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INGRID RUMMO

A Case Study of the Communicative Abilities of a Subject with Mosaic Patau Syndrome

TARTU ÜLIKOOL · UNIVERSITAS TARTUENSIS · 1632

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A Case Study of the Communicative Abilities of a Subject with Mosaic Patau Syndrome

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University of Tartu, Institute of Estonian and General Linguistics

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TABLE OF CONTENTS

LIST OF ARTICLES

I. Tenjes, Silvi; Rummo, Ingrid; Praakli, Kristiina 2009. **Kommunikatiivse situatsiooni dünaamiline dimensioon. [The dynamic dimension of a communicative situation].** *Eesti Rakenduslingvistika Ühingu aastaraamat / Estonian Papers in Applied Linguistics*, 5, 267–285.

II. Tenjes, Silvi; Lõbus, Triin; Kubinyi, Leila; Rummo, Ingrid; Kulakov, Dmitri; Ingerpuu-Rümmel, Eva 2010. **Multimodaalne suhtlus keeleõppe ja –kasutuse teenistuses. [Multimodal communication in language learning and language use services].** *Eesti ja soome-ugri keeleteaduse ajakiri / Journal of Estonian and Finno-Ugric Linguistics*, 1, 21–40.

III. Rummo, Ingrid; Tenjes, Silvi 2011. **Aja mõistestamine Patau sündroomiga subjekti suhtluses. [Conceptualization of time in the context of Patau syndrome].** *Eesti Rakenduslingvistika Ühingu aastaraamat/ Estonian Papers in Applied Linguistics*, 7, 231–247.

IV. Jokinen, Kristiina; Tenjes, Silvi; Rummo, Ingrid 2013. **Embodied Interaction and Semiotic Categorization: Communicative Gestures of a Girl with Patau Syndrome. –** The Construal of Spatial Meaning. Windows into Conceptual Space. Explorations in Language and Space 7. Carita Paradis, Jean Hudson, Ulf Magnusson (Eds.). Oxford: Oxford University Press, 74–97.

V. Rummo, Ingrid 2014. **How to communicate with a speech impaired person? Case study of a subject with mosaic of Patau syndrome.** – *Trames,* 18(68/63), 3, 243–264.

1. INTRODUCTION

1.1. Aim of the thesis

A person may have language impairment due to several medical reasons, such as various illnesses, psychic (developmental) disorders, genetic disabilities or damages to certain areas of the cerebral cortex (aphasias). If he/she is not able to produce or comprehend oral speech and written language – the loss can be total or partial – it does not automatically mean that his/her entire language capability and communication skills are missing. Of course, the ways how the meaning is created and mutual understanding is achieved are different, but communication can still be successful. On the basis of a long-term case study, current thesis is researching what is important to take into consideration under these conditions in order to achieve the goals of communication and fulfill the expectations of the participants.

The case study examines the communicative potential and communication means (modalities) of a person with severe language impairment. The aims of the thesis are:

1) to find out what is the communicative capability of an individual with congenital genetic disability, and how she makes herself understandable, despite her limited possibilities,
2) to investigate and identify cognitive abilities which manifest in the subject's communication,
3) to explore how the studied person constructs and communicates the concepts of TIME and SPACE,
4) to compile a lexicon of communication modalities of the subject, which expands the scope of communicative opportunities of the subject.

The subject of the research is a female born on 7th January 1990. Her clinical picture involves the mosaic form of Patau syndrome, also known as trisomy 13, which has caused severe mental retardation and restrains the development of her speech. The accompanying diagnosis is dyspraxia – language impairment, which has mainly affected the production of speech, but not the ability to comprehend the talk addressed to her. Her diagnoses will be discussed more closely in subchapter 2.1.

Robert E. Stake (1994: 437) has distinguished three types of case studies in his systematization of methods in social inquiry. One of these is *intrinsic*[1], and by definition it refers to the type of case study that is utilized when the researcher wants to obtain a better understanding of a case which itself is of interest, and the purpose is not to build a new theory. The author of current

[1] According to Stake (1994: 437), the other two types of case studies are *instrumental* and *collective*. The first refers to a case study with the objective of making generalizations; the latter explores in several different cases a more general phenomenon, which is represented in all cases under investigation.

dissertation was willing to investigate this particular subject in order to improve her prospects of socializing. The author of the dissertation avoids alleging explicit claims about the generalizability of the findings, but assumes that similar patterns may occur in communicative situations that involve people with other language impairments. It may give ideas for specialists how to make the communicative process involving individuals with speech deficits easier and smoother, and how to improve the rehabilitation of these people to the society. According to the knowledge of the author of the dissertation, there are no more people with Patau syndrome in Estonia, also in the whole world it is rare – this adds value to present data and the outcomes of the research.

Unsmooth co-functioning of the human brain and linguistic capability, and the occurrence of communicative problems is undoubtedly a topic of vital importance. Communication in the clinical context is of interest in medicine, psychology, special education, linguistic anthropology, sociolinguistics, pragmatics, semiotics and gesture studies, when only a few domains are to be mentioned. Due to development tendencies of modern science (interdisciplinarity, globalization and progressive utilization of novel technology), several methods and approaches that were previously at the disposal of only one branch of science, are now used transdisciplinarily. Also, the disciplines themselves have become less clearly definable. Non-clinical and clinical directions in studies of communication and social interaction are approaching each other in the 21st century, and give a mutual contribution when it comes to methods and data (see e.g. Perkins 2007).

In a broader framework the thesis belongs to the category of disability studies. According to Liina Paales (2011: 19), disability studies have been conducted since the 1980s with the objetive to examine disability social, political, and culture-specific factors that define disability. Disability is also an object of study in medical and special education research. In Estonia, no studies have been conducted on the academic level outside medical/special education research concerning language impairments and communication of individuals with genetic[2] intellectual disability.

1.2. Structure of the thesis

The thesis comprises the introductory part, five articles − three in Estonian, two in English − published during 2009–2014, and two annexes. The first annex presents English translations of the articles published in Estonian (the articles in their original language are presented in chapter 8), the second annex contains an overview of the ethical aspects concerning the doctoral thesis. The introductory part embodies

[2] Genetic anomaly may be inherited or occur de novo. The latter refers to an abnormality which develops incidentally in a gamete of one or another parent or after fertilization in the fetal cells.

information about the study subject and her diagnoses. The introduction explores also the methods that were utilized for preparing the study and describes the general theoretical background. It contains a respective part of the overview of history of communication studies which are relevant in the context of current thesis. The chapter "Results and conclusions" extracts the main contribution and the results of the study and presents the lexicon of the subject's verbal and corporal communication modalities. Chapter 6 presents the Estonian summary of the thesis; chapter 7 lists the references of the introductory part.

2. THE SUBJECT OF THE STUDY

2.1. General overview of the study subject

Current thesis represents a case study of one specific person. The subject of the study is a woman who was born on 7th January 1990 and was diagnosed on 28th December 2006 at the Genetics Institute of the United Laboratories of Tartu University Hospital with **mosaic trisomy of chromosome 13** or **the mosaic form of Patau syndrome** (Õunap 2006). The studied subject manifests mental retardation concomitant to the syndrome. Additional diagnosis is **developmental verbal dyspraxia**, which is not specific to Patau syndrome and may occur with various chromosome abnormalities and metabolic disorders (e.g., galactosemia). According to professor Õunap (conversation on 7th July 2011), there are no other people with Patau syndrome living in Estonia, because this anomaly has been prenatally well-diagnosed since the 1990s, i.e., there are only a few false diagnoses and hence the decision is made in favor of abortion. The syndrome is rare throughout the world, since miscarriages, still-born children or deaths at a very early age are frequent because of severe malformations.

The mosaic form of Patau syndrome is designated with code Q91.5 in the current 10th revision of the International Classification of Diseases (ICD-10; RHK-10 denotes the Estonian version). Patau syndrome or trisomy 13 is a chromosome anomaly, in other words − a chromosome disorder or a chromosomal syndrome. These terms have been in use since 1959 when an extra copy of a chromosome was discovered in children with Down syndrome (Mikelsaar 2001: 6). Chromosome disorder refers to a pathology which is caused by a change in the number or structure of chromosomes. People have normally 23 pairs of chromosomes, but in case of trisomies or numerical anomalies of autosomes (non-sex chromosomes) there are three copies of genetic material from a particular chromosome. Most prevalent is the presence of a third copy of chromosome 21, which is characteristic to Down syndrome. In case of Edwards syndrome, which is second in frequency, the extra copy originates from chromosome 18. Patau syndrome is most rare of various trisomies, according to Goldstein and Nielsen (1988) this trisomy occurs in about 1 in 12 000 to 1 in 29 000 newborns. The mosaic form has been described in medical literature only in a few cases. The syndrome has received its name after American scientist Klaus Patau, who discovered the genetic origin of this disease with his research group in 1960. Before him the syndrome was described in 1657 by Swedish anatomist Erasmus Bartholin (Mikelsaar 2001: 39). Patau and his colleagues (Patau et al. 1960) analyzed the clinical data of a female patient (born in 1959) with full trisomy in the article “Multiple congenital anomaly caused by an extra autosome”. Nowadays the syndrome is known to have three cytogenetic forms which are listed with their prevalence rates in the following table.

Table 1. Chromosome anomalies with Patau syndrome (Mikelsaar 2001: 41).

Cytogenetic form	**Incidence**
Full trisomy	85%
Translocation trisomy (Robertsonian type)	10%
Mosaicism	5%

Typical symptoms of full trisomy are cleft lip and palate, microphthalmia (small eye) and colobomas in the eyes (fissures of iris, uvea, retina), anomalies of the frontal part of the brain, severe heart disorder, polydactylism (supernumerary fingers or toes) and malformations of gastrointestinal tract and urinary tract (Pärilikkusmeditsiin 2010: 135). In case of the mosaic form, anomaly is not present in all somatic cells. The number of affected cell lines that carry the trisomy may vary considerably. The mosaic cases have a less expressed clinical picture, and malformations and anomalies are not so severe as in cases of full trisomy. An article (Griffith et al. 2009: 1346–1358) published in 2009 in *American Journal of Medical Genetics* gave an overview of 49 cases with the mosaic Patau syndrome. On the basis of this article, most characteristic symptoms of the mosaic form include various malformations of the ears, cleft lip and palate, and congenital heart defects. From the 49 patients, six were with normal intellect, while the rest had a milder or more profound mental retardation. The authors of the article claim that there is no clear correlation between the percentage of organism's trisomatic cells and individual's intellect (Griffith et al. 2009: 1346).

According to the decision of the consultation of a geneticist (Õunap 2006) compiled for the subject of the study, the following microanomalies occur in the given case: a wide round face, broad forehead, slight synophrys (non-existing space between eyebrows on the nasal bridge), antimongoloid shape of the eyes, large gap between eyes, divergent strabismus (discrepant squint), small nose, ears with low position and unrolled helix, conical fingers, large gap between the second and the third toe, clinodactyly of the fourth and the fifth toe (curvature of the toe due to shortening of the middle vertebra). The patient's right hand was immediately after birth operated for postaxial polydactyly (supernumerary fingers). There are no malformations of internal organs.

In respect to communication, the author of the current doctoral thesis was foremost interested in the mental capacity and speech development of the subject. Extract from the patient's medical record of 2011 (Uudelepp 2011) has pointed out that the subject is communicative and sociable; an emphasis is placed on her good memory and orientation ability. She is capable of recognizing dates in the calendar and is able to count to three. The description of verbal aptitude denotes subject's aspiration to call other people by their name, but as not all sounds are present in her speech, majority of the names have been subject to modification. Words of general language have transformed for the

same reason. The use of sentences has not developed in speech. The subject understands the speech of others, is able to write her name and knows block letters (Uudelepp 2011).

Communication of the studied subject is severely disturbed by developmental verbal dyspraxia, which is a neurological sensorimotor speech disorder. Dysphasia and alalia have been used in Estonia as synonyms of the term *dyspraxia*, though in English medical literature dysphasia and alalia refer to speech development disorder caused specifically by organic damage of the language center of the cerebral cortex. The subject's diagnosis in respect to the speech disorder has been specified by the time of compiling the doctoral thesis: the diagnosis was alalia or dysphasia from 2007 to 2011, and developmental verbal dyspraxia since July 2011. As the first four articles were published (or were submitted for publication) before the diagnosis was elaborated, the old diagnosis has been used in them.

