tetzchner, S., & Jensen, M. H. (1996). Introduction. In S. von Tetzchner & M. H. Jensen (Eds.), *Augmentative and Alternative Communication European Perspectives* (pp. 1-18). London: Whurr.
- Vygotsky, L. S. (1978). *Mind in Society The Development of Higher Psychological Processes* (M. Cole, V. John-Steiner, S. Scribner, E. Souberman, Eds.). Cambridge, MA: Harvard University Press.
- Vygotsky, L. S. (1986). *Thought and Language* (A. Kozulin, Ed.). Cambridge, MA: The M.I.T. Press.
- Vygotsky, L. S. (1987). *The Collected Works of L. S. Vygotsky, vol. 1, Problems of General Psychology* (R. W. Rieber & A. S. Carton, Eds., N. Minick, Trans.). New York: Plenum Press.
- Vygotsky, L. S. (1993). *The Collected Works of L. S. Vygotsky, vol. 2, The Fundamentals of Defectology Abnormal Psychology and Learning Disabilities* (R. W. Rieber & A. S. Carton, Eds., J. E. Knox & C. B. Stevens, Trans.). New York: Plenum Press.

- Waller, A., O'Mara, D., Tait, L., Booth, L., Brophy-Arnott, B., & Hood, H. (2001). Using written stories to support the use of narrative in conversational interactions: Case study. *Augmentative and Alternative Communication*, *17*, 221-232.
- Waller, A., & O'Mara, D. (2003). Aided communication and the development of personal story telling. In S. von Tetzchner & N. Grove (Eds.), *Augmentative and Alternative Communication Developmental Issues* (pp. 256-271). London: Whurr.
- Wanska, S., & Bedrosian, J. (1986). Topic and communicative intent in mother-child discourse. *Journal of Child Language*, *13*, 523-535.
- Welkowitz, J., Bond, R., Feldman, L., & Tota, M. (1990). Conversational time patterns and mutual influence in parent-child interactions: A time series approach. *Journal of Psycholinguistic Research*, *19*, 221-243.
- Wells, G. (1980). Adjustments in adult-child conversation: Some effects of interaction. In H. Giles, W. P. Robinson, & P. Smith (Eds.), *Language Social Psychological Perspectives* (pp. 41-48). Oxford, UK: Pergamon Press.
- Wells, G. (1985). *Language development in the pre-school years*. Cambridge, UK: Cambridge University Press.
- Wexler, K., Blau, A., Leslie, S., & Dore, J. (1983). Conversational interaction of nonspeaking cerebral palsied individuals and their speaking partner with and without augmentative communication aids. In A. W. Kraat (Ed.), *Communication interaction between aided and natural speakers A state of the art report* (pp. 239-240). Toronto, Canada: International Project on Communication Aids for the Speech-Impaired, Canadian Rehabilitation Council for the Disabled.
- White, S. H., & Siegel, A. W. (1984). Cognitive development in time and space. In B. Rogoff & J. Lave (Eds.), *Everyday Cognition Development in Social Context* (pp. 238-277). Cambridge, MA: Harvard University Press.
- World Health Organization, WHO (2001). *International classification of functioning, disability and health (ICF)*. WHO: Geneva, Switzerland.
- World Health Organization, WHO (2006). *International classification of functioning, disability and health for children and youth (ICF-CY)* [Online preliminary version]. Retrieved January, 2006, from <http://www3.who.int/icf/icftemplate.cfm>.
- Wittgenstein, L. (1953/1967). *Philosophical Investigations*. Oxford, UK: Blackwell.

- Yont, K., Snow, C., & Vernon-Feagans, L. (2003). The role of context in mother-child interactions: an analysis of communicative intents expressed during toy play and book reading with 12-month-olds. *Journal of Pragmatics*, 35, 435-454.
- Yorkston, K., Smith, K., & Beukelman, D. (1990). Extended communication samples of augmented communicators I: A comparison of individualized versus standard single-word vocabularies. *Journal of Speech and Hearing Disorders*, 55, 217-224.
- Zachrisson, G., Rydeman, B., & Björck-Åkesson, E. (2002). Gemensam problemlösning vid Alternativ och Kompletterande Kommunikation (AKK) [Collaborative problem solving in Augmentative and Alternative Communication (AAC)]. Stockholm: Hjälpmedelsinstitutet.
- Zake, S. (1997). What are they saying? An investigation of the communication between children with severe disabilities and those who care about them. *Dissertation Abstracts International*, 58 (06), 2077A. (University Microfilms No. 9736771)

# **Appendices**

# Appendix A1

Characteristics of study participants; focus dyad 1 and comparison dyad 1

	FOCUS DYAD 1 - FDI		COMPARISON DYAD 1 - CDI	
	Child - Maria	Caregiver (aunt)	Child	Caregiver (mother)
Diagnosis	Cerebral palsy; spastic diplegia with dystonia, and dysarthria	-	No remarks	-
Age	6 years 6 months	31 years 8 months	6 years 6 months	36 years 6 months
Siblings	None, no cousins	-	Two older brothers	-
Conditions of living	Rural district	Rural district	Rural district	Rural district
Occupation	Preschool class & after-school center	Public service	Preschool class	Public service
Main expressive communication mode	Speech vocalizations, word approximations, body communication, Blissymbolics	Speech and body communication	Speech and body communication	Speech and body communication
Communication aids	Bliss-board, light pointer, letter-board	Bliss-board	-	-
Cognition	Within normal variation for her age	-	Within normal variation for her age	-
Receptive language	Within normal variation for her age	-	Within normal variation for her age	-

## Appendix A2

Characteristics of study participants; focus dyad 2 and comparison dyad 2


	FOCUS DYAD 2 - FD2		COMPARISON DYAD 2 - CD2	
	Child - Tilde	Caregiver (mother)	Child	Caregiver (mother)
Diagnosis	Cerebral palsy; spastic tetraplegia and dysarthria	-	No remarks	-
Age	7 years 8 months	34 years 5 months	7 years 8 months	35 years 8 months
Siblings	One older brother	-	One younger sister and one older brother	-
Conditions of living	Rural district	Rural district	Rural district	Rural district
Occupation	Preschool class & after-school center	Medical care	Preschool class	Medical care
Main expressive communication mode	Speech, vocalizations, word approximations, body communication, Blissymbolics	Speech and body communication	Speech and body communication	Speech and body communication
Communication aids	Bliss-board, light pointer	Bliss-board	-	-
Cognition	Within normal variation for her age	-	Within normal variation for her age	-
Receptive language	Within normal variation for her age	-	Within normal variation for her age	-

## Appendix B

Corpus data: Specifications of lengths (min: sec), numbers of contributions and numbers of tokens for the activity samples in the study

General linguistic features in different activity types	Focus dyad 1 (FD1)		Focus dyad 2 (FD2)		Comparison dyad 1 (CD1)		Comparison dyad 2 (CD2)	
	Sample		Sample		Sample		Sample	
	a	b	a	b	a	b	a	b
<b>Mealtime</b>								
Length of sample	22:53	19:33	11:33	11:21	22:15	12:03	18:11	12:12
No. of contributions	310	303	86	87	275	117	410	301
Child	159	153	40	46	139	60	140	95
Caregiver	151	150	40	41	136	57	182	111
Other family member/s	-	-	6	-	-	-	88	95
No. of tokens	955	766	661	704	1255	598	2475	1753
Child	190	219	38	49	588	211	960	536
Caregiver	765	547	598	655	667	387	1080	645
Other family member/s	-	-	25	-	-	-	435	572
<b>Game</b>								
Length of sample	22:29	23:08	10:36	12:15	15:05	06:36	15:30	17:10
No. of contributions	199	465	121	133	158	79	263	389
Child	103	245	66	73	79	40	142	208
Caregiver	96	220	55	60	79	39	121	181
No. of tokens	908	1806	1028	1166	673	331	1852	2095
Child	97	276	61	66	301	90	456	696
Caregiver	811	1530	967	1100	372	241	1396	1399
<b>Drawing</b>								
Length of sample	15:23	13:17			18:57	16:03	14:03	10:18
No. of contributions	185	166			213	128	145	125
Child	92	70			107	64	70	64
Caregiver	93	81			106	64	69	61
Other family member	-	15			-	-	6	-
No. of tokens	514	418			1133	723	813	1015
Child	113	78			657	372	311	375
Caregiver	401	326			476	351	472	640
Other family member	-	14			-	-	30	-

<b>Teeth brushing</b>								
Length of sample	04:12	03:37	05:06	04:26	01:42	02:49	02:45	03:29
No. of contributions	59	51	48	19	23	49	42	58
Child	31	26	26	11	12	25	23	27
Caregiver	28	25	19	6	11	24	19	31
Other family member	-	-	3	2	-	-	-	-
No. of tokens	211	125	388	320	65	167	239	395
Child	38	46	39	10	27	76	63	158
Caregiver	173	79	338	308	38	91	176	237
Other family member	-	-	11	2	-	-	-	-
<b>Story reading</b>								
Length of sample	06:07	08:21	16:46	15:58	11:24	12:14	11:04	12:45
No. of contributions	57	111	83	47	125	251	72	71
Child	28	58	51	29	61	125	37	44
Caregiver	29	53	31	18	64	126	35	27
Other family member	-	-	1	-	-	-	-	-
No. of tokens	798	980	2177	1741	690	681	1617	2075
Child	38	69	55	20	340	313	201	212
Caregiver	760	911	2118	1721	350	368	1416	1863
Other family member	-	-	4	-	-	-	-	-

Note:  = was not video recorded for focus dyad 2.



# Appendix C

The uses of the Chi-square test in the study

## Example 1: Explanation relating to the sub-studies on mealtime interaction

### (Sections 4.2.1.3 & 4.2.2.3)

In the mealtime samples of FD1a and CD1a, 955 and 1255 tokens were observed, respectively. The total number of tokens was 2210. Since the interaction samples had different lengths, the expected values had to be recalculated considering the time difference. Interaction sample FD1a measured 22:53 (min:sec)  $\approx$  23 minutes, and sample CD1a measured 22:15  $\approx$  22 minutes (i.e., the relationship was 23:22). This meant that the expected values should also have been related in the same way, namely, 23:22. The expected values for number of tokens for FD1a and CD1a were calculated in the following way:  $2210 \cdot 23/(23 + 22) = 1130$  (FD1a), and  $2210 \cdot 22/(23 + 22) = 1080$  (CD1a). The Chi-square statistic in this situation was  $\chi^2(1) = 55.45$  ( $p < 0.001$ ), which means that the observed numbers of tokens were significantly different from what was expected from the null hypothesis. Thus, in relation to interaction sample length, FD1a included a smaller number of tokens than what was expected from the model.

## Example 2: Explanation relating to the sub-study on person reference

### (Section 4.2.3.3)

The mealtime sample for FD1 was 42 minutes and 26 seconds (written 42.43) and included 1721 tokens and 185 person references. The mealtime sample for CD1 was 34 minutes and 18 seconds and included 1853 tokens and 326 person references. In order to get the expected values for numbers of person references in FD1 and CD1 at mealtime, CD1 was, first, neutralized regarding length;  $34.30 \cdot 42.43/34.30 = 42.43$ . If the mealtime sample for CD1 measured 42.43 we would expect the number of tokens in CD1 to be 2292.21 ( $1853 \cdot 42.43/34.30$ ), and the number of person references in CD1 to be 403.27 ( $326 \cdot 42.43/34.30$ ). The interaction sample for CD1 was now neutralized for length. The next step in the procedure was to calculate the probability for numbers of tokens. The observed number of tokens for FD1 was added to the calculated number of tokens for CD1. In this situation, the total number of tokens for FD1 and CD1 was 4013.21 ( $1721 + 2292.21$ ). Dividing 1721 with 4013.21 ( $1721/4013.21 = 0.4288$ ) rendered the value 0.4288. Thus, 43% of all tokens belonged to FD1 and 57% of all tokens belonged to CD1. If the numbers of person references were uniformly distributed within FD1 and CD1, we would expect the numbers of person references to be distributed in the same way the tokens were (i.e., 43:57). To get the expected values for person references in each dyad sample, the total number of person references ( $185 + 326$ ) was multiplied with 0.43 and 0.57. The expected values for numbers of person references were 219.7 ( $511 \cdot 0.43$ ) and 291.3 ( $511 \cdot 0.57$ ), for FD1 and CD1, respectively. The Chi-square statistic in this situation was  $\chi^2(1) = 9.6303$  ( $p < 0.01$ ), which means that the observed numbers of person references were significantly different from what was expected from the null hypothesis.

# Appendix D1

Specification of interpreted meanings, types and tokens for the focus child in FD1a

FOCUS CHILD – FD1a				
No.	Occurrence	Meaning		No. of times meanings are expressed with different types and combination of types
		Swedish	English	
1	23	ja	yes	ng (8), a (9), aa (4), nga (1) ng nga (1)
2	23	m	m (yes)	m (23)
3	13	nej	no	ng (4), ngä (4), nä (3), nga: (1), ngää (1)
4	4	jo	contrastive yes	m (1), ä (1), eh (1), a: (1)
5	4	bengtsson	bengtsson	ngå (4)
6	4	kalle	kalle	möuwa (2), da (1), auva mam (1)
7	2	coca cola	coca cola	m va: (1), ngja (1)
8	2	mera	more	em (1), m (1)
9	2	toa	toilet	auoa (1), aoua (1)
10	2	champinjon	mushroom	åa (1), navo (1)
11	1	dricka	drink	å ngj a (1)
12	1	bengt	bengt	da (1)
13	1	okej	okey	ng (1)
14	1	farligt	dangerous	aje (1)
15	1	mm	mm (yes)	mm (1)
16	1	varm	warm	am (1)
	85			85 occurrences of meanings 90 tokens in these meanings

## Appendix D2

Specification of interpreted meanings, types and tokens for the focus child in FD1b

FOCUS CHILD – FD1b				
No.	Occurrence	Meaning		No. of times meanings are expressed with different types and combination of types
		Swedish	English	
1	15	ja	yes	ng (2), a (9), a: (1), nga: (1), ja:m (1), a:m (1)
2	15	m	m (yes)	m (15)
3	14	nej	no	ng (4), n ng (1), n ngä (1), nga (2), ngä: (3), ngä (2), ngjä (1), gä (1)
4	5	mera	more	m m (1), n gä (1), nnä (1), my:na (1), me: (1)
5	5	dricka	drink	n (1), g ä (1), gia (1), m m äj (1)
6	1	varm	warm	ouam (1)
7	1	mätt	full	mö (1)
8	1	tre	three	mde (1)
9	1	jo	contrastive yes	jo: (1)
10	1	mamma	mum	amma (1)
	59			59 occurrences of meanings 66 tokens in these meanings

# Appendix E1

Sequences of speech including person references coded as cited in focus dyad 1 (FD1) and in comparison dyad 1 (CD1)

*Note:* CA = caregiver and CH = child. Sequences of reported speech are within quotation marks and the person references of focus are italicized. Ellipsis points ..., signify the occurrence of other speech.

## Focus dyad (FD1)

The 11 person references coded as cited in FD1 were: jag (*I*; 1), vi (*we*; 1), du (*you*; 1), dig (*you*; 1), egna (*own*; 1), lisa (*proper name*; 1), matilda (*proper name*; 1), lena (*proper name*; 1), karin (*proper name*; 1), klas (*proper name*; 1) and klasse (*proper name*; 1). All person references occurred at mealtime.

### Mealtime

1. *The caregiver is talking for and about the child* (1 person reference)

CA: “**jag** är hungrig”  
(*I am hungry*)

2. *Reading of an information sheet* (10 person references)

CA: m välkommen till dagläger på habiliteringen i karlstad **vi** ses onsdagen den tionde juni klockan nio till sexton på programmet har planerats samling ett lotterihjul bazar planering av inköp av fika å lunch tillagning av lunch å fika olika lekaktiviteter det **du** behöver ta med **dig** förflyttningshjälpmedel för ute innebruk pengar för **egna** inköp fika å lunchpengar femti kronor välkommen **lisa matilda lena karin** nej förlåt **klas klasse** (*m welcome to a one day camp at the rehabilitation centre in karlstad we meet on wednesday the tenth of june at nine am to four pm the day includes circle time a lottery wheel a market planning of buying of snacks and lunch preparation of lunch and snacks various play activities what you need to bring with you transportation and mobility devices for outdoor and indoor use money for own purchases money for snacks and lunch fifty crowns welcome lisa matilda lena karin no sorry klas klasse*)

## Comparison dyad (CD1)

The 18 person references coded as cited in CD1 were: jag (*I*; 5), jessica (*proper name*; 2), anders (*proper name*; 2), du (*you*; 2), man (*one*; 2), vem (*who*; 2), dig (*you*; 1), min (*my*; 1) and kusse (*cousin*; 1).

### Mealtime

1. *Reports about what was said during a telephone call* (7 person references)

CA: så sa du “**jag** kan vara mä” du sa inte vem du va du sa bara “**jag** kan vara mä **dig**”  
(*then you said “I can play” you did not say who you were you just said “I can play with you”*)

CH: m

- (m)
- CA: vad sa hon då  
(*what did she say then*)
- CH: "förresten **vem** ä det" va "**jessica**"  
(*"by the way who is it" what "jessica"*)
- ...
- CA: m sa sa hon ja va bra  
(*m did she say say yes that's good*)
- CH: nä va "förresten **vem** är det" m "**jessica**"  
(*no "by the way who is it" m "jessica"*)

2. Report about what the child herself had said at school (2 person references)

- CH: ... så skulle siri å dom se på den sa en som heter ellen tror ja m ja tror nä rigmor heter hon tog rigmor den å skulle ge den till mig ba "nä **min kusse** ska se den först"  
(*then siri and the others should look at it said a girl who is called ellen I think m I think no rigmor is her name rigmor took it and was going to give it to me yes "no my cousin is going to look at it first"*)
- CA: sa du det  
(*did you say that*)
- CH: m  
(m)

3. Report about what the child's brother said when he was younger (3 person references)

- CA: han trodde det hette knackebröd så sa han så här "**jag** vet varför det heter knackebröd för **man** ska knacka så här när **man** äter det"  
(*he thought the name of the bread was knocking bread (playing word for hard bread) and he said like this "I know why it is called knocking bread because one is supposed to knock like this while one eats it"*)

## Drawing

1. Report about what a child friend said at school (6 person references)

- CH: ...du vet carina håller på å pladdra hela tiden så ö "kan kan inte **du** fråga om **jag** får en kula uta **anders** kan inte **du** fråga om **jag** får en kula uta **anders**" hon gjorde aldri det själv  
(*you know carina she talks all the time like this "can can you ask if I can get a marble from anders can you ask if I can get a marble from anders" she never did that herself*)

## Appendix E2

Words identified as person references in telephone conversations in focus dyad 1 (FD1) and in comparison dyad 1 (CD1)

*Note:* Person references during telephone conversations were coded into the category telephone. CA = caregiver and CH = child. Ellipsis points ..., notify the occurrence of speech which did not belong to the telephone conversation, that is, was directed to the present speaking partner and not to the person who was on the phone. Person references are italicized.