Depending on the level of severity, differentiation is made between the terms dyspraxia (milder form) and apraxia, which refers to intensively inhibited or missing speech capacity. The concept *apraxia* is more general and is frequently used without drawing a distinction between different severity levels of the disorder. These terms may also occur in literature as synonyms. In psycholinguistics apraxia is defined as a disorder which does not allow the brain to program or execute the movements necessary for speech articulation (Field 2004: 18). By the definition available on the website of the National Institute on Deafness and Other Communication Disorders (NIDCD) located in the United States of America, apraxia of speech, also known as verbal apraxia or dyspraxia, is a speech disorder in which a person encounters difficulties in speaking, he or she is not able to express himself or herself correctly and appropriately (NIDCD 2012). The disorder is not related to weakness or paralysis of the speech muscles, and the severity of apraxia of speech may vary from mild form to complete absence of speech capacity. Dyspraxia can be either acquired or congenital (i.e., developmental) (NIDCD 2012). In case of the subject of the doctoral thesis, the disorder is congenital and the development of speech has encumbered the subject since birth.

Geoff Brookes, researcher of apraxia, also claims that dyspraxia is a neurological disorder (and not cognitive or induced by muscular malfunction). The signals originating from the motor center of the brain do not reach muscles, and as a result the patient experiences difficulties in movement planning, the existing idea or a planned purpose remains unachieved or obstacles are encountered upon execution. Three processes are disrupted in the brain: 1) ideation; 2) motor planning; 3) execution (Brookes 2007: 5–6).

Brookes (2007: 6) describes three types of dyspraxia:

1) Oral dyspraxia. Patients are not able to reproduce mouth movements. For example, they are not capable of putting the tip of their tongue against the inner side of the cheek when asked to do it.

2) Verbal dyspraxia. The ability of making sounds or forming words out of sounds is disturbed. It is considered to be caused by an immaturity of the speech centers of the brain.
3) Motor dyspraxia. The ability of executing planned movements and moving is precluded. As an example, the child knows that he or she wants to catch a ball, but is unable to construct the necessary movements to do it.

The subject of the doctoral thesis suffers from developmental verbal dyspraxia as only the execution of speech movements is disturbed. In case of verbal dyspraxia, the speech muscles are not damaged. The patients use the same muscles in coughing, chewing and swallowing, but they are unable to utilize them for creating a desired sound (Brookes 2007: 61).

It is known that speech is produced in Broca's area. The motor centre that is located in its vicinity controls the functions of various speech organs (tongue, lips, pharynx, hard and soft palate, etc.). Speech is pronounced via the motor center of the vocal apparatus. Verbal dyspraxia denotes the disability of commencing volitional movements of the articulation mechanism for vocalizing sounds and words.

Verbal dyspraxia is most commonly associated with one specific gene FOXP2 and the disorder occurs with deletion of this gene. The same conclusion was reached when two Estonian families were studied in respect of the deletion of gene FOXP2 and concomitant verbal dyspraxia (see Žilina et al. 2012: 254–256).

From the discussion above it is clear that in addition to speech movements, dyspraxia may also affect the ability of moving other muscles (motor dyspraxia). For example, Dewey et al. (1988) studied apraxia in relation to the ability of executing hand movements. One group was formed of children with apraxia, members of the control group were not diagnosed with this disorder. The results revealed that subjects with verbal apraxia obtained worse results when they had to imitate movements or when they were asked to perform movements upon command, but such difference did not occur in the utilization of various tools. Manifestation or non-manifestation of dyspraxia upon composition of hand gestures, use of tools and work equipment, and pantomime (mimicking) has been studied by medics as well as linguists and special education teachers. The example presented in this paragraph is only one of the many, and the objective was to draw attention to the fact that the manifestation of dyspraxia may be considerably more profound than in the given case.

Morgan and Vogel (2009) have emphasized that a diagnosis of verbal dyspraxia or apraxia has so far mainly been based on three key features: 1) abnormalities and errors without any specific pattern on formation of consonants as well as vowels in syllables and words reoccurring in speech; 2) lengthened and impaired coarticulatory transitions between sounds and syllables; and 3) inappropriate prosody.

According to Brookes, people suffering from dyspraxia have a very limited verbal depository of sounds and a restrained vocabulary. Because of this, they have a well-developed generalization capability. For example, they may use a simple syllable for denoting almost everything (Brookes 2007: 62).

The subject of this thesis understands speech addressed to her, but her ability of expressing herself verbally is limited. She uses some nursery language and simplified words in oral speech, and it is noticeable that the subject avoids consonants that are formed with intense exertion of the articulation mechanism. Labials *m* and *b* as well as *v* are used (for example, the name Nele has been altered to the palatable form Beve). All vowels are represented in speech. Considerable part of subject's communication is transpired via gestures and simplified signs of Estonian sign language. Facial expressions play an important role; from the suprasegmental features intonation is more significant than others and is most used.

2.2. Data. Transcription systems

Data collection for current research started in 2007 when the subject was 17 years old. Two data gathering methods have been used – videotaping of the communicative situations as well as participant observation. In the beginning of 2015 the database contained 25 pages of journal entries deriving from observations and video materials totalling to 10 h 14 min. All the recordings and observation notes are of natural activities, i.e., activities that would have taken place despite the presence of a camera and/or an observer.

2.2.1. Transcription systems

Shorter communication sections or communication sequences were transcribed using the elements of Gail Jefferson's transcription system (Sacks et al. 1974). Multimodal details were transcribed taking into account the conventions created by Charles Goodwin (e.g. 2003) and Lorenza Mondada (e.g. 2006; 2007). Both systems were modified depending on the specific character of the present data – the subject does not speak. For this reason a line of translation/explanation was added in order to indicate all important nonverbal modalities. Hereby it is essential to emphasize that transcription or recording all relevant communication modalities in multimodal analysis is part of the analysis itself and not merely data recording. The transcriptions and notes are in Estonian as this is the mother tongue of the subject.

Utilization of the advantages of Jefferson's system has been necessary primarily for describing the activities of the subject's interlocutors, but partially also for accurate transmission of the subject's communication. For example, the system enables to describe the dynamics of interchange of conversation rounds, to mark beginnings and ends of conversation rounds as well as down-talking,

etc. (Kasterpalu, Gerassimenko 2006: 113). It also allows identifying specific features of speech (a very loud or soft voice, changes in intonation, accentuation, laughter, etc.) (Hutchby, Wooffitt 1998: 73–74). The length of pauses has not been relevant in the context of these materials, because the pauses occurring in the sections studied under the articles did not impart any communicative meaning. Because of the limited role of speech which was present in this research the phonetic alphabet was not used.

2.2.2. Video and journal data

The journal notes were made during or after participant observation. The notes and video clips were analyzed multimodally with the objective of finding answers to the raised research questions. The journal entries contain step-by-step descriptions of communicative situations, and all modalities that carry communicative meaning have been marked down. Video and journal data were taken as the basis of the analysis presented in the articles (the articles are in the focus centre of current doctoral thesis) and the lexicon (the analysis conducted for the articles was also the foundation for compiling the lexicon). The lexicon of the subject's communication means is presented in subchapter 5.2.

When subject's communication modalities were systematized for the lexicon, attention was foremost paid to speech and sound utterances, gestures and signs. Other communication modalities (for modalities, see subchapter 3.3) are variable and depend more on the specific communication situation and its context.

It has been explained in subchapter 2.1 that the vocabulary of people with dyspraxia is very limited on comprehensible grounds. In more severe cases only a few syllables are used for denoting almost everything. Brookes (2007: 62) describes a patient whose only mean for verbal expression is the syllable *da*. In the framework of current doctoral thesis, it was also important to determine the meaning of the subject's sound combinations, because the analysis presented in the articles revealed one specific intricate feature as if one syllable would carry several meanings.

3. RESEARCH METHODS AND CONCEPTS

The theoretical framework follows approaches to clinical linguistics, cognitive research and gesture studies. Analysis also encompassed the fields of anthropology, pragmatics, clinical communication studies, special education studies, semiotics and gesture studies. The means and methods applied for analyzing the material were discourse analysis, the theory of semiotic categorization of signs (icon, index, symbol) by Charles Sanders Peirce (1839–1914), microethnography, the SPEAKING model of Dell Hymes (1972), and Michael Agar`s (1994) MAR analysis. The data was processed in accordance with the principles of **qualitative microanalysis** as a part of discourse analysis. Conversation analysis was applied with some reservations – mainly its transcription system and some general principles as well as some concepts were taken into consideration.

3.1. Qualitative microanalysis, microethnography. Conversation analysis

Qualitative microanalysis as a part of discourse analysis was used for analyzing and interpreting the data of current dissertation. This method is applied by several disciplines, among others **microethnography** (also known as video-based ethnography), promoted by LeBaron (2008) who is one of the pioneers in this field. Specifically a video-based research method was needed to analyze the material of the thesis as most of the data was videotaped. The history of using research material captured in the visual format dates back to 1942 when anthropologists Bateson and Mead published their "Balinese character" with more than 700 photos characterizing the patterns of social life (LeBaron 2008: 3120; Bateson and Mead 1942). In the 1970s social scientists began to use video to record human behavior as it naturally occurs in our everyday life (LeBaron 2008: 3120). Microanalysis provides the possibility to notice even the smallest details of a communicative situation. This is crucial in the context of current dissertation as the subject has a language impairment − dyspraxia, which enables her to use only some words. The meaning is created and transmitted by using and combining different communicative modalities (for communicative modalities, see subchapter 3.3), microanalysis gives the opportunity to notice and analyze their role. Also, the method does not impose any restrictions on the details, it does not tell which of them are more and which less important, everything depends on the specific data. Another important principle is that all recorded materials should be authentic, no laboratory or simulated situations are used.

LeBaron (2008: 3122–3123) has listed the following five stages of microethnographic research.

1) A research site is selected depending on the nature of the research project.

2) Data is collected. Participant observations, field notes, interviews and field recordings (audio and video) are the premium material for microethnographic study.
3) Data is analyzed. For example, video material is watched carefully and repeatedly to find patterns of interaction. These patterns form the empirical basis for research claims.
4) The most important video-recorded moments are selected, digitized and transcribed.
5) Research findings are described and reported.

LeBaron (2008: 3122) underlines that microethnography excludes some means which are completely acceptable when it comes to a number of other methods, e.g., hypothesis is not set or data which is based on the memory of the investigator is not considered reliable. And as mentioned above, no laboratory experiments are arranged. While analyzing the data, the researchers pay attention to both speech and behavior of the people, and observe also how different objects and space are used in communicative situations.

The strongest influence on microethnography derives from conversation analysis (abbreviated as CA). CA is a form of microanalysis of communication, which utilizes as research material the recordings and detailed literalizations of actual conversations (Mihkels 2013: 11). Research in CA is also empirical (as it is in microethnography), and no hypothesis is set as well.

The method of CA was developed by a group of sociologists. It originates from a series of lectures, given at the University of California in 1964–1972 by Harvey Sacks, a follower of Harold Garfinkel, the founder of ethnomethodology. The first follower of Sacks was his colleague Emanuel Schegloff. After Sacks died in 1974, his audio recorded lectures were copied from the tapes by his colleague, secretary and student Gail Jefferson. The lectures were published only in 1992 in a two-volume issue "Lectures on conversation" (Hakulinen 1997: 13).

In CA it is underlined that only naturally occurred conversations can be the source on the basis of which scientific conclusions are made. The aim of conversation analysis is to identify the structure and the elements of a conversation (ten Have 2006: 24). Researchers are looking for recurrent main units and search what are the conditions under which these units occur (Hakulinen 1986: 451). In his first lecture Sacks delineated this method to have the following objectives and affirmed that it is necessary to ascertain how things in interaction regularly (or always, or rarely, etc.) happen (Sacks 1992: 5–6).

LeBaron (2008: 3121) claims that though microethnography applies CA assumptions and operations, there are three important differences between these methods.

1) Conversation analysts usually compose their databases of some phenomenon that is present in a variety of contexts (medical consultations, courtroom situations, etc.). Microethnographic research is typically based on a case

study, it investigates interaction in a concrete setting (e.g., a medical centre) or during an activity (e.g., a regular meeting of a certain group of people).
2) Conversation analysts attempt to generalize about what people are usually doing and how they conduct their speaking acts; microethnographers by contrast aim to give a profound description and to analyze scenes of social interaction.
3) The focus of conversational analysis is talk, only a little attention is paid to visible multimodalities of interaction. Microethnographers attempt to see the connections between vocal and visible modalities, including objects used in a communicative situation.

Christian Heath and Paul Luff (1993) have pointed out one more characteristic feature of CA. Their viewpoint is that the general practice in CA should begin with an audio transcription to find interesting elements from there, and only later on the visual details are added from video recordings if there is something important to consider. Paul ten Have (2006: 9) shares this opinion and suggests that the reason may lay in the transcription system – there is one main system for the transcription of talk, but no similar system for marking nonvocal elements. One of the main principles which the author of the present dissertation has followed is to transcribe and to take into consideration as many elements (vocal or not) as possible because only this allows to find out the meaning created in interaction.

This dissertation has applied some input from CA as seen above, mainly in the first article, but there have been some principal obstacles to employ the method throughout and systematically in the research as a whole. CA focuses on routine practices of the talk (turn-taking, repair, sequence organization, etc.) (Wooffitt 2006: 86), which is not enough considering the material researched here. The author of the thesis had to take into account that the subject's means for self-expression through language are very limited, and at the same time CA concentrates mainly on oral language. Also, the aim of CA is to identify the structures and the elements of a conversation (as seen above), but here the goal was to determine the key which would ensure the success of a communicative situation. A method which pays more attention to all communicative modalities and the communicative situation in its entirety was needed. This approach is **discourse analysis** under which **microanalysis as a research method** is applied. Discourse analysis (abbreviated as DA) has concentrated on the broader interpersonal and social aims carried out by a fragment of speech, and is analyzing the whole repertoire used for interaction (Wooffitt 2006: 80). This enables to analyze essential outcomes of interaction and to evaluate its results. From the viewpoint of the author of current thesis, the most important questions during assessment of the success of communicative situations involving the study subject are the following:

- Were the subject and her intentions understood?
- Did she receive answers to her questions?

- How much time and energy was spent?
- Was the subject able to share something about her?
- Did she understand other interlocutors?
- Was the necessary information exchanged?

3.2. Discourse analysis, pragmatics. Roman Jakobson's model of communication

The first discipline which started to research conversation was sociology. An essential contribution to the research of talk in social context was given by the scientists of ethnomethodology. The most well-known ethnomethodologists are Harold Garfinkel, Harvey Sacks, Emanuel A. Schegloff, Gail Jefferson and John Heritage. The major tenet of the scientists was that the sense of social action is reached through the participant's skills and competences which are tacit and practical – inconspicuous, but inherently present in the social ground (Tenjes et al. 2009: 271; Wooffitt 2006: 73). Both CA and DA have developed the objectives of ethnomethodology further.

Discourse analysis is considered rather an approach than a method, and it is employed both for written and oral texts. Different disciplines or schools apply it according to their own needs and no particular rules of analyzing procedure have been established. The term *discourse analysis* is heterogeneous, this approach does not offer a framework for analyses, but simply identifies what is the object of study – language that is wider than a sentence (Tannen 2007: 5–7). Unlike CA, discourse analysis does not see conversational interaction as the main focus of analysis (Müller et al. 2008: 19). It uses a broader angle and incorporates non-conversational spoken and written texts, images, etc. (Müller et al. 2008: 19; Kress and van Leeuwen 1996). The analysis enables to explore how language and other communicative modalities are used and how the process of communication has been built up. In brief, discourse analysis is the analysis of language in use (Brown, Yule 1983: 1). In the present thesis it will refer to the analysis of all communicative modalities which are occurring together.

The term *discourse analysis* was first introduced in 1952 by an American linguist Zellig Harris who defined it as "a method for the analysis of connected speech (or writing)". Harris explained that he was looking for a method which allows viewing more than a single sentence at a time. He also considered important to correlate non-linguistic and linguistic behavior. Descriptive linguists had not been able to achieve these two goals, and this is why Harris was seeing descriptive linguistics as a limited approach. He also believed that for his predecessors were unable it was to take social situation into consideration, and hoped that with the help of the new approach it is possible to determine correlations between language and other forms of behavior. One of his principles was to conduct the analysis considering what the material permits.

Now it was possible to discover not only that some elements occur, but also how they occur (Harris 1952).

Harris employed the new method to develop his idea of grammatical transformations. Durig the 1960s and the 1970s the concept of discourse and the method of its analysis were evolved by other scientists, but their work cannot regarded to be direct continuation of Harris's model.

Auli Hakulinen has claimed that nowadays linguistic discourse analysis originates from speech act theory. This type of discourse analysis was initially used to analyze and to subdivide individual speech acts, but in the long run different types of discourses were discussed (Hakulinen 1986: 450). In the linguistic discourse analysis it has become a tradition to deal with discourses where the roles of the speakers are clearly determined, e.g., doctor-patient conversations, classroom or courtroom interactions.

Speech act theory (or natural language philosophy), an important forerunner of DA, was evolved by Oxford philosopher John Langshaw Austin (1911–1960) who in 1955 gave twelve lectures at Harvard University. These lectures were published under the title "How to do things with words" in 1962. Austin (1962: 1) emphasized that there are several sentences which do not describe or state anything directly (and in fact – a sentence is not a statement: rather it is used in making a statement), so it is not possible to tell if they are true or false. The uttering of the sentence is doing something, carrying out an action (Austin 1962: 5). Hence, these sentences are forms of social action. Another philosopher, John Searle (born 1932), has developed the idea of speech acts onwards. The theory built a bridge between language usage and different non-linguistic activities.

In parallel with discourse analysis, which was initially more used with written texts, **pragmatics** developed, the latter was more applied to oral speech. Pragmatics can be defined as a subfield of linguistics which studies rules and principles in language use in contrast to abstract rules of an ideal language (Malmkjær 1996: 354). It states that meanings are not coded in languages but depend on the context of the communicative situation, on the shared knowledge of the interlocutors, intent of the speaker and many other factors (Levinson 1983). The foundation of pragmatics lies in speech act theory and in Grice's theory of conversational implicature (Malmkjær 1996: 354). Brown and Yule (1983: 26) have stated that analyzing a discourse means first of all applying pragmatics – it has to be explored who tells whom what where and in which context, also how it is told and received (understood). In other words, language in its use is observed. Agnes Weiyun He (2003) claims that even if discourse analysis is applied by linguists, not only language as such is under research, but it is seen as a tool for doing something; language is changing the context in which it is used. He (2003) states that we cannot fully understand a language if we don't pay attention to how it is used. Analysts of discourse are interested in contexts where and in processes with the help of what oral and written language

is employed, while turning in concrete situations on specific reasons to concrete audience (He 2003).

Oral discourses are like captured pieces of real social interaction. A discourse analyst is primarily interested in the relations of the speaker-utterance-hearer, not in the relation of one utterance to another (Brown, Yule 1983: 27).

A fundamental theory – systemic functional linguistic model of language – was elaborated by British linguist Michael A. K. Halliday (born 1925). Halliday sees language as a social phenomenon, a tool for exchanging meanings. He describes language as a semiotic system "not in the sense of a system of signs, but a systemic resource for meaning", and that a language user is making **choices** while applying language. He views "language as the creature and creator of human society". Language does not only have a social context, but also an environmental one (Halliday 1978; 2005).

Roman Jakobson has underlined that language has to be researched in all the diversity of its functions (Jakobson 1960: 353). His model of a speech events as communicative acts constitutes a comprehensive basis for analyzing communication as it includes all the significant components. Jakobson (1960: 353) outlines six constitutive factors in any speech event:

1) addresser – sender of the message, the encoder;
2) message; requires a context referred to;
3) addressee – receiver of the message, the decoder;
4) context; has to be comprehensible by the addressee, and either verbal or enable verbalizing;
5) code; needs to be entirely or at least to a certain extent common to the encoder and decoder;
6) contact; a physical channel and psychological connection between the communicators which makes it possible for them to stay in interaction.

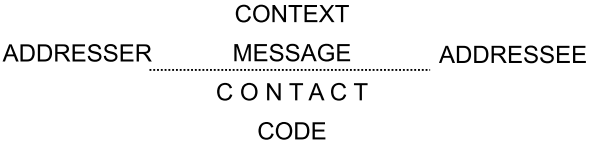

Figure 2. Jakobson's schematized model (Jakobson 1960: 353).

Jakobson associated each factor of his model with a specific communicative function. At the same time he admitted that it is not possible to find a message which fulfills only one function. He added that there exists a hierarchical order of functions and the referential function tends to dominate as it refers to the context. According to Jakobson (1960: 353–357) six basic functions of verbal comunication are the following:

1) emotive or expressive; is focused on the sender of the message (addresser); coveys the speaker's attitude and emotions toward what he is expressing;
2) poetic; focuses on the message in its entirety, enables to pass the message smoothly and with a suitable tone;

3) conative; is orientated toward the receiver of the message and expresses the impact on him; the imperative sentences are the purest examples of this function;
4) referential; refers to context, expresses that the message is compiled to transmit information;
5) metalingual; reveals when the communicators are talking about the code of the message, performs glossing;
6) phatic; the function is related to contact and describes the endeavor to start and sustain communication.

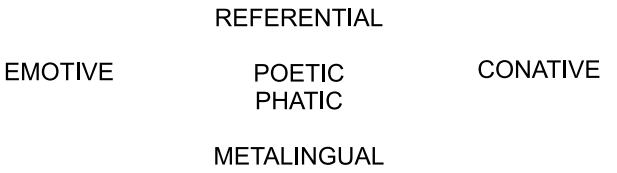

Figure 3. Basic functions of verbal communication (Jakobson 1960: 357).

Methods which constitute the basis of the theoretical framework of studying communication were described in subchapters 3.1 and 3.2. Replenished and elaborated viewpoints as well as theoretical starting-points of authors explored here were taken as the foundation of analysis conducted in the articles.

3.3. Concepts of the study

In this subchapter the main concepts are defined in the context of being used in current dissertation. The thesis is examines **oral communication**, it researches a discourse in which combination of vocal and sign language means is used. Verbal and nonverbal tools are both present in this specific discourse which is seen as a complex phenomenon. According to Brown and Yule (1983: 26), the scientist who is analyzing discourse handles his/her material as the protocol of a dynamic process where "language was used as an instrument of communication in a context by a speaker/writer to express meanings and achieve intentions (**discourse**)". The latter quote is one possible definition of discourse. As the term *discourse* is used in so many different ways, it is recommendable to make reference only to its context of use on each occurrence (MacCabe 1979; Macdonell 1986). This principle is strictly followed in current dissertation.

As this specific discourse here has clinical background, it is important to consider the impairments that impede language use. The dissertation explores the patterns that describe the subject`s communication and investigates respective communicative strategies. And as emphasized by Müller et al. (2008: 4) for the researches in clinical contexts, the primary concern is to focus on mechanisms that serve as a basis for the processing of discourse.

The concept of discourse is employed in different social sciences and in linguistics, including its subdisciplines. It can be seen as a rather narrow notion (the way of using a language) or in a much broader way. For example, Teun van Dijk (1997: 13) defines discourse as action and interaction in society. Every oral discourse takes place in a concrete situation, under specific conditions, involving particular attendants, in other words – in a communicative situation. For van Dijk (2005: 17) communication and discourse are synonyms. Van Dijk (2005: 231) has additionally specified discourse as an event, in which different social agents (speakers/hearers and writers/readers) are participating and which takes place at a particular time, in a particular place, in particular circumstances. He underlines that in dialogues (oral discourse) the hearer (i.e., the comprehender) has to be at the same time a participant which becomes a speaker and then a hearer again (van Dijk 1983: 6), so that the roles of the social agents are changed many times during a communicative event. In a dialogue (oral discourse) van Dijk (1983:7) sees "linear connectedness of speech acts performed by subsequent speakers". A communicative situation is influenced by personal and psychological qualities (e.g., gender, age, education, social role, etc.) of the interlocutors.

Discourse can also be seen as a process of creating meaning. Meaning is built up in a communicative situation as a result of interaction, it is constructed by all interlocutors jointly in collaboration. As the meanings depend on particular communicative situations, which are constantly developing and altering, the meanings as well are developing and altering. Oral discourse is a multimodal process of interaction which takes place during a specific time period.

Discourse comprises of communicative acts and **the communicative situation**. Heath and Hindmarch (2002) see communicative situation as a part of social activity, in which communicators, their verbal/nonverbal activity, communication space and the channels are involved. In the present thesis channels are also called modalities. Humans have five senses or sensomotoric channels via which information from the environment is acquired: sight (visual channel), hearing (auditory channel), taste (gustatory channel), touch (tactile channel) and smell (olfactory channel). We use the senses also while communicating, never just one of them, but a combination of several. To create information mainly voice (speech with its paralinguistic features) and our bodily gestures are applied. Several modalities of production and perception make communication **multimodal** (Allwood 2003: 134). Information acquisition in communication (perception) can be subconscious – for example, we are not always aware what is the impact of every detail we hear, see or smell. Similary, production of messages as well involves elements of which the speaker is not conscious about, but which are still influential. In the present dissertation the concept of **modality** is used in the sense of **communication modality** or **communication channel** – modalities are different modes used in communication to create and transfer information (meanings and emotions).

In conversations utterances usually predominate and bodily gestures convey supplementary information; the gestures are strengthened by prosody. The messages produced in a communicative situation in the different modalities can either support each other or give contradictory information (Allwood 2003: 134). In the case of this thesis, inversely the bodily gestures are dominating and also some special modalities (touch or manipulation of objects) are applied which usually do not play so significant role in other types of oral discourse.