### Focus dyad (FD1)

The following person references occurred during a telephone conversation in FD1: du (*you*; 2), jag (*I*; 2), sara (*proper name*; 1) and han (*he*; 1).

#### Game (6 person references)

1. CA: sara ja hej **du han** ä här utanför nånstans a **jag** tror de annars får **du** se här uppe i garaget **jag** vet inte riktigt a gör de a de ä bra hej  
(*sara yes hi you he is some where outside here yes I think so or you could look in the garage I am not sure yes do that yes that's good bye*)

### Comparison dyad (CD1)

The following person references occurred during two telephone conversations in CD1: vi (*we*; 3), jessica (*proper name*; 2), du (*you*; 2), jag (*I*; 1), ingrid (*proper name*; 1), maria (*proper name*; 1) and henne (*her*; 1).

#### Game (3 person references)

1. CH: hej **jessica** hej vänta lite ...  
nä **jag** ska gå till **maria** ...  
m ä de hejdå  
(*hello jessica hello wait a moment ...  
no I am going to maria ...  
m it is bye*)

#### Drawing (8 person references)

1. CA: ... **ingrid** hej ö **du** kan få prata mä **henne**  
(*ingrid hello eh you can talk to her*)
2. CH: ... hej de ä **jessica** hej a men **du vi** ska åka å köpa kaninen så om **vi** om **vi** kan leka sen efter det ja å ja hejdå  
(*hello it is jessica hello yes but you we are going to get the rabbit so if we could if we could play after that yes o yes bye*)

## Appendix E3

Combinations of words referring to person in the activity samples of focus dyad 1 (FD1) and comparison dyad 1 (CD1)

Note: CA = caregiver and CH = child. Combinations of person referential items are italicized.

### Focus dyad (FD1)

The 10 person references in FD1, which occurred in 5 combinations, belonged to 2 different categories as follows: speaking partner; dig (*you*; 4), du (*you*; 3), själv (*yourself*; 1); unspecific; någon (*someone*; 1) and annan (*else*; 1).

#### Game

1. CA: slog **du dig** vad hände nu slog **du dig** i knät va ä de va ä de maria slog **du dig** va va de vännen  
(*did you hurt yourself what happened now did you hurt your knee what is it what is it maria did you hurt yourself what was it my friend*)
2. CA: ibland ä de **någon annan** som vinner också  
(*sometimes someone else wins too*)
3. CA: men nu få du ta en te **dig själv** då  
(*but now you have to take one for your self then*)

### Comparison dyad (CD1)

The 29 person references in CD1, that occurred in 14 combinations, belonged to 9 different categories as follows: speaking partner; du (*you*; 1), din (*your*; 1), mamma (*mum*; 1); self; min (*my, mine*; 4), mig (*me*; 1); self + other; vår (*our*; 1); unspecific; vem (*who*; 1); family; kusin (*cousin*; 3); other child; hon (*she*; 1), annika (*proper name*; 1), barn (*child*; 1), juliette (*proper name*; 1), rigmors (*proper name*; 1), lillasyster (*younger sister*; 1); personnel; fröken (*teacher*; 1); other adult; kents (*proper name*; 1), and; fictive; sig (*herself, themselves*; 4), sin (*her*; 2), dom (*them, they*; 1) and de (*them, they*; 1).

#### Mealtime

1. CA: du sa inte **vem du** va  
(*you did not say who you were*)
2. CH: m de va **kents barn**  
(*m it was kent's child*)
3. CA: vi kan gå å hämta **juliette din kusin**  
(*we can go to get juliette your cousin*)
4. CH: **min kusse**

(*my cousin*)

5. CH: då hade jag med **mig min**  
(*then I had with me my*)
6. CH: **min kusse** ska se den först  
(*my cousin is going to see it first*)
7. CH: birgitta va ute så bara **vår fröken**  
(*only birgitta was out our teacher*)

### Game

1. CH: **min mamma** fuskar  
(*my mother cheats*)

### Drawing

1. CH: du vet **hon annika**  
(*you know she annika*)
2. CA: **rigmors lillasyster**  
(*rigmor's younger sister*)

### Story reading

1. CH: bodil har med **sig sin** fina väska  
(*bodil brought with her her nice bag*)
2. CA: sedan lägger **dom sig** på madrassen  
(*then they lay themselves down on the mattress*)
3. CA: har med **sig sin** fina  
(*has with her her nice*)
4. CH: sedan lägger **de sig**  
(*then they lay themselves down*)



## Appendix E4

Words used to refer to person in focus dyad 1 (FD1); ranked from most to least common

No.	Swedish	English
349	du ( <i>focus child</i> : d (1), dy (1), vu: (1))	<i>you</i>
113	jag ( <i>focus child</i> : ngaa (1))	<i>I</i>
79	vi	<i>we</i>
51	proper names ( <i>focus child</i> : möuwa (2), a:jjä (1), auva mam (1), da (1), ngå (4), da (1))	<i>proper names</i>
36	han	<i>he</i>
26	maria	<i>maria</i>
22	dig	<i>you</i>
18	mamma ( <i>focus child</i> : amma (1), mamma (1), mämmå (1))	<i>mum</i>
16	mig	<i>me, myself</i>
12	mormor ( <i>focus child</i> : åjä (1), lullu (1), a ojo (1))	<i>grandmother</i>
11	dom	<i>them, they</i>
9	vem	<i>who</i>
8	din	<i>your</i>
6	hon	<i>she</i>
5	honom	<i>him</i>
4	man	<i>one</i>
4	morfar ( <i>focus child</i> : ngua (1))	<i>grandfather</i>
3	dina	<i>your</i>
3	sin	<i>one's, his, her, its</i>
2	flickorna	<i>the girls</i>
2	fuskreja	<i>cheater</i>
2	hans	<i>his</i>
2	matte	<i>the owner</i>
2	mina	<i>mine</i>
2	moster	<i>aunt</i>
2	någon	<i>someone</i>
2	simläraren	<i>the swimming teacher</i>
2	vännerna	<i>the friends</i>
1	alla	<i>all</i>
1	annan	<i>other</i>
1	barn	<i>child</i>
1	den	<i>him, her, that</i>
1	egna	<i>own</i>
1	en	<i>a, an, one, him, her</i>
1	flickan	<i>the girl</i>
1	kompis	<i>friend</i>
1	lisa	<i>lisa's</i>
1	maria	<i>maria's</i>
1	mattes	<i>the owner's</i>
1	ni	<i>you</i>
1	pelles	<i>pelle's</i>
1	polisen	<i>the policeman</i>
1	sara	<i>sara</i>

---

1	sig	<i>oneself, itself, him, himself, her, herself, them, themselves</i>
1	själv	<i>yourself</i>
1	sportsman	<i>athlete</i>
1	tjej	<i>girl</i>
1	vänner	<i>my friend</i>
1	vår	<i>our</i>
1	vems	<i>whose</i>

---

*Note:* Proper names = all proper names except the study participants' (maria and sara) and genitives.

## Appendix E5

Words used to refer to person in comparison dyad 1 (CD1); ranked from most to least common

No.	Swedish	English
251	du	<i>you</i>
217	jag	<i>I</i>
125	proper names	<i>proper names</i>
51	hon	<i>she</i>
42	vi	<i>we</i>
29	dom	<i>them, they</i>
25	han	<i>he</i>
25	jessica	<i>jessica</i>
23	min	<i>my, mine</i>
21	dig	<i>you</i>
19	ni	<i>you</i>
16	sig	<i>oneself, itself, him, himself, her, herself, them, themselves</i>
13	mig	<i>me, myself</i>
13	man	<i>one</i>
12	mamma	<i>mum</i>
12	vem	<i>who</i>
11	pappa	<i>dad</i>
8	de	<i>them, they</i>
8	din	<i>your</i>
8	killarna	<i>the boys</i>
8	sin	<i>one's, his, her, its</i>
7	tjejerna	<i>the girls</i>
5	er	<i>you, your</i>
4	barnen	<i>the children</i>
4	henne	<i>her</i>
4	sitt	<i>one's, his, her, their/s, its</i>
3	dina	<i>your</i>
3	kusin	<i>cousin</i>
3	ungar	<i>children</i>
2	barn	<i>child</i>
2	fröken	<i>the teacher</i>
2	helles	<i>helle's</i>
2	jesu	<i>jesus</i>
2	kents	<i>kent's</i>
2	sina	<i>one's, his, her, their/s</i>
2	tims	<i>tim's</i>
2	varandra	<i>each other</i>
1	cillas	<i>cilla's</i>
1	den	<i>it, he, him, she, her</i>
1	deras	<i>their, theirs</i>
1	en	<i>a, one</i>
1	familjen	<i>the family</i>
1	gubbe	<i>old man</i>

---

1	hennes	<i>her</i>
1	hjalles	<i>hjalles's</i>
1	inga	<i>nobody</i>
1	ingen	<i>nobody</i>
1	ingrid	<i>ingrid</i>
1	jättelite	<i>very little, few</i>
1	lillasyster	<i>younger sister</i>
1	mina	<i>mine</i>
1	någon	<i>someone</i>
1	några	<i>some</i>
1	norsk	<i>norwegian</i>
1	norsken	<i>the norwegian</i>
1	oss	<i>us</i>
1	rigmors	<i>rigmor's</i>
1	stycken	<i>persons, children, items</i>
1	tantan	<i>the lady</i>
1	tjejs	<i>girl's</i>
1	tös	<i>girl</i>
1	trollkarlen	<i>the magician</i>
1	tysk	<i>german</i>
1	tysken	<i>the german</i>
1	vår	<i>our</i>
1	vilken	<i>who, which</i>
1	vuxna	<i>adults</i>

---

Not possible to transcribe: 2

*Note:* Proper names = all proper names except the study participants' (jessica and ingrid) and genitives.