In the opinion of the author of the thesis, it is possible to distinguish the following modalities in a communicative situation:

- speech and uttering sounds
- paralinguistic means (e.g., characteristics of the voice; intonation; emphasis)
- gaze (existence or absence of eye contact)
- smile
- laughter
- head movements
- facial expressions
- movements of hands and arms
- body posture
- proxemics (location of the interlocutors in the communication space and their position towards each other (including the distance between them)
- communicative touch
- manipulation of objects
- clothing, hairstyle and other appearance-related details
- silence

Undoubtedly, the given list is not conclusive, because a communicative act is continuously influenced by its situation, context and various other factors. One can however roughly generalize that the addresser employs motoric modalities and the addressee the sensory ones. The message is conveyed by one modality (i.e., speech or hand movement) and received by another one (i.e., hearing or vision). Isabella Poggi (2001: 1–2) has also distinguished two senses of modality − motoric (or productive) modality adverts to the body organs that produce the signals, and sensory (or receptive) modality refers to the sensory (receptive) organs of the addressee.

Gunther Kress handles the concept of multimodality even more widely – he includes all the tools (e.g., still or moving images, music) which humans have to create meaning or pass a message. These are the modes of representation, a researcher's duty is to take into account each mode's specific way of transmitting the mental picture of the world. It is also important to bear in mind that meanings are always conveyed through concrete media, this medium can also be the human body (Kress 2004).

As seen above, there is a big variety of means used in addition to speech in oral discourse. The idea is also represented in the definition of Bente and Krämer (2008: 3334) who state: "Human communication is a multichannel reality comprising verbal, paraverbal, and nonverbal signals". These authors elaborate further that some researchers place paraverbal qualities (e.g., tone, pitch, voice) also under the nonverbal category, but from the viewpoint of Bente and Krämer it is better to distinguish the two forms and use the word nonverbal for referring to visually transmitted signals (body posture, movement, various gestures, etc.) only (Bente and Krämer 2008: 3334). The author of current dissertation is on the same opinion and uses the terms in this meaning. It is important to see that the visual modality plays a significant role both in face-to-face and mediated communication (see e.g. Burgoon et al. 1989).

It is considered that most essential bodily instruments are head movements, eye movements (gaze and eye contact), smile and laughter (Allwood 2003: 139), the first three of them are visual. Also, a significant part of the rest of nonverbal information and emotions is expressed via face, especially in the areas proximal to eyes and mouth. The importance of gaze is crucial. When interactants communicate, they always look either at each other or together at something in the perceptual space (Mirivel 2008: 1931). The first function of gaze is to signal readiness for interaction (Goffman 1963). The gaze is also important in denoting a suitable moment in the conversation when the speaker passes and the listener takes the floor (taking turns at speaking). A communicator who is speaking at the moment, looks away – it is presumed that the goal is to hold the turn – and when the utterance is finished, glances towards the recipient (Mirivel 2008: 1931).

Attempts have been made in organizing nonverbal modalities on the basis of their communicative functions. One of the best known is the scheme of Albert Mehrabian (1972) who identified three basic dimensions and related cue categories: (1) the evaluation dimension (like-dislike), on which immediate cues (smiling, leaning forward, touch) can be followed; (2) the potency or status dimension refers to dominant versus dependent attitudes; (3) the responsiveness dimension is communicated by active use of gestures or facial expressions which refer to the extnet of reactions (e.g., anger, joy).

Communication modalities have to be researched in a broader framework in order to detect the purpose of their employment. This broader framework is **the context of a communictive situation**. Jörg Meibauer (2012: 11) states that context includes all the aspects which have to be taken into account to understand a piece of oral or written discourse. Goffman (1974) proposes that the context is a frame that surrounds the researched event and gives means for its interpretation, context involves a focal event. Deborah Schiffrin (2007: 365–385) looks at the notion through the perspective of different theories and methods, which have been the forerunners of DA or are connected to it today. For example, she takes into consideration speech act theory, Gricean pragmatics and CA. In her view context can be seen as (1) situation, (2) knowledge or (3) text, or (4) the

combination of two or all three. Schiffrin (2007: 366) underlines that all approaches to discourse rest on "mutual knowledge as a path to, or locus of, coherence". Philosopher Kent Bach (2005) considers context to be broadly construed conversational setting, which among others includes (a) salient shared knowledge between the communicators, and (b) relevant broader common knowledge. Schiffrin (2007: 367) argues that context is also a collection of social conditions where utterances are created. It is important to stress the relational and interactive nature of context (Goodwin and Duranti 1992; Fetzer and Akman 2002).

A well-known classical approach to context refers to four different aspects of a piece of discourse: linguistic, cognitive, social and sociocultural and contexts (Fetzer 2007: 5). The linguistic context covers the language used in a communicative situation. It frames the talk even if the talk is mostly produced by using nonverbal modalities. In fact, language behavior is not restricted to talk, also nonvocal elements are creating the context (Kendon 1992; Goodwin and Goodwin 1992). To detect what precisely has been said and to interpret the meaning correctly, the researcher has to take into account the linguistic context that preceded the concrete piece of discourse, in other words – he/she has to consider what was communicated before. This means that part of linguistic context is constantly changing – what was the focal event before becomes the context for the next piece of the communicative act. The more stable side of linguistic context involves e.g. the rules of language.

Bunt and Black (2000) distinguish static and dynamic context. The dynamic context involves traces of former statements and guides what a communicator can do next, also supplies with a resource of mutually available knowledge (Bunt and Black 2000: 16). The static context is brought to the communicative act by each party, that is to say it is present both before and after actual situation.

Cognitive context is relevant to the psychology of communication (Fetzer 2007: 9). Bunt and Black (2000: 15) point out that some intentions and beliefs of the interlocutors' are present throughout the whole communicative act and it is also possible to detect the communicators' presuppositions and assumptions carried by certain expressions. Communication is an intentional-inferenal process, where addressees attempt to infer addressers' intentions on the basis of what is provided by language (Riemer 2010: 115). Sperber and Wilson (2002: 3) describe this process as "an exercise in metapsychology, in which the hearer infers the speaker's intended meaning from evidence she has provided for this purpose." Cognitive context comprises the partcipants' intentions and goals, emotions, all kind of reactions, interpretations etc.

Social context is the context of communicative exchange, defined by separating linguistic context and cognitive context from the entire notion of context (Fetzer 2007: 12). In a speech situation, the addresser and the addressee are social roles with their gendered and ethnic identities, with their rights and obligations (Fetzer 2007: 13). The social context of the situations researched in

the current thesis can be defined as communication in a family involving the subject, her siblings and mother.

Sociocultural context refers to the idea that neither language nor communication can be separated from the culture and society where they occur. Language acquires a significant part of its meanings from the culture it is used. In order to understand what is communicated, one must first comprehend the cultural aspects of the situation. Dell Hymes (1972) used a conception of speech community or community of practice, which denotes groups of people who interact regularly. These communities may include entire nations or much smaller groups, e.g. families or work-related groups, which all exercise their specific cultures or subcultures.

In the franework of current dissertation the core of the context is mutual knowledge. The communication between the subject and her interlocutors would be impossible if one or another could not grasp the conversational topic the other person is trying to, or if they both would not have detailed shared knowledge about the different aspects of the topic. It is also important for the communicators to remember what was told about the same issue before and what were the outcomes then. The knowledge is of course present in a specific communicative situation with all its circumstances, so the situation itself is also part of the context.

If one of the communicators has language impairment, the process of searching for the correct word or expression is long and needs a lot of effort from all the participants. Communicators collaborate through their contributions (Allwood 2003: 133). This brings us to the role of **cooperation** focusing on is the key to success in this type of conversations. For example, in his research upon an aphasic man Goodwin (1995:2) has stated that the talk of a person with severe language impairment is not independent and separated from the talk of others, vice versa – it is inextricably linked to it. Various complications occur frequently in communication, but especially when one conversation partner possesses very limited opportunities of self-expression. Hennoste and Rääbis (2004: 22) have drawn attention to the fact that communication is an unsmooth system by its nature (and not a system where disturbances occur occasionally). From the viewpoint of the mentioned authors, the utility for solving communication problems must therefore also be a system that is sufficiently universal and flexible, and suits for various conversation types and problems (Hennoste, Rääbis 2004: 22). Such an instrument is repair organization, which is also known under the term *repair mechanism*. This does not necessarily deal with linguistic corrections, but generally with rectifications and specifications of all types, when the communicators may feel that a particular part of speech requires correcting for some reason. As the repair mechanism is a process in essence, it is natural that the correction may be initiated by one conversation partner and terminated by the other (Sorjonen 1997: 112).

4. OVERVIEW OF THE ARTICLES AND THE AUTHOR'S CONTRIBUTION

The main part of this doctoral thesis comprises five articles, presented in the sequence of their publication. The concepts TIME and SPACE were in the primary focus of the first, third and fourth article. These are the two phenomena which have always played a significant role in human cognition – they help us to define ourselves, to position ourselves in the surrounding world and to perceive the world. Hence, one may say that these notions are probably the key concepts in the framework of human cognition.

I have performed the analysis of the first article "Kommunikatiivse situatsiooni dünaamiline dimensioon" (published in 2009). All materials of the third (2011) and the fourth (2013) article were repeatedly reviewed in a team with the coauthors of the articles, with the objective of identifying communication patterns and determining the means utilized for creation of meaning and methods of transferring the meaning, but the final decisions and conclusions regarding the results of the analysis were made by me. Theoretical background was discussed cooperatively for all articles except the fifth one where I was the only author. My contribution in the third article "Aja mõistestamine Patau sündroomiga subjekti suhtluses" (2011) is 8 pages from the total of 12.

In the second publication (which is the overview article) "Multimodaalne suhtlus keeleõppe ja –kasutuse teenistuses" (2010) my text is present on pages 32–33.

I am the only author of the fifth article "How to communicate with a speech impaired person? A case study of a subject with Mosaic Patau Syndrome" (2014). In respect to all the other articles, my role was setting study hypotheses, collection of material via videotaping and participant observation, making a selection from the collected materials, transcribing video clips relevant from the viewpoint of the aims of the hypotheses – I support the position that recording and transcribing all relevant communication modalities in multimodal analysis is part of the analysis itself and not merely data recording – and analyzing the materials alone as well as in collaboration with other members of Multimodal Communication Research Group of Tartu University.

The first article **"Kommunikatiivse situatsiooni dünaamiline dimensioon" (2009)** was compiled in Estonian and focused on both concepts highlighted in the doctoral thesis – TIME and SPACE. Human communication was investigated in real situation and more detailed exploration concerned the components which constitute a communicative situation. The article gave an overview of conversation and discourse analysis, including the history of the development of these methods. The relative importance of video recordings as a method for collecting and analyzing linguistic subject matter was also surveyed. It was concluded that in comparison with audio recording and related notes, video recording enhances the observation of relations between verbal speech and hand movements.

The authors of the article share the viewpoint that in order to gain a deeper understanding of communication and language use, it is necessary to conduct such structural studies of multimodal interaction, as these analyze relations between individual cognition and preference of repertory of communication means as well as social and cultural aspects which influence the selection of communication strategies.

The article presented a 39-lines-long transcription of a communication situation which involved the subject of the doctoral thesis, her brother and their mother. Subject's motivation and consistency in directing the talk was revealed in conversation. During the analysis of the situation it became evident that above all the subject used various means of movements – gestures, facial expressions and body postures. The significance fields of signs and gestures are broad and depend firmly on the specific context.

The article exhibited how meaning emerged via collaboration of the parties involved. It was concluded that it is necessary to analyze the situation in its entirety as well as the linguistic behavior and movements of communication partners in words, signs and space. Analysis of the given situation showed that the subject is able to transfer the occasions that took place in the past and the events that will happen in the future.

The second article **"Multimodaalne suhtlus keeleõppe ja -kasutuse teenistuses" (2010)** gives an overview of the research of Tartu University's Department of Estonian as a Foreign Language that is related to the activities of the Multimodal Communication Research Group, including collaboration with the Institute of Germanic, Romance and Slavonic Languages. The article also discusses international cooperation. Namely, some faculty members and Doctoral candidates of the department, including the author of current dissertation, were involved during 2006–2009 in the project connecting the universities of the Nordic Countries, titled "PlaceME: Place, Mediated Discourse and Embodied Interaction" (project manager professor Paul McIlvenny, Estonian coordinator docent Silvi Tenjes). Seminars on social interaction, multimodal communication and discourse studies took place twice a year and were intended for Doctoral candidates and researchers of the Nordic universities. (PlaceME) I attended the third seminar "Analysing Embodied and Object–Focused Interaction" (12.–13.11.2007, Tartu, Estonia), the fifth seminar "Distributed and Mobile Interactions" (10.–11.11.2008, Aalborg, Denmark), and the sixth seminar "Learning, Design and Transformation in Embodied Spatial and Mobility Practices" (4.–5.05.2009, Göteborg, Sweden). The sessions of analyzing video materials, which were performed as team work in workshops, improved the skills of detecting communication patterns and identifying modalities used in communicative situations. The lectures complemented the knowledge regarding the options of the method of discourse analysis. A general introduction to my field of research and materials is given on pages 32–33 of this article.

The third article **"Aja mõistestamine Patau sündroomiga subjekti suhtluses" (2011)** was prepared in Estonian; it analyzed how the subject

conceptualized TIME and expressed this abstract concept in communication, and determined the importance of hand movements in uncovering the meaning. Theoretical grounds originated from the studies of interpersonal communication and cognition.

The article described several substantial aspects which must be taken into consideration in communication studies. For example, attention must be paid to the goals of the communicators and structures of their knowledge, because people utilize in conversations diverse foreknowledge, including facts regarding their communication partner (preferences, background, habits, etc.). Conversing requires also knowledge about the procedures and strategies of interaction as well as the social context of communication.

In communication studies it is necessary to take into consideration cognition, because people utilize in conversing their cognitive abilities or capacity of sensing the surrounding and creating new correlations. Human cognition binds behavior to thinking – thoughts influence behavior, behavior in turn remodels the original thought and all subsequent ideas.

The analyzed materials comprised two dialogues, the first was 33 seconds long and the other lasted for 1 minute and 6 seconds. The topic of TIME played a significant role in both conversations. Analysis of the first communication episode revealed how the subject uses a slightly rounded sign for APRIL or MAY from Estonian sign language for denoting calendar month June – both interpretations are possible. Apparently this is an example of fusion of meaning. The subject has either made a generalization or drawn a conclusion that calendar months (concretization of the concept of *time*) can be expressed with a sign that resembles the sign for APRIL. Therefore it is here possible to witness the emergence of reasoning as a cognitive ability. Subject's concept of (calendar) MONTH is presented through a sound and an iconic gesture (shows a sign of a LONG NOSE) that for her designates various months. Analysis of the second communication episode showed that via manipulation of an object (the calendar), vocalization and communicative gestures, the subject is able to make herself comprehensible and to converse on the topic "When is the birthday of X?" The subject is capable of showing dates in the calendar (manipulation of an object as part of communicative behavior).

It came forward from the analysis how the subject uses her mother as her interpreter for expressing something that she is not able to formulate herself. The analysis gives a contribution to elaborating on cognitive abilities of people with mosaic Patau syndrome: the subject is capable of understanding concepts and expressing notions. On the basis of existing studies it is not yet possible to describe in more detail the subject's mechanism of concept formation and creation of additional significance relations.

The fourth article **"Embodied interaction and semiotic categorization: communicative gestures of a girl with Patau syndrome" (2013)** is in English. The article sought for an answer to the question how are meanings created and transmitted in a communicative situation. For this purpose, emphasis was given

to a specific videotaped communication situation and analysis focused on the relation between hand gestures and construction of meaning. The main interest of the study concerned how the subject senses her surrounding or also a more distant space, and how she communicates spatial relations and meanings. The material revealed that her most frequently used spatial concepts can be converged under two umbrella terms – HERE and THERE. She uses pointing gestures for transferring them, and information about the precise places that are referred to in the conversation becomes evident in a specific communication situation.

The theoretical framework incorporated an overview of gesture studies and semiotic interpretation of signs. The article also analyzed relations between a person's cognition and his or her brain activity. It was also stated that embodiment is an important aspect of human cognition as cognition depends on the kinds of experience that come from having a body with various sensory-motor capacities (Varela et al. 1991: 173).

The results made it clear that upon formation of meaning the relation of meaning and communicative situation is more important than the correlation between the sign and its referent – the roles of the conversation participants and their private relations, their shared knowledge and contextual information have key importance on creation of meaning. The results of the research support the hypothesis that human communicative abilities may function separately from the speech abilities of the specific language. Speech enables symbolic communication, but other modalities (for example, gestures and body postures) may also render communicative functions.

My contribution to the fourth article is the following. I introduced the subject and her diagnoses on pages 74 and 75. Page 75 contains the article's research questions, which were set cooperatively with the coauthors of the article. My contribution includes also the two-stage selection of videotaped materials: I first selected from the larger set those clips that were relevant for the analysis, transcribed and analyzed them. Then I decided which of the selected clips might most probably give answers to our research questions, and dismissed the other clips. The final selection of the clips was reanalyzed in collaboration; therewith I presented the explanation of the signs of sign language and oral modalities. The analysis of the clips as well as the results of the articles were discussed with coauthors and I gave my personal suggestions. The annex containing conventions of transcription signs is my contribution. I participated in the discussion regarding subchapters 6.2 (Theoretical Background) and 6.3 (Gestures and Language); my contribution in subchapter 6.5 (Discussion) constitutes 1.5 pages of the total of 2, which was compiled while taking into consideration the proposals of the coauthors.

The fifth article **"How to communicate with a speech impaired person? A case study of a subject with Mosaic Patau Syndrome" (2014)** was compiled in English. It seeked an answer to the question how to communicate with a speech impaired person so that all participants of the communicative situation

would understand each other. Three communicative events, both successful and unsuccessful were analyzed. The data originates from the journal of participant observation.

The method used for analyzing the material was discourse analysis (DA). The means of linguistic anthropology were also applied, namely the SPEAKING model of Dell Hymes (1972), and Michael Agar`s (1994) MAR analysis.

The study involved analyses of three situations. Two of them required several conversation rounds and corrections, before the message that the study subject wished to transfer was revealed. The first one (took place between the mother and her daughter) was a face to face conversation initiated by the daughter, the study subject, with the intention of planning a joint activity with her mother. The subject tried to transfer the meaning with several communicative modalities, e.g. she used vocalizations, pointing and iconic gestures, but all her attempts failed. However, the subject was active in repetitive corrections of her problematic round and the modality that finally led the conversation to its goal was manipulation with an object – a calendar. The girl tapped on all weekend dates of October, until she reached the voting day of municipal elections and her mother understood that her daughter wanted to go there.

The other problematic speech event was a phone conversation which involved three participants: the mother, the daughter and an occupational therapist. This time the conversation was mediated with a regular phone (as opposed to video phone or Skype) and was complicated because the receiver (the mother) was unable to acquire information that was created with movements. Also this time manipulation with an object (lifting a dustbin) was the successful communicative modality. The mother did not see it but the girl passed the phone on to the occupational therapist who then became a mediator or translator for the girl.

The last situation represents an example of a communicative episode, which did not contain a rich point or any misunderstandings. It can be assumed that the conversation was smooth and did not involve complications because it took place in clearly defined routine circumstances: the mother and the daughter were at the shopping center discussing where to buy flowers. Vocalizations and hand movements were used this time, pointing was applied by both participants.

The study subject understands when she is given a signal of occurrence of a problem (rich point), which requires a repair. Creation of meaning through joint activity is successful when the interlocutor of the subject is motivated to listen. Utilization of a specific object may help to transfer the desired meaning.

5. RESULTS AND CONCLUSIONS

Current thesis analyzed communicative abilities and methods of an individual with mosaic Patau syndrome. The articles of the thesis encompass the formation and transmission of two important concepts – *time* and *space* – in communication where the subject participates. The articles analyzed the proportion of various communication modalities and explored the processes involved in development of meaning in conversing and for communication. The study also investigated and identified cognitive abilities which manifest in subject's communication.

5.1. Findings in the articles of the doctoral thesis

The meaning is created in communicative situations via interaction. Signification is imparted not only by spoken words, but by gestures and body movements, and it is understood as a result of an interactive process. The creation of meaning through joint activity is successful when the interlocutor of the subject is motivated to listen and is aware of the communication modalities of the girl.

It can be assumed that the conversation is more smooth if it takes place in clearly defined routine circumstances. A conversation mediated with a phone complicates a communication where various nonverbal modalities are used as the receiver needs the visual channel.

The subject is motivated and consistent in directing the conversation. She expects her dialogue partners to assist her in formulating her thoughts and conducts the interchange of conversation rounds with indicative gestures, glances and her universal interrogative word *öhö,* which may represent any question. Study of the videotaped materials allows also concluding that the subject understands that words are more precise than other communication modalities, and permits translating her movements into words. The individual uses most frequently her mother as an interpreter for expressing something that she is not able to enunciate herself. In the fifth article (Rummo 2014), where the material from the journal of participant observation was analyzed, the occupational therapist played the role of a mediator. The subject always verifies if she was translated correctly, and is not satisfied before she is certain of it.

As an alternative, the subject uses manipulation of an object (for example, photos, a calendar or a dustbin) to communicate the information that she anticipates her communication partners to verbalize. If necessary, the interlocutor may ask the subject to use a specific object, the utilization of which would enable her to transfer the desired meaning.

The subject utilizes the feedback procurable from the communication partners as a verification mechanism.

The study subject understands when she is given a signal of occurrence of a problem (a rich point). Her activity in repetitive corrections of a problematic

round also demonstrates her consistency in directing the conersation in a direction which would clarify the meaning.

Communication means of the individual are diverse and intricately combined. Both auditive-verbal and visual part is represented in her communication. Her vocalized communication modalities include some words of Estonian and Estonian baby-talk, sound utterances and self-created combinations of syllables. Due to medical reasons (dyspraxia), she does not always articulate all words correctly; some sounds may be replaced or omitted. From nonverbal modalities signs and other gestures, intense facial expressions and use of objects (manipulation) are utilized. Simplified signs of Estonian sign language are even more simplified because of subject's dyspraxia. Nonverbal communication modalities carry the main meaning in most cases, but they never occur without a vocalized modality.

The individual is able to count to three and expresses numerals with the vowels of respective words. The subject gives an expression to the near future with recourse to her counting ability, by using snorting sounds – one snort represents one night.

One unique communication modality is **touch** (for example, placing the hand on the shoulder of the companion), which the subject uses for creating the communication space. Physical contact provides greater closeness and ensures the attention of communication partners.

The subject uses both gestures and signs for marking relations of time and space studied in the articles, and these are accompanied by an uttered sound or syllable combination with prosodic means. The concepts *here* and *there* come forward via indicative gestures; the exact meaning of the latter sign is created in communicative situation and context. The subject's concept of (calendar) month is presented in the studied episodes through a sound and an iconic gesture (shows a sign of a long nose) that designates various months. The meanings related to *time* are congregated under a concept of a subcategory (calendar, month(s)). The subject is able to communicate on topics which regard occasions that took place in the past or events that will happen in the future.

One of the objectives of the doctoral thesis was to elaborate on cognitive abilities of a person with mosaic Patau syndrome. The subject has **the capacity of understanding concepts**, the results of the study revealed that the level of abstractness of speech addressed to her can be much higher than initially presumed. The individual is also able to use abstract concepts **(the capacity of expressing a concept)** and to draw conclusions **(the ability of reasoning)**. The individual's communication modalities are characterized by a high level of generalization (which refers to **generalization capability**), there is a lot of polysemy. Each item has several interrelated meanings, the logic of creating the relations is unconventional and inventive.

The subject is able to call some people by their name, which in turn indicates that she is capable of associating a heard name adequately with a specific person and remembering it. This corroborates that the individual possesses **memory** as

a cognitive ability. The functioning of memory is also verified by the fact that the subject remembers places (for example, Pangodi) which she wants to visit again.

The results of the study reveal that the lack of capability to speak does not automatically mean the lack of linguistic abilities and does not preclude communication. Conversing in a communicative situation can be successful even when participant's abilities for spoken language are limited. One prerequisite for success is the collaboration of dialogue partners, which is enhanced by shared knowledge. The auditive-verbal side alone cannot transfer the communicative meaning; activity as well is an important constituent of the communication situation. Taking all multimodal components or communication modalities into consideration enables to obtain a more adequate overview of the communication situation.

5.2. Lexicon of the subject's verbal and corporal communication modalities

The lexicon of the subject's communication modalities is presented below. According to the definition, a lexicon is the collection of words and signs that language users know, the words and signs themselves are called lexical items (Valli et al. 2005: 144).

1. The subject's language contains seven correctly **articulated words**; one of them is a proper name. Correct articulation of words *jah* ('yes') and *ei* ('no') has been obtained via training with a speech therapist. The subject expresses affirmation also with a nod of the head; negation was expressed during childhood with a self-created word *ävü*. Other five words are *appi* ('help'), *vaba* ('free'), *beebi* ('baby'), *jala* ('on foot') and *Pipi* ('Pippi'). Dyspraxia patients compensate their limited expressive capability with an inordinate ability for generalization. Ronald Langacker, one of the most famous representatives of cognitive linguistics, has stated: "A lexical item used with any frequency is almost invariably polysemous: it has multiple, related meanings that have all been conventionalized to some degree" (Langacker 2008: 37). Patients with dyspraxia have developed polysemia to an extreme extent, all lexical items of their speech are loaded with numerous interrelated meanings, and therewith the logic of creating relations may differ from common reasoning.