## Appendix E6

Words used to refer to person in different categories in focus dyad 1 (FD1)

Categories	Words	No.	
<i>Self</i>	jag ( <i>I</i> ) – ( <i>focus child</i> : ngaa (1))	75	
	mig ( <i>me, myself</i> )	15	
	mina ( <i>mine</i> )	2	
	moster ( <i>aunt</i> )	2	
<i>Speaking partner</i>	du ( <i>you</i> ) – ( <i>focus child</i> : d (1), dy (1), vu: (1))	336	
	maria ( <i>maria</i> )	26	
	dig ( <i>you</i> )	18	
	din ( <i>your</i> )	6	
	dina ( <i>your</i> )	3	
	fuskmaja ( <i>cheater</i> )	2	
	barn ( <i>child</i> )	1	
	marias ( <i>maria's</i> )	1	
	själv ( <i>yourself</i> )	1	
	tjej ( <i>girl</i> )	1	
	vänner ( <i>my friend</i> )	1	
<i>Self + speaking partner</i>	vi ( <i>we</i> )	110	
<i>Self + other</i>	vårän ( <i>our</i> )	1	
<i>Speaking partner + other</i>	ni ( <i>you</i> )	1	
<i>Third person</i>	proper names – ( <i>focus child</i> : a:jjä (1))	4	
	du ( <i>you</i> )	3	
	han ( <i>he</i> )	1	
	sin ( <i>one's, his, her, its</i> )	1	
<i>Unspecific</i>	vem ( <i>who</i> )	8	
	någon ( <i>someone</i> )	4	
	man ( <i>one</i> )	2	
	annan ( <i>other</i> )	1	
	vems ( <i>whose</i> )	1	
<i>Family</i>	mormor ( <i>grandmother</i> ) – ( <i>focus child</i> : åjå (1), lullu (1), a ojo (1))	12	
	mamma ( <i>mum</i> ) – ( <i>focus child</i> : amma (1), mamma (1), mämmå (1))	11	
	proper names – ( <i>focus child</i> : möuwa (2), auva mam (1), da (1))	8	
	han ( <i>he</i> )	6	
	morfar ( <i>grandfather</i> ) – ( <i>focus child</i> : ngua (1))	4	
	hon ( <i>she</i> )	2	
	en ( <i>a, an, one, him, her</i> )	1	
	honom ( <i>him</i> )	1	
	<i>Personnel</i>	han ( <i>he</i> )	2
		den ( <i>him, her, that</i> )	1
<i>Other adult</i>	proper names – ( <i>focus child</i> : ngå (4), da (1))	9	
	han ( <i>he</i> )	2	
<i>Fictive</i>	han ( <i>he</i> )	23	
	proper names	24	
	dom ( <i>them, they</i> )	11	

	du ( <i>you</i> )	7
	mamma ( <i>mum</i> )	7
	hon ( <i>she</i> )	4
	honom ( <i>him</i> )	4
	dig ( <i>you</i> )	3
	din ( <i>your</i> )	2
	flickorna ( <i>the girls</i> )	2
	hans ( <i>his</i> )	2
	matte ( <i>the owner</i> )	2
	simläraren ( <i>the swimming teacher</i> )	2
	sin ( <i>one's, his, her, its</i> )	2
	vännerna ( <i>the friends</i> )	2
	vi ( <i>we</i> )	2
	alla ( <i>all</i> )	1
	flickan ( <i>the girl</i> )	1
	jag ( <i>I</i> )	1
	kompis ( <i>friend</i> )	1
	lisas ( <i>lisa's</i> )	1
	mattes ( <i>the owner's</i> )	1
	mig ( <i>me, myself</i> )	1
	pelles ( <i>pelle's</i> )	1
	polisen ( <i>the policeman</i> )	1
	sig ( <i>oneself, itself, him, himself, her, herself, them, themselves</i> )	1
	sportsman ( <i>athlete</i> )	1
	vem ( <i>who</i> )	1
<i>Cited</i>	proper names	6
	dig ( <i>you</i> )	1
	du ( <i>you</i> )	1
	egna ( <i>own</i> )	1
	jag ( <i>I</i> )	1
	vi ( <i>we</i> )	1
<i>Phone</i>	du ( <i>you</i> )	2
	jag ( <i>I</i> )	2
	han ( <i>he</i> )	1
	sara ( <i>sara</i> )	1
<i>Unclear</i>	han ( <i>he</i> )	1
<b>Total</b>		<b>815</b>

*Note:* Proper names = all proper names except the names of the focus child and caregiver (maria and sara) and genitives.

## Appendix E7

Words used to refer to person in different categories in comparison dyad 1 (CD1)

Categories	Words	No.
<i>Self</i>	jag ( <i>I</i> )	200
	min ( <i>my, mine</i> )	19
	mig ( <i>me, myself</i> )	8
	mina ( <i>mine</i> )	1
<i>Speaking partner</i>	du ( <i>you</i> )	241
	jessica ( <i>jessica</i> )	21
	dig ( <i>you</i> )	20
	mamma ( <i>mum</i> )	11
	din ( <i>your</i> )	8
	dina ( <i>your</i> )	3
<i>Self + speaking partner</i>	vi ( <i>we</i> )	31
	oss ( <i>us</i> )	1
<i>Self + other</i>	vi ( <i>we</i> )	8
	vår ( <i>our</i> )	1
<i>Speaking partner + other</i>	ni ( <i>you</i> )	8
	er ( <i>you, your</i> )	1
<i>Unspecific</i>	man ( <i>one</i> )	11
	vem ( <i>who</i> )	9
	dom ( <i>them, they</i> )	2
	den ( <i>it, he, him, she, her</i> )	1
	deras ( <i>their, theirs</i> )	1
	inga ( <i>nobody</i> )	1
	ingen ( <i>nobody</i> )	1
	jättelite ( <i>very little, few</i> )	1
	killarna ( <i>the boys</i> )	1
	någon ( <i>someone</i> )	1
	några ( <i>some</i> )	1
	sig ( <i>oneself, itself, him, himself, her, herself, them, themselves</i> )	1
	vilken ( <i>who, which</i> )	1
	<i>Family</i>	proper names
han ( <i>he</i> )		7
kusin ( <i>cousin</i> )		2
pappa ( <i>dad</i> )		1
<i>Other child</i>	proper names	55
	hon ( <i>she</i> )	34
	dom ( <i>them, they</i> )	12
	barnen ( <i>the children</i> )	4
	han ( <i>he</i> )	4
	henne ( <i>her</i> )	3
	barn ( <i>child</i> )	2
	varandra ( <i>each other</i> )	2
	en ( <i>a, one</i> )	1
	hennes ( <i>her</i> )	1
	lillasyster ( <i>younger sister</i> )	1

	rigmors ( <i>rigmor's</i> )	1
	stycken ( <i>persons, children</i> )	1
	tjejs ( <i>girl's</i> )	1
	tös ( <i>girl</i> )	1
<i>Personnel</i>	proper names	8
	hon ( <i>she</i> )	7
	han ( <i>he</i> )	3
	fröken ( <i>the teacher</i> )	2
	vuxna ( <i>adults</i> )	1
<i>Other adult</i>	hon ( <i>she</i> )	6
	proper names	4
	kents ( <i>kent's</i> )	2
	cillas ( <i>cilla's</i> )	1
	mamma ( <i>mum</i> )	1
	tanten ( <i>the lady</i> )	1
<i>Fictive</i>	proper names	46
	sig ( <i>oneself, itself, him, himself, her, herself, them, themselves</i> )	15
	han ( <i>he</i> )	11
	jag ( <i>I</i> )	11
	ni ( <i>you</i> )	11
	pappa ( <i>dad</i> )	10
	dom ( <i>them, they</i> )	9
	de ( <i>them, they</i> )	8
	sin ( <i>one's, his, her, its</i> )	8
	killarna ( <i>the boys</i> )	7
	tjejerna ( <i>the girls</i> )	7
	du ( <i>you</i> )	6
	mig ( <i>me</i> )	5
	er ( <i>your</i> )	4
	hon ( <i>she</i> )	4
	sitt ( <i>one's, his, her, their/s, its</i> )	4
	min ( <i>my, mine</i> )	3
	ungar ( <i>children</i> )	3
	helles ( <i>helle's</i> )	2
	jesu ( <i>jesus</i> )	2
	sina ( <i>one's, his, her, their/s</i> )	2
	tims ( <i>tim's</i> )	2
	familjen ( <i>the family</i> )	1
	gubbe ( <i>old man</i> )	1
	hjalles ( <i>hjalle's</i> )	1
	norsk ( <i>norwegian</i> )	1
	norsken ( <i>the norwegian</i> )	1
	trollkarlen ( <i>the magician</i> )	1
	tysk ( <i>german</i> )	1
	tysken ( <i>the german</i> )	1
	vem ( <i>who</i> )	1
<i>Cited</i>	jag ( <i>I</i> )	5
	du ( <i>you</i> )	2
	jessica ( <i>jessica</i> )	2
	man ( <i>one</i> )	2



	proper names	2
	vem ( <i>who</i> )	2
	dig ( <i>you</i> )	1
	kusin ( <i>cousin</i> )	1
	min ( <i>my, mine</i> )	1
<i>Phone</i>	vi ( <i>we</i> )	3
	du ( <i>you</i> )	2
	jessica ( <i>jessica</i> )	2
	henne ( <i>her</i> )	1
	ingrid ( <i>ingrid</i> )	1
	jag ( <i>I</i> )	1
	proper name	1
<i>Unclear</i>	dom ( <i>them, they</i> )	6
	<...>	2
<b>Total</b>		<b>1018</b>

*Note:* Proper names = all proper names except the names of the comparison child and caregiver (jessica and ingrid) and genitives.