Words *appi* ('help'), *vaba* ('free'), *beebi* ('baby') and *Pipi* ('Pippi') are polysemic in the subject's speech:

appi ('help') 1. The subject uses the word with its main meaning when she needs help.
2. One additional function of the word is expressing surprise.

3. The subject uses the word to express her willingness to help someone, to perform a task (for example, preparing a meal, putting laundry to dry, etc.) with somebody or to do a chore all by herself in order to lighten the obligations of someone else.

vaba (‘free’) 1. Someone has free time or a free day.
2. A shop or some other establishment is closed (= the shopkeeper or the official has a free day).
3. Refusal to perform an unpleasant task or to fulfill a duty (= it’s my free time, I cannot do it).

beebi (‘baby’) 1. A very small child.
2. Young descendants of relatives and acquaintances, used especially when the subject wishes to ask how and what they are doing.
3. Someone is pregnant.

Pipi (‘Pippi’) 1. Pippi Longstocking.
2. A movie featuring Pippi.
3. Shopping centre Lõunakeskus in Tartu, because movies of Pippi have been bought to her from there.

2. The subject uses five **words of Estonian nursery language**; these are *emme* (‘mommy’), *memmu* (‘granny’), *pai* (‘good’), *päh* (‘bad’) and *allo* (‘hallo’). She uses the first word to address her mother, and the second to approach her grandmother. *Pai* (‘good’) is in most cases an adjective used for approval and praising – someone is good or has done something well. It also means giving a caressing or petting. *Päh* (‘bad’) has the opposite meaning – someone is bad or has done something wrong. *Allo* (‘hallo’) means the phone or calling.

Two simplification strategies can be observed in words that the subject is not able to articulate correctly – these are **substitution of sounds** and **omission of sounds**.

3. Substitution. As mentioned before, the subject is not capable of articulating consonants that are produced with intense exertion of the articulation mechanism. In some cases she has replaced these with sounds that are easier to articulate. There are five such words:

aupo *Auto* (‘car’), denotes also driving with a car.
apah *Aitäh* (‘thank you’).
Beve *Nele* (a name).
opepaja *Õpetaja* (‘teacher’), denotes also mother’s coworker or a student.
paff *Paks* (‘fat’), denotes also weighing oneself and a scale.

4. Omission. Substitution is sometimes not possible, and in those cases more complex sounds, generally consonants, are left out of a word. Some words have shortened with this method to only one vowel:

ahu Vahur (a name).

aua Laura (a name).
iam Mirjam (a name).
uo Huko (a name).
Intonation and word accent are very important in all names.

au *Tšau* (‘ciao’), denotes also good-bye.
ee *Tere* (‘hi’).
eö *Head ööd* (‘good night’).
ia *Siin*, *siia* (‘here’). The subject uses this sound utterance with a respective sign.
u *Kus?* (‘where?’).
u o? *Kus on?* (‘where is [it]?’).
ua *Kurat* (as swearword ‘damn’).
uua *Juua* (conjugation of the verb ‘to drink’), denotes also drinking and thirst.
ea(b)u Denotes the birthday and the birthday song “*Ta elagu!*”
a(l)v *Talv* (‘winter’), denotes also cold weather.

The subject can count to three and hence there are three numerals in her language:
ü *Üks* (‘one’).
a *Kaks* (‘two’).
o *Kolm* (‘three’).

Two temporal words have particularly high degree of generalization. First of them is derived from the word *pühapäev* (‘Sunday’) and due to omission has shortened to the form *ü(h)aäe*. It represents all weekdays and is also used in questions regarding the day of the week (*Which weekday is today?*) and the time when something takes place (*On which day does something happen?*). The second has shortened from the month’s name *aprill* (‘April’) and has taken the form *apii*. *Apii* is used as a generalization of all twelve calendar months. The same word signifies the calendar (on a wall, in a phone or an engagement book) and the wish to check with someone the dates in the calendar in order to see when an activity or an event takes place. In case a rising intonation is used, *apii* represents the question *when* and also the answer to the question “*What is the date?*” The word is sometimes used with the sign of Estonian sign language that signifies the month April.

5. Sound utterances. The subject uses three sound utterances that have a meaning.
clicking sound The tip of the tongue touches repeatedly the palate behind the upper teeth. The sound is not specific to subject’s speech, it is used in communication with horses. It is one of the various examples of polysemy, and represents both horses and riding

(the subject participates in riding lessons), Pippi (because Pippi has a horse) and again the shopping centre Lõunakeskus, because a movie of Pippi was bought to her from there.

snorting sound 1. Tomorrow.
2. Sleepiness.
3. To sleep.
The subject expresses near future via the number of snorts and refers to something happening the next day or in two or three days.

kissing sound Used as a name, i.e., represents one specific youngster who has many apples of the eye.

6. Self-created meaningful combinations of syllables.
This group includes five lexemes that are likely to be self-creation of the subject.

papapapaa Used with a singsong tone of voice that becomes louder.
1. A song.
2. To sing.
3. A singing lesson.
4. A song program on the television.
5. The song festival.

Iu Kerttu (a name).
bobo A man, uncle.
Böö Siim (a name).
öhö Universal interrogative word, which may represent any question.

7. Gestures and signs. The subject has been raised in Estonian cultural space and she has learned at school the simplified signs of Estonian sign language. The author of the doctoral thesis identified 48 gestures and signs from the recorded video material; many of the simplified signs have in turn been simplified or personalized in some other way. In the following list the presentation of modified concepts differs from the previous lists. The meanings of the Estonian gesture in general language are given in the alphabetic order, followed by the description of the movement, comments and analysis. The subject's signs were compared with Estonian simplified signs via utilization of the website http://lihtsustatudviiped.edu.ee (LV).

ABOVE; UP
Points upwards with the index finger of the right hand.

TO BRING
The sign means first of all fetching newspapers from the mailbox. Holds both hands in front of her at the height of waist, puts the fingers of the right hand together to tap on the left palm.

BUS

Uses the word *aupo* (= *auto* ('car')), while indicating the height with the right hand (a bus is higher from the ground than a car, i.e., a bus is bigger than a car).

CALENDAR MONTH; CALENDAR

A sign of the long nose (= APRIL) from Estonian sign language, used with the word *apii*. Depending on the context, may also signify questions regarding time.

CAR

Both hands are used to depict turning the car's steering wheel. Coincides with the sign of the Estonian sign language.

CAT

Uses the fingers of the right hand to make a scratching movement over the back of the left hand. The simplified Estonian sign is different.

CHILD

This sign as well originates from the sign language. The palm of the right hand is turned downwards approximately at waistline, indicating the height from the ground.

COLD; WINTER

The subject's sign for these two concepts coincides with the respective sign of the sign language. The hands cramped to fists are slightly raised on the sides, while the subject shakes the body and arms.

COMPUTER; TO WORK WITH THE COMPUTER

Movement of both hands which imitates the movement of fingers of fingers on a computer keyboard.

TO DANCE; DISCO

The subject uses rather a pantomime than a sign, as the whole upper body is involved in presenting this sign. The arms are bent at elbows and located in front of the body, arms make circular movements, shoulders and the upper body move along.

DOCTOR

Uses the fingers of the right hand to imitate pinching of the left wrist. In Estonian sign language it actually denotes the concept ILL, SICK; therefore this represents transmission of meaning.

DOG

Pats the right thigh with the right hand, the same sign is used in Estonian sign language.

TO DRINK; THIRST

A "cup" formed with the fingers of the right hand is raised to the mouth. Uses with the word *uua* (conjugation of the verb 'to drink'). The sign of the sign language has a slightly different shape.

TO EAT; FOOD

The sign is identical to the simplified Estonian sign – the index finger (or two or three fingers) of the right hand are used for repetitive pointing to the (half-)open mouth.

FISH

The right flat of the hand with clenched fingers makes wiggling movements approximately at the height of the chest. The sign is adapted from Estonian sign language which uses also the left hand for supporting the right arm.

FLOWER

The subject utilizes a sign that differs from the sign language. She uses only the right hand, while the sign language utilizes both hands for performing the sign. The subject raises the right fist in front of her, approximately to the height of the face, and then opens her fingers (a blossoming flower).

HERE

Points with the right hand towards the floor or the ground.

HOME

Uses two hands to form a triangle with an upward peak (a roof) at the height of the eyes. Coincides with the sign of the sign language.

I, ME

Taps with the right hand against her chest.

ICE-CREAM

Licks with the tongue over the middle and index finger of the right hand.

ILL, SICK; FEVER

Touches the forehead with the right hand. A widespread gesture but not an Estonian sign language sign.

TO IRON

Two hands are used for making the simplified sign, the subject has simplified the respective sign even more. The right hand forms a fist, which is held at the height of the chest (depicting a flat iron) and moved back and forth with slight pressure.

I'LL BEHAVE PROPERLY

Uses the Estonian sign for HUSH, by pressing the index finger of the right hand against closed mouth.

KEY; TO TURN WITH A KEY

The thumb of the right hand is against the index finger, the rest of the three fingers are slightly bent, and the whole right hand makes a turning movement.

A LITTLE

Accompanying meanings are PETROL; TO TAKE PETROL; COCA-COLA. Uses the thumb and the index finger of the right hand for making the sign; indicates that a small space remains between these two fingers. Analysis of the video material revealed that the main meaning of the sign is

A LITTLE. When sitting into the car, the subject often asks if there is enough petrol or is it necessary to fill the car with more. In case of Coca-Cola, the sign A LITTLE is used because the subject is allowed to drink a little of it. Therefore the sign represents the amount of specific liquid products (petrol, Coca-Cola).

TO MAKE A PHONE CALL; PHONE

Raises the right hand with curved fingers to the ear. Uses with the word *allo* ('hallo'). May also represent questions *Who called? Has anyone called? Where is the phone?*

MAN

The subject's sign is similar to the sign language; she draws imaginary moustaches below the nose, by moving the right index finger from left to right. The sign is polysemic and has a wide range of meanings; most specific significance of the sign is denotation of MOUSTACHES. The sign is a metonym when it comes to the meaning (WORK)MAN. Implication to WORKMAN has become more specific in some communication situations and denotes in those cases the GARBAGE COLLECTOR. The same sign may refer also to TRASH and the question *When will the dustbins be emptied?*

MEDICATION

Uses the fingers of the right hand to tap on the left side of Adam's apple.

OK; BEAUTIFUL

Raises the thumb of the right hand. A widespread gesture, also used in Estonian.

PLEASE

The palms of both hands are clasped against each other at the height of the chest. The gesture is widely known and used in Estonian cultural space.

POTATO

A sign with two hands. Puts the fingertips of both hands against each other and moves them up and down (peeling potatoes). Estonian sign for potato is a remarkably clearer movement of peeling; the subject's sign is abstract in comparison with it.

RED

L. Hollman has explained in her doctoral thesis that two signs are used in Estonian sign language to denominate RED. First of them is formed on the cheek with the hand shape of A, F or S; the second by drawing with the tip of the index finger over the lips, indicating thereby to the red color of the lips (Hollman 2010: 125). The subject uses the second sign, presumably because of its simplicity. The individual is not proficient in finger-spelling. The meaning of this sign has also escalated, the subject uses it to signify all colors as well as the question *What is the color of something?*

SCHOOL; BAG

The subject uses the sign for BAG to denote school, i.e., holds the right elbow curved as if a bag would be hanging there. The sign language has

separate signs for school and bag, the sign for bag does not coincide with the sign that the subject uses.

SCISSORS; WITH SCISSORS

Estonian sign language also uses one sign for TO CUT to signify both the tool and the activity – the thumb of the right hand moves up and down. The subject shows the sign for scissors and imitates cutting with them, by moving the middle and index finger of the right hand against each other.

SENDING KIND REGARDS TO SOMEONE

Waves with the fingers of the raised right hand, fingers are slightly curved. The subject indicates with a sound the addressee of the greetings before performing the sign or simultaneously.

SHIP; TRAVELLING BY WATER

The sign for the means of transport and the activity is the same here as well – two hands are put together as a keel and moved forward, away from the body. The movement derives from Estonian sign language.

SHOP; FRIEND

Knocks with the knuckles of the right hand in the air or against a table, the wall or some other hard surface, like knocking on the door of a store or a friend's house. This also is an example of polysemy.

TO SMOKE

The sign is pantomimic, and both the hand movement (imaginary cigarette is held between the fingers of the right hand and smoking is imitated by raising it to the mouth) and facial expression (a frown with a serious and important impression) are equally important. The sign is also used as a sign name (see the discussion about sign names below after the lexicon).