## Appendix E8

Words used to refer to person in the activities of focus dyad 1 (FD1) and comparison dyad 1 (CD1)

FOCUS DYAD 1 – MEALTIME				
Categories	Child	No.	Caregiver	No.
<i>Self</i>			jag ( <i>I</i> )	8
<i>Speaking partner</i>			du ( <i>you</i> )	100
			maria ( <i>maria</i> )	4
			dig ( <i>you</i> )	2
			barn ( <i>child</i> )	1
			tjej ( <i>girl</i> )	1
<i>Self + speaking partner</i>			vi ( <i>we</i> )	18
<i>Speaking partner + other</i>			ni ( <i>you</i> )	1
<i>Unspecific</i>			någon ( <i>someone</i> )	2
			vem ( <i>who</i> )	2
<i>Family</i>	möuwa ( <i>proper names</i> )	2	han ( <i>he</i> )	4
	amma ( <i>mamma; mum</i> )	1	mormor ( <i>grandmother</i> )	4
	auva mam ( <i>proper name</i> )	1	proper names	3
	da ( <i>proper name</i> )	1	honom ( <i>him</i> )	1
			mamma ( <i>mum</i> )	1
<i>Personnel</i>			han ( <i>he</i> )	2
			den ( <i>him, her, that</i> )	1
<i>Other adult</i>	ngå ( <i>proper names</i> )	4	proper names	4
	da ( <i>proper name</i> )	1	han ( <i>he</i> )	1
<i>Fictive</i>			proper names	2
			dom ( <i>them, they</i> )	2
<i>Cited</i>			proper names	6
			dig ( <i>you</i> )	1
			du ( <i>you</i> )	1
			egna ( <i>own</i> )	1
			jag ( <i>I</i> )	1
			vi ( <i>we</i> )	1
Total		10		175

COMPARISON DYAD 1 – MEALTIME

Categories	Child	No.	Caregiver	No.
<i>Self</i>	jag ( <i>I</i> )	37	jag ( <i>I</i> )	24
	mig ( <i>me, myself</i> )	3		
	min ( <i>my, mine</i> )	2		
<i>Speaking partner</i>	du ( <i>you</i> )	8	du ( <i>you</i> )	74
	mamma ( <i>mum</i> )	6	jessica ( <i>jessica</i> )	15
			dig ( <i>you</i> )	10
			din ( <i>your</i> )	5
<i>Self + speaking partner</i>	vi ( <i>we</i> )	6	vi ( <i>we</i> )	8
<i>Self + other</i>	vi ( <i>we</i> )	3	vi ( <i>we</i> )	1
	vår ( <i>our</i> )	1		
<i>Speaking partner + other</i>			er ( <i>you, your</i> )	1
<i>Unspecific</i>	man ( <i>one</i> )	2	vem ( <i>who</i> )	3
	deras ( <i>their, theirs</i> )	1	dom ( <i>them, they</i> )	2
	inga ( <i>nobody</i> )	1	killarna ( <i>the boys</i> )	1
	ingen ( <i>nobody</i> )	1	man ( <i>one</i> )	1
	jättelite ( <i>very little, few</i> )	1	några ( <i>some</i> )	1
	vem ( <i>who</i> )	1		
<i>Family</i>	han ( <i>he</i> )	2	han ( <i>he</i> )	5
	proper names	2	proper names	5
	kusin ( <i>cousin</i> )	1	kusin ( <i>cousin</i> )	1
	pappa ( <i>dad</i> )	1		
<i>Other child</i>	proper names	7	hon ( <i>she</i> )	7
	hon ( <i>she</i> )	2	proper names	7
	barn ( <i>child</i> )	1	barn ( <i>child</i> )	1
	dom ( <i>them, they</i> )	1	dom ( <i>them, they</i> )	1
	en ( <i>a, one</i> )	1		
	tjejs ( <i>girls</i> )	1		
<i>Personnel</i>	hon ( <i>she</i> )	3	fröken ( <i>the teacher</i> )	1
	proper names	3	hon ( <i>she</i> )	1
	fröken ( <i>the teacher</i> )	1		
	vuxna ( <i>adults</i> )	1		
<i>Other adult</i>	hon ( <i>she</i> )	5	proper names	3
	kents ( <i>kent's</i> )	2	tanten ( <i>the lady</i> )	1
	cillas ( <i>cilla's</i> )	1		
	proper name	1		
<i>Fictive</i>	killarna ( <i>the boys</i> )	5	tjejerna ( <i>the girls</i> )	4
	tjejerna ( <i>the girls</i> )	3	killarna ( <i>the boys</i> )	2
	helles ( <i>helle's</i> )	1	helles ( <i>helle's</i> )	1
	hjalles ( <i>hjalles's</i> )	1	jesu ( <i>jesus</i> )	1
	jesu ( <i>jesus</i> )	1	proper name	1
<i>Cited</i>	jessica ( <i>jessica</i> )	2	jag ( <i>I</i> )	3
	vem ( <i>who</i> )	2	man ( <i>one</i> )	2
	min ( <i>my, mine</i> )	1	dig ( <i>you</i> )	1
	kusin ( <i>cousin</i> )	1		
<i>Unclear</i>	dom ( <i>them, they</i> )	5	dom ( <i>them, they</i> )	1
Total		131		195

FOCUS DYAD 1 – GAME

Categories	Child	No.	Caregiver	No.	
<i>Self</i>	ngaa (jag; I)	1	jag (I)	62	
			mig (me)	10	
			mina (mine)	2	
			moster (aunt)	2	
<i>Speaking partner</i>	dy (du; you)	1	du (you)	159	
			d (du; you)	1	
				maria (maria)	13
				dig (you)	11
				din (your)	3
				dina (your)	3
				fuskmaja (cheater)	2
				marias (maria's)	1
				själv (yourself)	1
				vänner (my friend)	1
<i>Self + speaking partner</i>			vi (we)	46	
<i>Third person</i>			proper names	2	
			du (you)	1	
<i>Unspecific</i>			vem (who)	5	
			man (one)	2	
			annan (other)	1	
			någon (someone)	1	
			vems (whose)	1	
<i>Family</i>	lullu (mormor; grandmother)	1	han (he)	2	
			en (a, an, one, him, her)	1	
			hon (she)	1	
			mormor (grandmother)	1	
			proper name	1	
<i>Other adult</i>			han (he)	1	
<i>Fictive</i>			polisen (the policeman)	1	
<i>Phone</i>			du (you)	2	
			jag (I)	2	
			han (he)	1	
			sara (sara)	1	
<i>Unclear</i>			han (he)	1	
	Total	4		344	

COMPARISON DYAD 1 – GAME

Categories	Child	No.	Caregiver	No.
<i>Self</i>	jag ( <i>I</i> )	29	jag ( <i>I</i> )	36
	min ( <i>my, mine</i> )	9	min ( <i>my, mine</i> )	6
	mina ( <i>mine</i> )	1	mig ( <i>me, myself</i> )	1
<i>Speaking partner</i>	du ( <i>you</i> )	14	du ( <i>you</i> )	51
	mamma ( <i>mum</i> )	3	dig ( <i>you</i> )	9
	din ( <i>your</i> )	1	jessica ( <i>jessica</i> )	2
			din ( <i>your</i> )	1
			dina ( <i>your</i> )	1
<i>Self + speaking partner</i>	vi ( <i>we</i> )	1	vi ( <i>we</i> )	8
<i>Unspecific</i>	man ( <i>one</i> )	2	den ( <i>it, he, him, she, her</i> )	1
			vem ( <i>who</i> )	1
<i>Other child</i>	hon ( <i>she</i> )	1	hon ( <i>she</i> )	3
			proper names	3
<i>Other adult</i>			mamma ( <i>mum</i> )	1
<i>Fictive</i>			familjen ( <i>the family</i> )	1
<i>Phone</i>	jag ( <i>I</i> )	1		
	jessica ( <i>jessica</i> )	1		
	proper name	1		
Total		64		125

FOCUS DYAD 1 – DRAWING

Categories	Child	No.	Caregiver	No.
<i>Self</i>			mig ( <i>me, myself</i> )	5
			jag ( <i>I</i> )	4
<i>Speaking partner</i>	vu: ( <i>du; you</i> )	1	du ( <i>you</i> )	44
			maria ( <i>maria</i> )	5
			dig ( <i>you</i> )	1
			din ( <i>your</i> )	1
<i>Self + speaking partner</i>			vi ( <i>we</i> )	15
<i>Third person</i>	a:jjja ( <i>proper name</i> )	1	du ( <i>you</i> )	1
			sin ( <i>one's, his, her, its</i> ) han	1
			( <i>he</i> )	1
			proper name	1
<i>Unspecific</i>			vem ( <i>who</i> )	1
<i>Family</i>	a ojo ( <i>mormor; grandmother</i> )	1	mormor ( <i>grandmother</i> )	4
	åjå ( <i>mormor; grandmother</i> )	1	morfar ( <i>grandfather</i> )	3
	ngua ( <i>morfar; grandfather</i> )	1	hon ( <i>she</i> )	1
Total		5		88