SQUARE; SOMETHING ANGULAR

Draws the contours of a rectangle with index fingers of both hands. The sign has a very general meaning; it may refer to a letter, a book or a newspaper, but also to a cake or a pretzel, if the latter two are in a square box or on some tray, etc.

SUN

The right fist is raised up and the fingers are opened in the downward direction. Similar to the sign which refers to cousin Maarja.

TELEVISION; TO WATCH TV

A sign similar to pantomime. The right hand holds an imaginary remote control, which is pointed straight forward.

THEATRE; CONCERT

Clapping.

THERE

Waves with the right hand to the distance.

TRAINING; YOGA; TO DO SPORTS

The subject stretches hands out to sides and makes squatting movements, although crouching is not very low and rather imitates squatting down.

TO TRAVEL

Accompanying meanings are TO FLY; AIRPLANE; INDREK (a name). The sign for the means of transport and the activity coincide in the sign language also here – hands stretched out to the sides are moved up and down, while the body moves along. The subject has simplified the sign; she waves hands up and down at the height of shoulders (see the discussion about sign names below after the lexicon).

TREE; FIR; CHRISTMAS TREE

Although the sign language has various signs for a tree and a fir, the subject uses only the sign for TREE to denote also a fir and the Christmas tree.

TO WASH LAUNDRY

Rubs two fists against each other.

TO WORK

The subject's sign coincides with the sign of Estonian simplified sign language – both hands are in fists and the right fist taps on the left fist. The sign has metonymically expanded to denote any kind of work, not only physical work.

The subject uses three **sign names**. One of them is conveyed with the sign for TRAVELING. Liina Paales (2011: 57) has pointed out four sources of descriptive personal sign names in her doctoral thesis: 1) appearance; 2) hobby, activity or behavioral manner; 3) another distinctive feature; 4) unclear characteristics.

Cousin Indrek used to travel between Tallinn and Tartu because of his job, therefore he acquired the sign for TO TRAVEL as his sign name. The name is allocated to the second group of the division of Paales, because it imparts the recurrent activity of the owner of the name.

Another sign name resides to the same group – the name overlaps with the sign for TO SMOKE, as smoking is the habit (recurrent activity) of that particular person. The sign is pantomimic, and both the hand movement (imaginary cigarette is held between the fingers of the right hand and smoking is imitated by raising it to the mouth) and facial expression (a frown with a serious and important impression) are equally important.

The third sign refers to cousin Maarja. According to Maarja School, which the subject has graduated and where she learned the simplified signs, the sign for MAARJA has probably been derived from the sign name for MAARJA SCHOOL, which in turn originates from the sign for VIRGIN MARY and is related to the sign for SUN. The subject has modified the sign slightly. She holds the right hand on the side, higher than the head, and moves the flat of the hand with open fingers back and forth in the shape of a crescent. The sign is used to denote a close relative.

Analysis of the material allows drawing **conclusions** on subject's presumptions (including her mental and cognitive capacity) for successful communication.

The subject is able to appoint people by their name. This ability demonstrates her capability of associating a name with a specific person and to remember it. This represents a composite mental operation, which among other aspects involves memory processes.

Studied material reveals clearly the subject's polysemy of linguistic and nonverbal communication signs – each item has several interrelated meanings, the logic of creating the relations is unconventional and inventive.

The individual is able to count to three and expresses numerals with the vowels of respective words. The subject gives an expression to the near future with recourse to her counting ability, by using snorting sounds – one snort represents one night.

Transmission of meaning in comparison with Estonian sign language has occurred with the sign for DOCTOR. The sign is presented by pinching the left wrist with the fingers of the right hand, and the original meaning of this is ILL, SICK. Metonymic transmission is observable in several signs; for example, the subject uses a sign of the right hand to denote TELEVISION and imitates directing a remote control forward; the sign for TO WORK encompasses tapping one fist with the other. The latter does not refer only to physical work, but denotes doing any kind of work.

Interesting transmission of meaning has occurred with the sign for A LITTLE – the thumb and the index finger of the right hand are used for indicating a small space. When sitting into the car, the subject feels the need to check if there is enough petrol or is it necessary to fill the car with more. In case of Coca-Cola, the subject probably uses the sign for A LITTLE because it is an unhealthy drink which should not be consumed in big amounts.

6. SUMMARY IN ESTONIAN

Väitekiri „Patau sündroomi mosaiikvariandiga subjekti kommunikatiivsed võimed: juhtumiuuring" käsitleb Patau sündroomi e 13. kromosoomi trisoomia mosaiikvariandiga kõnetu indiviidi suhtlemisvõimet ja -viise. Uurimuse põhiosa moodustavad viis aastatel 2009–2014 ilmunud artiklit. Artiklitele eelneb sissejuhatav osa, mille esimeses pooles antakse ülevaade uurimuse subjektist. Teises pooles käsitletakse meetodeid, mille abil materjali koguti ja uurimistöö tehti, ning esitatakse teema üldteoreetiline taust. Samuti analüüsitakse suulise suhtluse uurimise traditsiooni ja kulgu ning tuuakse esile selle protsessi olulisemad tulemused.

Doktoritööl on kaks lisa, esimeses esitatakse eesti keeles ilmunud artiklite tõlked inglise keelde, teises ülevaade väitekirjaga seotud eetikaküsimustest.

Kolm artiklit käsitlevad kahe olulise mõiste, AJA (Rummo, Tenjes 2011) ja RUUMI (Tenjes et al. 2009; Jokinen et al. 2013), moodustumist ja edastamist subjekti osalusega suhtluses, samuti uuritakse neis, milline on eri suhtlusmodaalsuste osakaal ning vaadeldakse tähenduse tekkimise protsessi. 2010. aasta publikatsioon (Tenjes et al. 2010) on ülevaateartikkel, mis lisab dissertatsiooni mõistmiseks olulist taustinformatsiooni. Viiendas artiklis (Rummo 2014) uuriti, millised subjekti käsutuses olevad suhtlusmodaalsused võimaldavad tal tema enda alustatud suhtlus edukalt eesmärgini juhtida. Doktoritöös esitati ülevaade kõikidest subjekti keelelistest ja mitteverbaalsetest väljendusvahenditest ning analüüsiti nende olemust ja kasutust.

Eesmärgid. Väitekirjal oli neli eesmärki:

1) Teha kindlaks, millised on subjekti kommunikatiivsed võimed ja milliseid vahendeid (suhtlusmodaalsusi) kasutades ta neid suhtluses rakendab.
2) Täpsustada uuritava subjekti kognitiivseid võimeid.
3) Teha kindlaks, kas ja kuidas konstrueerib subjekt mõisteid AEG ja RUUM, ning kuidas ta neid mõisteid suhtluses edastab.
4) Koostada subjekti suhtlusmodaalsuste leksikon.

Valdkond, meetodid ja materjal. Väitekiri kuulub suhtlusuuringute valdkonda, kitsam uurimisala määratlus on suhtlus kliinilises kontekstis. Uurimus on interdistsiplinaarne, hõlmates diskursusuuringuid, pragmaatikat, žestiuuringuid, semiootikat, lingvistikat ning vaadeldes kõne- ja vaimupuudest tingitud takistusi suhtlemisel (geneetika, eripedagoogika, viipekeele uuringud).

Materjal. Doktoritöö autor alustas materjali kogumist 2007. aastal, kui uurimissubjekt oli 17-aastane. Materjalist moodustati analüüsikorpus, mille sisu on saadud peamiselt subjekti osalusega suhtlussituatsioone videokaameraga filmides, aga ka osalusvaatluse teel, mille põhjal on tehtud päevikumärkmeid. 2015. aasta alguses sisaldas korpus 10 tundi ja 14 minutit videomaterjali ning 25 lk märkmeid. Tulenevalt doktoritöö analüüsimeetoditest on olnud põhimõttelise tähtsusega

salvestatud suhtlussituatsioonide autentsus, st filmitud on nn tavalisi olukordi, mis ilmnevad videokaamera kaasatusest olenemata. Litereerimismeetod on pärit vestlusanalüüsist, kasutusel on Gail Jeffersoni transkriptsioonisüsteem (Sacks et al. 1974), mida on täiendatud ja muudetud uuritava materjali eripära järgi – lisatud on rida mitteverbaalsete elementide kirjeldamiseks ja vajaduse korral veel üks rida viibete/žestide ning häälitsuste seletamiseks. Mitteverbaalsete suhtlusmodaalsuste jaoks olid eeskujuks Charles Goodwini (vt nt 2003) ja Lorenza Mondada (vt nt 2006; 2007) süsteemid.

Analüüsimeetoditest on läbivalt kasutatud diskursusanalüüsi ja kvalitatiivset mikroanalüüsi. Artiklites on tuginetud ka semiootilisele analüüsile, täpsemalt Charles S. Peirce'i märgiteooriale ja tema kolmikjaotusele indeks-ikoon-sümbol.

2009. aastal ilmunud artiklis on kasutatud vestlusanalüüsi elemente, hiljem on sellest loobutud. Selle meetodi sobimatus selgus materjali süstemaatilise analüüsi põhjal, mis näitas, et eri suhtlusmodaalsuste analüüsimiseks meetod piisavalt vahendeid ei paku.

2014. aasta artiklis on rakendatud lingvistilise antropoloogia vahendeid, täpsemalt Dell Hymes`i S-P-E-A-K-I-N-G-meetodit (Hymes 1972) ja Michael Agar'i (1994) M-A-R-analüüsi.

Subjekt. Väitekiri on juhtumiuuring (ingl *case study*), mis puudutab üht konkreetset isikut. Uurimistöö subjekt on 07.01.1990 sündinud naine, kellel 28. detsembril 2006. aastal diagnoositi TÜ Kliinikumi ühendlabori geneetikakeskuses **13nda kromosoomi mosaiikne trisoomia ehk Patau sündroomi mosaiikvariant** (Õunap 2006). Uuritaval indiviidil kaasneb sündroomiga vaimne alaareng. Lisadiagnoos on **arenguline verbaalne düspraksia**, mis pole Patau sündroomile eriomane, selle esinemine on võimalik mitmete kromosoomianomaaliate ja ainevahetushaiguste korral. Prof Õunapi andmetel (suuline vestlus 07.07.2011) ei ela praegu Eestis rohkem Patau sündroomiga isikuid, sest alates 20. sajandi 90ndatest on anomaalia sünnieelselt hästi diagnoositav, st valediagnoose on vähe, ja nii otsustatakse abordi kasuks. Sündroom on haruldane kogu maailmas, kuna raskete väärarengute tõttu on sagedased spontaansed abordid, surnult sündinud või väga varases elueas surnud lapsed.

Rahvusvahelise haiguste klassifikatsiooni praegu kehtivas 10. versioonis (RHK-10, ingl ICD-10) on Patau sündroomi mosaiikvariant tähistatud koodiga Q91.5 (RHK-10). Patau sündroom ehk trisoomia 13 on kromosoomianomaalia e kromosoomihaigus e kromosoomisündroom. Nimetatud terminid on kasutusel 1959. aastast, kui Downi sündroomiga lastel avastati lisakromosoom (Mikelsaar 2001: 6). Kromosoomihaiguse all peetakse silmas patoloogiat, mille põhjuseks on kromosoomide arvu või struktuuri muutus. Inimesel on normaaljuhul 23 kromosoomipaari, trisoomiate e autosoomide (mittesugukromosoomide) arvuanomaaliate korral esineb mõne paari asemel tegelikult kolmik. Kõige levinum on Downi sündroom 21. paaris asetseva lisakromosoomiga. Sageduselt teise, Edwardsi sündroomi korral on lisakoopia tekkinud 18. kromosoomist. Patau

sündroom on trisoomiatest kõige haruldasem, Goldsteini ja Nielseni (1988) andmetel esineb seda umbes 1 : 12 000 – 1 : 29 000 elusa vastsündinu kohta. Mosaiikset varianti on meditsiinikirjanduses kirjeldatud vaid üksikutel juhtudel. Sündroom on saanud nime Ameerika teadlase Klaus Patau järgi, kes 1960. aastal oma uurimisrühmaga selle haiguse geneetilise päritolu avastas. Enne teda oli aastal 1657 sündroomi kirjeldanud Rootsi anatoom Erasmus Bartholin (Mikesaar 2001: 39). Patau ja tema kolleegid (Patau jt 1960) käsitlesid artiklis „Multiple congenital anomaly caused by an extra autosome" („Lisaautosoomist põhjustatud kompleksne kaasasündinud anomaalia") täieliku trisoomiaga naispatsiendi (snd 1959) kliinilisi andmeid.