COMPARISON DYAD 1 – DRAWING

Categories	Child	No.	Caregiver	No.	
<i>Self</i>	jag ( <i>I</i> )	29	jag ( <i>I</i> )	14	
	mig ( <i>me, myself</i> )	2			
	min ( <i>my, mine</i> )	1			
<i>Speaking partner</i>	du ( <i>you</i> )	19	du ( <i>you</i> )	44	
	mamma ( <i>mum</i> )	2	jessica ( <i>jessica</i> )	2	
			dina ( <i>your</i> )	1	
<i>Self + speaking partner</i>	vi ( <i>we</i> )	2	vi ( <i>we</i> )	3	
			oss ( <i>us</i> )	1	
<i>Self + other</i>	vi ( <i>we</i> )	4			
<i>Speaking partner + other</i>			ni ( <i>you</i> )	8	
<i>Unspecific</i>	man ( <i>one</i> )	2	man ( <i>one</i> )	2	
	vem ( <i>who</i> )	2	vem ( <i>who</i> )	2	
	vilken ( <i>who, which</i> )	1	någon ( <i>someone</i> )	1	
<i>Family</i>			proper names	2	
<i>Other child</i>	proper names	15	proper names	20	
	hon ( <i>she</i> )	11	hon ( <i>she</i> )	7	
	dom ( <i>them, they</i> )	6	dom ( <i>them, they</i> )	4	
	barnen ( <i>the children</i> )	1	barnen ( <i>the children</i> )	3	
	han ( <i>he</i> )	1	han ( <i>he</i> )	3	
	henne ( <i>her</i> )	1	varandra ( <i>each other</i> )	2	
	stycken ( <i>persons, children</i> )	1	henne ( <i>her</i> )	1	
			hennes ( <i>her</i> )	1	
			lillasyster ( <i>younger sister</i> )	1	
			rigmors ( <i>rigmor's</i> )	1	
	<i>Personnel</i>	hon ( <i>she</i> )	2	proper names	5
			han ( <i>he</i> )	3	
			hon ( <i>she</i> )	1	
<i>Other adult</i>	hon ( <i>she</i> )	1			
<i>Fictive</i>	jag ( <i>I</i> )	5	han ( <i>he</i> )	2	
	proper names	4	du ( <i>you</i> )	1	
	dom ( <i>them, they</i> )	3	dom ( <i>them, they</i> )	1	
	han ( <i>he</i> )	2	vem ( <i>who</i> )	1	
	sig ( <i>oneself, itself, him, himself, her, herself, them, themselves</i> )	2			
	du ( <i>you</i> )	1			
	gubbe ( <i>old man</i> )	1			
	norsk ( <i>norwegian</i> )	1			
	norsken ( <i>the norwegian</i> )	1			
	tysk ( <i>german</i> )	1			
	tysken ( <i>the german</i> )	1			
	<i>Cited</i>	du ( <i>you</i> )	2		
		jag ( <i>I</i> )	2		
proper names		2			

<i>Phone</i>	vi ( <i>we</i> )	3	du ( <i>you</i> )	1
	du ( <i>you</i> )	1	henne ( <i>her</i> )	1
	jessica ( <i>jessica</i> )	1	ingrid ( <i>ingrid</i> )	1
<i>Unclear</i>	<...>	1		
Total		137		140

FOCUS DYAD 1 – TEETH BRUSHING

Categories	Child	No.	Caregiver	No.
<i>Speaking partner</i>			du ( <i>you</i> )	15
			dig ( <i>you</i> )	3
			maria ( <i>maria</i> )	2
<i>Self + speaking partner</i>			vi ( <i>we</i> )	7
<i>Self + other</i>			våran ( <i>our</i> )	1
Total				28

COMPARISON DYAD 1 – TEETH BRUSHING

Categories	Child	No.	Caregiver	No.
<i>Self</i>	jag ( <i>I</i> )	3	jag ( <i>I</i> )	1
	mig ( <i>me, myself</i> )	2		
	min ( <i>my, mine</i> )	1		
<i>Speaking partner</i>	du ( <i>you</i> )	2	du ( <i>you</i> )	7
			dig ( <i>you</i> )	1
			dina ( <i>your</i> )	1
			jessica ( <i>jessica</i> )	1
<i>Self + speaking partner</i>			vi ( <i>we</i> )	1
<i>Other child</i>	hon ( <i>she</i> )	2	henne ( <i>her</i> )	1
	proper names	2	hon ( <i>she</i> )	1
			proper name	1
			tös ( <i>girl</i> )	1
<i>Unclear</i>			<...>	1
Total		12		17

FOCUS DYAD 1 – STORY READING

Categories	Child	No.	Caregiver	No.
<i>Speaking partner</i>			du ( <i>you</i> )	15
			din ( <i>your</i> )	2
			maria ( <i>maria</i> )	2
			dig ( <i>you</i> )	1
<i>Self + speaking partner</i>			vi ( <i>we</i> )	24
<i>Third person</i>			du ( <i>you</i> )	1
<i>Unspecific</i>			någon ( <i>someone</i> )	1
<i>Family</i>	mamma ( <i>mum</i> )	1	mamma ( <i>mum</i> )	7
	måmma ( <i>mamma; mum</i> )	1		
<i>Fictive</i>			han ( <i>he</i> )	23
			proper names	22
			dom ( <i>them, they</i> )	9
			du ( <i>you</i> )	7
			mamma ( <i>mum</i> )	7
			hon ( <i>she</i> )	4
			honom ( <i>him</i> )	4
			dig ( <i>you</i> )	3
			din ( <i>your</i> )	2
			flickorna ( <i>the girls</i> )	2
			hans ( <i>his</i> )	2
			matte ( <i>the owner</i> )	2
			simläraren ( <i>the swimming teacher</i> )	2
			sin ( <i>one's, his, her, its</i> )	2
			vi ( <i>we</i> )	2
			vännerna ( <i>the friends</i> )	2
			alla ( <i>all</i> )	1
			flickan ( <i>the girl</i> )	1
			jag ( <i>I</i> )	1
			kompis ( <i>friend</i> )	1
			lisas ( <i>lisa's</i> )	1
			mattes ( <i>the owner's</i> )	1
			mig ( <i>me, myself</i> )	1
			pelles ( <i>pelle's</i> )	1
			sig ( <i>oneself, itself, him, himself, her, herself, them, themselves</i> )	1
			sportsman ( <i>athlete</i> )	1
			vem ( <i>who</i> )	1
Total		2		159



COMPARISON DYAD 1 – STORY READING

Categories	Child	No.	Caregiver	No.	
<i>Self</i>	jag ( <i>I</i> )	25	jag ( <i>I</i> )	2	
<i>Speaking partner</i>	du ( <i>you</i> )	4	du ( <i>you</i> )	18	
	din ( <i>your</i> )	1	jessica ( <i>jessica</i> )	1	
<i>Self + speaking partner</i>			vi ( <i>we</i> )	2	
<i>Unspecific</i>	man ( <i>one</i> )	1	sig ( <i>oneself, itself, him, herself, her, herself, them, themselves</i> )	1	
			man ( <i>one</i> )	1	
<i>Fictive</i>	proper names	26	proper names	15	
	de ( <i>them, they</i> )	6	sig ( <i>oneself, itself, him, herself, her, herself, them, themselves</i> )	9	
	ni ( <i>you</i> )	5	ni ( <i>you</i> )	6	
	sin ( <i>one's, his, her, its</i> )	5	pappa ( <i>dad</i> )	6	
	han ( <i>he</i> )	4	dom ( <i>them, they</i> )	5	
	pappa ( <i>dad</i> )	4	jag ( <i>I</i> )	5	
	sig ( <i>oneself, itself, him, himself, her, herself, them, themselves</i> )	4	han ( <i>he</i> )	3	
	mig ( <i>me, myself</i> )	3	sin ( <i>one's, his, her, its</i> )	3	
	min ( <i>my, mine</i> )	3	de ( <i>them, they</i> )	2	
	du ( <i>you</i> )	2	du ( <i>you</i> )	2	
	er ( <i>your</i> )	2	er ( <i>your</i> )	2	
	hon ( <i>she</i> )	2	hon ( <i>she</i> )	2	
	sitt ( <i>one's, his, her, their/s, its</i> )	2	mig ( <i>me, myself</i> )	2	
	ungar ( <i>children</i> )	2	sina ( <i>one's, his, her, their/s</i> )	2	
	jag ( <i>I</i> )	1	sitt ( <i>one's, his, her, their/s, its</i> )	2	
			tims ( <i>tim's</i> )	2	
			trollkarlen ( <i>the magician</i> )	1	
			ungar ( <i>children</i> )	1	
	Total		102		95

*Note:* English translations and the meanings of the focus child's expressions, as interpreted by the analyst, are provided in parentheses. The study children and caregivers' names (maria, sara, jessica and ingrid) are spelled out, as are proper names in the genitive form. <...> = not possible to transcribe.

# Appendix E9

Person reference in relation to four groups of categories; present person, non-present person, unspecific and other, across dyads (FDI & CD1) and activities

Activities and groups	FOCUS DYAD				COMPARISON DYAD			
	Total	Percent	CH	CA	Total	Percent	CH	CA
<b>Mealtime</b>	185				326			
Present person	135	73%	-	135	204	62.6%	66	138
Non present person	35	18.9%	10	25	89	27.3%	47	42
Unspecific	4	2.2%	-	4	15	4.6%	7	8
Other	11	5.9%	-	11	18	5.5%	11	7
<b>Game</b>	348				189			
Present person	322	92.5%	3	319	173	91.5%	58	115
Non present person	9	2.6%	1	8	9	4.8%	1	8
Unspecific	10	2.9%	-	10	4	2.1%	2	2
Other	7	2%	-	7	3	1.6%	3	-
<b>Drawing</b>	93				277			
Present person	81	87.1%	2	79	132	47.7%	59	73
Non present person	11	11.8%	3	8	120	43.3%	61	59
Unspecific	1	1.1%	-	1	10	3.6%	5	5
Other	-	-	-	-	15	5.4%	12	3
<b>Teeth brushing</b>	28				29			
Present person	28	100%	-	28	20	69%	8	12
Non present person	-	-	-	-	8	27.6%	4	4
Unspecific	-	-	-	-	-	-	-	-
Other	-	-	-	-	1	3.4%	-	1
<b>Story reading</b>	161				197			
Present person	45	28%	-	45	53	26.9%	30	23
Non present person	115	71.4%	2	113	141	71.6%	71	70
Unspecific	1	0.6%	-	1	3	1.5%	1	2
Other	-	-	-	-	-	-	-	-
<b>Total</b>			21	794			446	572

Note: The four groups include the following categories of person reference: present person = self, speaking partner, self + speaking partner, self + other, speaking partner + other and third person; non present person = family, other child, personnel, other adult and fictive; unspecific = unspecific; and other = cited, telephone and unclear. CH = child, CA = caregiver.

## Appendix E10

Referring to person during drawing; examples from focus dyad 1 (FD1) and comparison dyad 1 (CD1)

*Note:* CA = caregiver and CH = child; BC = body communication and PA = physical action. All comments except those of relevance for the reading of the transcripts are withdrawn. / = short pause, // = intermediate pause, and /// = long pause. Parts of a contribution that are commented on are within < >, which are numbered in cases of more than one comment within the specific contribution. Comments are marked with @ and are provided below contributions.

### Focus dyad (FD1)

CA: ska **vi** vända – (*should we turn*)

CH: < ng > – (*ng*)

@ < meaning: probably yes >

CA: ska **vi** se om **vi** fixa de ida da – (*shall we see if we manage this today then*)

CH: < nga > – (*nga*)

@ < meaning: probably yes; BC: quiet >

CA: ä de fel håll – (*is it the wrong way*)

CH: < a > – (*a*)

@ < meaning: probably yes; BC: nasal, quiet >

CA: kanske (...) ska **du** ta bort händerna nu da / så <1 oj >1 titta här **du** (...) m ska sätta bättre mä tejp här

– (*perhaps (...) will you move your hands now then / so <1 ous >1 look here you (...) m shall put more tape here*)

@ <1 CH's hands are in the way >1

CH: < ng > – (*ng*)

@ < meaning: probably yes; BC: quiet >

CA: a (...) ska **vi** ta dä – (*yes (...) should we take there*)

CH: < ng > – (*ng*)

@ < meaning: probably yes; BC: quiet >

CA: så bli de bra – (*so is this good*)

CH: < ng > – (*ng*)

@ < meaning: probably yes >

## Comparison dyad (CD1)

- CA: gjorde **du** det da – (*did you do that then*)  
CH: ja – (*yes*)  
CA: fick fick **hon** en – (*did did she get one*)  
CH: m – (*m*)  
CA: har < har **johan** har **johan** inga da > – (*does does johan does not johan have any*)  
@ < PA: CA moves from the stove to the table >  
CH: < ö > går **dom** i samma klass da – (*< ö > are they in the same class or*)  
@ < seems to be tired of CA's lack of understanding >  
CA: **anders** å **johannes** // m – (*anders and johannes*)  
CH: < men > går **carin** å **johannes** i samma klass  
– (*< but > are carin and johannes in the same class*)  
@ < BC: quick look at CA >  
CA: < nå men **du** å **anders** går väl inte i samma klass heller >  
– (*no but you and anders are not in the same class either or*)  
@ < PA: CA leaves the table >  
CH: < nå men **jag** menar **anders** **linsa** å **dom** > – (*no but I mean anders linsa and them*)  
< BC: CH looks at CA >  
CA: jaha gjorde **du** det då – (*okay did you do that then*)  
CH: m / fick göra de hela tiden /// – (*m / had to do that all the time ///*)  
CA: nu få **jag** gissa – (*now I am going to guess*)  
CH: < om tusen miljarder hundra år > – (*in a thousand billion hundred years*)  
< BC: high pitch >  
CA: m / de ä rätt länge de – (*m / that is quite a long time*)  
CH: m /// så /// – (*m /// so ///*)  
CA: < frös > – (*freeze*)  
CH: m – (*m*)  
CA: frös **du** när **du** cykla in ti skolan ida – (*did you freeze when you biked to school today*)  
CH: cykla – (*biked*)  
CA: < (ör) > har **du** inte cyklat – (*< (ör) > did you not bike*)  
@ < incomprehensible >  
CH: nå – (*no*)  
CA: < nu kommer **jag** å tittar > – (*now I come and look*)  
@ < PA: CA comes to the table to look at the drawing >  
CH: <1 nå >1 <2 >2 gå / gå gå – (*<1 no >1 <2 >2 go / go go*)  
@ <1 BC: shouts >1, <2 BC and PA: playing voice >2  
CA: < va ä detta för lappar som står tio å tio å femti på ä de **dinna** >  
– (*what are these pieces of paper on which it says ten and ten and fifty are they yours*)

## Appendix F

Examples of episodes that did not involve Bliss-words in focus dyad 2 (FD2) and focus dyad 1 (FD1)

### Future actions and events

*I want the ice cream* (FD2; game-Bliss, unaided part of sample)

1. CA: <1 >1 ja <2 de va frans / (1 s.) de va frans / (1 s.) vicken tur vi hade va dukti du va / (1 s.) nu svara du precis [13 så där som mamma sa å litta litta näsa hade han / (2 s.) å frans hette han såg han ut som pappa tyckte du / (2 s.) när pappa har så lockit hår / (2 s.) ja >2 ja så ]13 va smacka du för / (1 s.) ä de för glassen / (2 s.)  
– (yes that was frans that was frans what luck we had you were good now you answered exactly the way mum said and he had a small small nose and frans was his name did he look like dad do you think when dad has curly hair like that yes yes what are you clicking your tongue for is it because of the ice cream)  
@ <1 PA: CA looks at picture >1, <2 PA: shows CH the card and talks about it >2
2. CH: [13 <1 >1 <2 >2 <3 >3 <4 >4 <5 >5 <6 >6 <7 >7 <8 >8 <9 >9 <10 >10 <11 >11 <12 >12 <13 >13 ]13  
@ <1 click >1, <2 click >2, <3 click >3, <4 click >4, <5 click >5, <6 click >6, <7 click >7, <8 click >8, <9 click >9, <10 click >10, <11 click >11, <12 click >12, <13 click >13
3. CH: <>  
@ < meaning: yes; BC: small and slow nod, looks at CA >
4. CA: ä de de – (*is it*)
5. CH: <>  
@ < meaning: yes; BC: very small nod, looks at CA >
6. CA: vill du ha glassen nu – (*do you want the ice cream now*)
7. CH: <>  
@ < meaning: yes; BC: raises head, small and slow nod, looks at CA >
8. CA: för att du ha vart (...) dukti flicka – (*because you have been a good girl*)
9. CH: <1 a >1 – (*yes*)  
@ < BC: CH raises her head, very small nod, looks at CA >

*About not going on the trip* (FD1; mealtime-unaided)

1. CH: < am a ng > – (*am a ng*)  
@ < meaning: unclear; BC: looks out the window, seems dissatisfied >
2. CA: <>  
@ < BC: looks in the same direction as CH >
3. CH: <>  
@ < meaning: unclear; BC: glottal sound >
4. CA: dålit väder – (*bad weather*)
5. CH: <1 n >1 <2 ng >2 – (*n ng*)  
@ <1 meaning: no; BC: shakes her head >1, <2 meaning: unclear; BC: seems dissatisfied >2
6. CA: (...)
7. CH: < guöa: > – (*guöa:*)  
@ < meaning: unclear; BC: nods >
8. CA: < ha > – (*what*)
9. CH: < hö > – (*hö*)

- @ < meaning: unclear; BC: quiet nasal >
10. CA: ä de nånting ute – (*is it something outside*)
11. CH: <1 >1 [14 <2 jä: >2 ]14 – (*jä:*)  
@ <1 meaning: probably yes; BC: nods >1, <2 BC: loud >2
12. CA: [14 <> ]14 va – (*what*)  
@ < BC: turns her head and looks out through the window where CH is looking >
13. CH: <>  
@ < BC: looks down to her right >
14. CA: de ska bli fint väder i morrn – (*the weather is going to be nice tomorrow*)
15. CH: m – (*m*)
16. CA: a – (*yes*)
17. CH: a: – (*a:*)
18. CA: m ska bli de (...) – (*m it is true*)
19. CH: < m mm > – (*m mm*)  
@ < meaning: unclear; BC: stretches her body, seems dissatisfied >
20. CA: tro du inte – (*you do not believe that*)
21. CH: < ng > – (*ng*)  
@ < meaning: no; BC: shakes her head >
22. CA: nä da joo – (*no yes yes*)
23. CH: n < ngä > – (*n ngä*)  
@ < meaning: no; BC: shakes her head quickly >
24. CA: ska du inte åka då om de ä dålit väder < nu få du släppa da > ska du ha mer ketchup på  
– (*are you not going then if the weather is bad now you have to let go do you want more ketchup on*)  
@ < comments CH's biting on the fork >
25. CH: < m > – (*m*)  
@ < meaning: probably yes; BC: looks satisfied >

## World and language

*The meaning of the word grimace* (FD2; mealtime-Bliss, no use of Bliss-words)

1. CA: <1 åh / (1 s.) oj oj / (1 s.) vilka jättestbett / (5 s.) oj oj oj / (1 s.) oj oj oj >1 <2 / (2 s.) grimas / (2 s.) grimas var det / (1 s.) [5 ng ]5 vet du vad en grimas är >2 <3 / (2 s.) vet >3 <4 du vet du vad grimas ä >4  
– (*oh oh oh what big bites oh oh oh oh oh oh grimace that was grimace ng do you know what a grimace is do you know do you know what grimace is*)  
@ <1 CA comments CH's eating; PA: dries CH >1, <2 BC: CA leans forward closely to CH's face, intimacy, CA and CH look at each other closely >2, <3 BC: CH looks quickly to her right side down at the table and then back at CA >3, <4 BC: CA and CH look at each other closely >4
2. CH: [5 < ng > ]5 – (*ng*)  
@ < BC: laughs, CH and CA look at each other closely >
3. CH: < / (2 s.) ng > – (*ng*)  
@ < meaning: yes; BC: CH looks at CA and nods >
4. CA: ja det är när man gör något roligt med ansiktet ja  
– (*yes it is when one does something funny with the face yes*)
5. CH: <>  
@ < BC: CH laughs >
6. CA: < öh > – (*öh*)  
@ < BC: demonstrates a funny face and says öh >

7. CH: <>  
@ < BC: CH laughs >
8. CA: < det är en grimas / (2 s.) kan tilde nån grimas >  
– (that is a grimace can tilde make a grimace)  
@ < PA: dries CH's face >
9. CH: < ng > – (ng)  
@ < BC: CH laughs and turns her head to her right side and then back to CA >
10. CA: det kan du när du äter glass [6 då kommer det grimaser ja / (2 s.) m då kommer det grimaser oj // (6 s.) ]6 ●●●  
– (you can that when you eat ice cream then there comes grimaces yes m then there comes grimaces oh)
11. CH: [6 <> ]6  
@ < BC: lots of laughter and sounds >

**Grimace is a funny word** (FD2; mealtime-Bliss, no use of Bliss-words)

1. CH: <1 >1 <2 /// (22 s.) >2  
@ <1 BC: laughs >1, <2 PA and BC: CH eats, CA looks at CH and at the board >2
2. CA: < det var hemskt vad du grimaserar > – (you really make grimaces now)  
@ < PA: CA dries CH's face >
3. CH: <>  
@ < BC: laughs >
4. CA: < grimas > – (grimace)  
@ < BC: CA leans forward and looks closely at CH, intimacy >
5. CH: < m > – (m)  
@ < BC: CH and CA look at each other closely >
6. CA: < är det kul med grimas > – (is it fun with grimace)  
@ < PA and BC: CA dries CH's face, CA and CH look at each other, intimacy >
7. CH: <>  
@ < BC: CH laughs and looks at CA >
8. CA: < är det ett roligt ord [8 är de det ]8 > – (is it a funny word is it)  
@ < PA and BC: CA dries CH's face, CA and CH look at each other, intimacy >
9. CH: [8 < m > ]8 m m – (m m m)  
@ < BC: CH laughs, CH and CA look at each other, intimacy >
10. CA: <1 mm ●●● /// (15 s.) >1 – (mm)  
@ <1 PA and BC: CA feeds CH, CA and CH look at each other, intimacy >1

**Writing grandmother and grandfather** (FD1; drawing-unaided)

1. CH: < åjå > – (åjå)  
@ < meaning: grandmother >
2. CA: < m > – (m)  
@ < eliciting feedback >
3. CH: < a ojo > – (a ojo)  
@ < meaning: grandmother; BC: looks at CA >
4. CA: ska mormor ha teckningen – (shall grandmother get the drawing)
5. CH: < ng > – (ng)  
@ < meaning: yes; BC: looks at CA >
6. CA: ska vi skriva de då – (should we write that then)
7. CH: < ng > – (ng)  
@ < meaning: yes >

8. CA: ska vi skriva de här uppe – (*should we write that up here*)
9. CH: < ng > – (*ng*)  
@ < meaning: yes >
10. CA: < ska vi dra ett streck först då så kan vi skriva de sen (...) så så skriver vi vicken ä den första bokstaven ska vi skriva till mormor >  
– (*should we make a line first then so we can write that later so so now we write which is the first letter should we write to grandmother*)  
@ < PA: helps CH to draw a line and to write >
11. CH: < ng > – (*ng*)  
@ < meaning: yes >
12. CA: va ä de – (*what is it*)
13. CH: < öngö > – (*öngö*)  
@ < quiet >
14. CA: < t > å sen – (*t and then*)  
@ < letter >
15. CH: [6 <1 å å >1 <2 gl >2 ]6 – (*å å gl*)  
@ <1 nasals >1, <2 letter >2
16. CA: [6 <1 i >1 <2 l l >2 ]6 å sen da – (*i l l*)  
@ <1 letter >1, <2 letters >2
17. CH: lång – (*lång*)
18. CA: < m m > va börja de på – (*m m what does it start with*)  
@ < letters >
19. CH: < ngua > – (*ngua*)  
@ < meaning: grandfather; BC: looks at CA >
20. CA: morfar sa de va morfar också – (*grandfather shall we write grandfather too*)
21. CH: < ng > – (*ng*)  
@ < meaning: yes >
22. CA: mo (...) < mormor > och – (*gr grandmother and*)  
@ < PA: writes >
23. CH: å – (*å*)
24. CA: va börja de på – (*what does it start with*)
25. CH: ng < m > – (*ng m*)  
@ < clear bilabial >
26. CA: < m o r > far (...) så ä de färditt nu då – (*g r a n d father so are we finished now then*)  
@ < letters >
27. CH: < ng > – (*ng*)  
@ < meaning: yes >







**GOTHENBURG MONOGRAPHS IN LINGUISTICS**  
**DOCTORAL DISSERTATIONS FROM THE DEPARTMENT OF LINGUISTICS**  
**GÖTEBORG UNIVERSITY, SWEDEN:**

1. Lars-Gunnar Andersson: *Form and Function of Subordinate Clauses*. 1975
2. Jens Allwood: *Linguistic Communication as Action and Cooperation*. 1976
3. Pierre G. Javanaud: *The Vowel System Of Lemosin - A Phonological Study*. 1981
4. Sven Strömqvist: *Make Believe Through Words. A Linguistic Study of Children's Play with a Doll's House*. 1984
5. Elisabeth Ahlsén: *Discourse Patterns of Aphasia*. 1985
6. Sally Boyd: *Language Survival. A Study of Language Contact, Language Shift and Language Choice in Sweden*. 1985
7. Richard Hirsch: *Argumentation, Information and Interaction*. 1989
8. Sören Sjöström: *Spatial Relations - Towards a Theory of Spatial Verbs, Prepositions and Prenominal Adverbs in Swedish*. 1990
9. Anders Eriksson: *Aspects of Swedish Speech Rhythm*. 1991
10. Anders-Börje Andersson: *Second Language Learners' Acquisition of Grammatical Gender in Swedish*. 1992
11. Joakim Nivre: *Situations, Meaning and Communications. A Situation Theoretic Approach to Meaning in Language and Communication*. 1992
12. Kaarlo Voionmaa: *On The Semantics of Adult Verb Acquisition*. 1993
13. Mats Dahllöf: *On The Semantics of Propositional Attitude Reports*. 1995
14. Torbjörn Lager: *A Logical Approach to Computational Corpus Linguistics*. 1995
15. Karl Erland Gadelii: *Lesser Antillean French Creole and Universal Grammar*. 1997
16. Kerstin Nelfelt: *Simultaneous Sign And Speech: A Multimodal Perspective on the Communication of Hearing-Impaired Children*. 1998
17. Åsa Abelin: *Studies in Sound Symbolism*. 1999
18. Biljana Martinovska: *The Role of Repetitions and Reformulations in Court Proceedings - A Comparison of Sweden and Bulgaria*. 2000
19. Åsa Nordqvist: *Speech About Speech: A Developmental Study on Form and Function of Direct and Indirect Speech*. 2001
20. Åsa Wengelin: *Text Production in Adults with Reading and Writing Difficulties*. 2002
21. Staffan Larsson: *Issue-Based Dialogue Management*. 2002
22. Ylva Hård Af Segerstad: *Use and Adaptation of Written Language to the Conditions of Computer-Mediated Communication*. 2002
23. Ann-Christin Månsson: *The Relation between Gestures and Semantic Processes: A Study of Normal Language Development and Specific Language Impairment in Children*. 2003
24. Sylvana Sofkova Hashemi: *Automatic Detection of Grammar Errors in Primary School Children's Texts. A Finite State Approach*. 2003
25. Dianyu Li: *Causative and Resultative Constructions in Mandarin Chinese: A Multiperspectival Approach*. 2003
26. Ulla Veres: *Input and Production in Swedish Children's Acquisition of Past Tense*. 2004
27. Jean-Michel Saury: *The Phenomenology of Negation and its Expression in Natural Language*. 2004
28. Stina Ericsson: *Information Enriched Constituents in Dialogue*. 2005
29. Cajsa Ottesjö: *Att fortsätta och att återgå: Studier i koherensskapande praktiker i vardagliga flerpersonsamtal*. 2005
30. Charlotta Saldert: *Inference and Conversational Interaction: Pragmatic language disturbances related to stroke*. 2006
31. Ulrika Fern: *Using Language in Social Activities at Home: A Study of Interaction between Caregivers and Children with and without Disabilities*. 2006