Uuritava isiku suhtlust häirib tugevasti arenguline verbaalne düspraksia (ingl *dyspraxia*), mis on neuroloogiline sensomotoorne kõne häire. Eestis on termini düspraksia sünonüümina kasutusel ka düsfaasia ja alaalia. Raskusastmest olenevalt tehakse vahet mõistetel düspraksia (kergem vorm) ja apraksia (ingl *apraxia*), mille puhul kõnevõime on tugevasti pärsitud või puudub üldse. Mõiste apraksia on üldisem ja tihti kasutatakse just seda ega tehta vahet häire eri raskusastmete vahel. Mõisted võivad kirjanduses esineda ka sünonüümidena. Psühholingvistika defineerib apraksiat kui häiret, mis ei lase ajul kõne artikuleerimiseks vajalikke liigutusi programmeerida ega teostada (Field 2004: 18).

Ka apraksia uurija Geoff Brookes väidab, et düpraksia on neuroloogiline (mitte kognitiivne ega lihastetalitluse) häire, mille korral aju motoorsest keskusest tulevad signaalid ei jõua lihasteni. Seetõttu on patsiendil raskusi liigutuste planeerimisel, olemasolev mõte või püstitatud eesmärk jääb teostamata või selle teostamine on takistatud. Ajus on häiritud kolm protsessi: 1) mõtteloome (ingl *ideation*) e ideede formuleerimine; 2) liigutuste planeerimine (ingl *motor planning*); 3) liigutuste teostamine (ingl *execution*) (Brookes 2007: 5–6).

Doktoritöö subjekti puhul on tegemist arengulise verbaalse düspraksiaga, häiritud on ainult kõneliigutuste teostamine. Verbaalse düspraksia puhul ei ole kõnelihased kahjustunud, patsiendid kasutavad neid samu lihaseid köhimisel, närimisel ja neelamisel, kuid nad ei saa nende abil soovitud heli (häälikut) tekitada (Brookes 2007: 61).

Tulemused. Subjekti verbaalsete ja kehaliste suhtlusmodaalsuste leksikon on esitatud peatükis 5.1. Alljärgnevalt on välja toodud doktoritöö artiklite tulemused.

Subjekt on vestluse suunamisel motiveeritud ja järjekindel. Ta ootab oma dialoogipartneritelt abi enda mõtete sõnastamisel ning juhib kõnevooru vahetumist osutavate žestide, pilgu ja oma universaalse küsisõna *öhö* abil, mis võib tähendada ükskõik millist küsimust. Tavaliselt kasutab indiviid n-ö tõlgina oma ema, et väljendada seda, mida ta ise sõnastada ei saa. Samuti võib videolindistatud materjali uurides järeldada, et subjekt mõistab, et sõnad on täpsemad kui teised suhtlusmodaalsused ja laseb oma liigutused sõnadesse tõlkida või kommunikeerib mõnd objekti (nt fotod, kalender) manipuleerides, millise informatsiooni verbaliseerimist ta oma vestluspartneritelt ootab. Seejärel kontrollib ta, kas teda tõlgiti õigesti ega jää rahule enne, kui on selles veendunud. Suhtlus-

partneritelt saadav tagasiside on subjekti jaoks kontrollimehhanism. Viiendas artiklist selgub, et selliseks tõlgiks või vahendajaks võib olla ka tegevusterepeut, kes on samuti tuttav subjekti modaalsustega.

Indiviidi suhtlemisvahendid on mitmekesised ja keerukalt kombineeritud. Tema suhtluses on esindatud nii auditiiv-verbaalne kui ka visuaalne pool. Tema vokaliseeritud suhtlusmodaalsuste alla kuuluvad mõned eesti keele ja eesti lastekeele sõnad, häälitsused ja omaloomingulised silbikombinatsioonid. Meditsiinilistest põhjustest (düspraksia) tulenevalt ei häälda ta sõnu alati korralikult välja, häälikud võivad olla asendatud või välja jäetud. Mitteverbaalsetest modaalsustest on kasutuses viiped ja teised žestid, intensiivsed näoilmed ning objektide kasutamine (manipulatsioon). Objektide kasutamise olulisus tähenduse edastamisel selgus eelkõige viienda artikli materjali analüüsist: uuritud kolmest suhtlussituatsioonist kahes oli just selle modaalsuse rakendamine kõige tulemuslikum.

Eesti lihtsustatud viipekeele viiped on subjektil olemas, kuid düspraksia tõttu veelgi enam lihtsustunud. Omanäolise suhtlusmodaalsusena võib esile tuua **puudutuse** (nt käe kaaslase õlale asetamise), mille abil subjekt suhtlusruumi loob. Füüsiline kontakt kindlustab suurema läheduse ja tagab suhtluspartnerite tähelepanu. Mitteverbaalsed suhtlusmodaalsused kannavad enamasti põhitähendust, kuid ei esine kunagi ilma mõne vokaliseeritud modaalsuseta.

Kolmes artiklits uuritud aja- ja ruumisuhete markeerimisel kasutab subjekt nii žeste kui ka viipeid, millega kaasneb häälitsus või silbikombinatsioon koos prosoodiliste vahenditega. Mõisted SIIN ja SEAL tulevad esile osutavate žestide kaudu, viimati mainitud märgi täpne tähendus luuakse kommunikatiivses situatsioonis ja kontekstis. Subjekti (KALENDRI)KUU kontsept on uuritud episoodes esitatud eri kuid tähistava häälitsuse ja ikoonilise žesti kaudu (näitab pika nina märki). AJAGA seotud tähendused kogunevad mõne allkategooria mõiste alla (KALENDER, KUU(D)). Subjekt on võimeline suhtlema teemadel, mis puudutavad minevikus toimunud või tulevikus toimuvaid sündmusi.

Indiviid on võimeline kolmeni loendama, väljendades arvsõnu neis sisalduvate vokaalide abil. Oma loendamisoskusele tuginedes väljendab subjekt lähitulevikku, selleks kasutab ta norsatusi, üks norsatus tähendab ühte ööd.

Doktoritöö üks eesmärkidest oli täpsustada Patau sündroomi mosaiikvariandiga inimese kognitiivseid võimeid. Subjektil on **mõistest arusaamise võime**, uurimistöö tulemusena selgus, et talle suunatud kõne abstraktsuse aste võib olla tunduvalt kõrgem, kui esialgu eeldati. Ka on indiviid võimeline **kasutama** abstraktseid mõisteid **(mõiste väljendamise võime)** ja tegema järeldusi **(järeldamise võime)**. Indiviidi suhtlusmodaalsustele on iseloomulik kõrge üldistusaste (millest järeldub **üldistamisvõime**), esineb palju polüseemiat. Igal üksusel on palju omavahel seotud tähendusi, seoste loomise loogika on omapärane ja leidlik.

Subjekt on võimeline inimesi nime pidi kutsuma, mis omakorda näitab, et ta suudab kuuldud nime adekvaatselt konkreetse inimesega seostada ja seda meeles pidada. See tõestab **mälu** kui kognitiivse võime olemasolu indiviidil.

Uurimuse tulemused näitavad, et kõnevõime puudumine ei tähenda automaatselt keeleliste võimete puudumist ega takista suhtlemist. Kommunikatiiv-

ses situatsioonis saab suhtlemine olla edukas ka siis, kui ühe osalise kõnekeelelised võimed on piiratud Õnnestumiseks on vajalik dialoogipartnerite koostöö, millele aitavad kaasa ühised teadmised. Auditiiv-verbaalne külg üksi ei suuda kommunikatiivset tähendust edastada, ka tegevus on suhtlussituatsiooni oluline koostisosa. Kõiki multimodaalseid komponente e suhtlusmodaalsusi arvesse võttes kujuneb suhtlussituatsioonist adekvaatsem ülevaade.

Doktoritöö eetilised aspektid

Inimuuringu vajalikkuse põhjendatus. Tegemist on Eesti esimese multimodaalse suhtluse uuringuga, kus vaadeldakse vaimupuude ja düspraksiaga indiviidi toimetulekut suhtlussituatsioonides. Ka ei ole eri trisoomiatega isikute suhtlusmodaalsusi siin varem uuritud ning kogu maailmas on sellise kommunikatsiooni kohta väga vähe andmeid. Samas on valdkond oluline ja suure praktilise väärtusega, kuna ka sellise puudega – ekspressiivse kõne häirega – indiviididel on vajadus ja õigus inimestevahelises suhtluses osaleda, informatsiooni vastu võtta ja ennast arusaadavaks teha. Temaatikat oleks kohe vaja Eesti ühiskonnas rohkem tutvustada. Ainuüksi multimodaalse mikroanalüüsil põhineva lähenemise teadvustamisest võib olla abi selliste puuetega inimeste paremaks mõistmiseks nende igapäevases elus.

Töö autor näeb vajadust töötada välja sobiv suhtlusmetoodika ekspressiivse kõnepuudega indiviidide ja nende suhtluspartnerite jaoks, käesolev uurimus on esimene samm selles suunas. Uurimus esitab subjekti leksikoni, mis on süstematiseeritud suhtlusmodaalsuste kaupa. Leksikon koostati eesmärgil parandada subjekti elukvaliteeti – sõnastiku olemasolu võimaldab indiviidi suhtluspartneritel temast aru saada, temaga suhelda ja tagab nii sujuvama kommunikatsiooni. Ühtlasi pakun välja modaalsuspõhise leksikoni (korpuse) loomise idee, mis koosneks alaleksikonidest (iga sellist korpust vajava indiviidi kohta üks alaosa), kuid oleks kasutatav ka tervikuna. Tervikuna kasutatavus tagab selle, et vaegkõnelejate lähedased ja nende teised suhtluspartnerid saavad korpusest abi, tuge ja ideid suhtlusvara laiendamiseks. Kõnetud inimesed või vaegkõnelejad sõltuvad oma suhtluses vestluspartneritest väga suurel määral. Ideaaljuhul tõlgivad viimased vaegkõneleja mitteverbaalselt väljendatu verbaalsesse keelde. Sellises kommunikatsioonis ei puuduta vajaliku sõna leidmine ainult ühte vestluspartnerit, vaid on süstemaatiline koostöö dialoogis osalejate vahel. Läbi sellise protsessi ehitatakse üles tähendused. Tavasuhtluses toodab lausungi ja seda saatva žesti üks ja seesama inimene ehk see, kes parajasti räägib. Kui aga üks osalejatest on vaegkõneleja, antakse tema liigutustele tähendus tema dialoogipartnerite kõne kaudu. Sellises suhtluses on rollid vahetunud – kuulaja panustab kommunikatsiooni selle, mis tavaliselt on rääkija panustada. Modaalsuspõhine leksikon või korpus olekski mõeldud kasutamiseks ülalkirjeldatud juhtumitel.

Inimuuring oli ka vajalik, et tuua esile Patau sündroomiga inimeste kognitiivseid võimeid. Kommunikatiivsed võimed on suhtluses – tähenduse loomises ja sellest arusaamises – osa inimese kognitsioonist.

Delikaatsed isikuandmed. Uurimuse eesmärkide saavutamiseks kasutati filmimist ja osalusvaatlust kui kõige relevantsemaid materjali kogumise meetodeid diskursusuuringute puhul. Doktoritöö autor tagab subjekti anonüümsuse ega avalikusta tema nime. Kuna subjekt ei olnud oma diagnoosist tulenevalt võimeline uuringuteks nõusolekut andma – ta ei suuda poolt- ja vastuargumente kaaluda – siis ei ole privaatsuseriive vältimise huvides doktoritööle filmitud materjali lisatud. Dissertatsiooni allikmaterjalid säilitatakse viisil, mis piirab kolmandate isikute juurdepääsu neile.

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8. ARTICLES

ANNEX I

English translations of articles published in Estonian

I. THE DYNAMIC DIMENSION OF A COMMUNICATIVE SITUATION

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Abstract. The Dynamic dimension of a communicative situation. The current article presents an overview of a domain which has become essential as an intersection of social sciences and the humanities: research of human communication in a real situation, among this the describing of language usage in a multimodal way including all kinds of means that are available to the collocutors or used by them. Also, a survey of previous research upon the use of language (e.g. in sociolinguistics) is provided.

The communicative situation as a part of social activity includes, besides the spoken language of the communicators, also their bodily movements – glance, hand movement – and the situation as a whole. Currently research into language use serves as part of interdisciplinary investigations including conversation analysis, discourse analysis, research on multilingualism, anthropology, second language acquisition, micro sociology etc.

The researches carried out by sociologists are often called conversation analysis, while the investigations made mainly by linguists and sociolinguists are referred to as discourse analysis. These two fields of research differ from each other both in their objectives and methods, and this is a point discussed in the present article.

The main principles of studying speaking as a social activity are also viewed in the current article. The pioneers in the field as well as the founders of the method discussed and the guardians of its continuity are introduced.

The ability to communicate and physical experience have been important for a human being all through the existence of the thinking mankind. We discover the space surrounding us by means of various movements. Perception, memory and language are parts of human cognition. The way we see the world, our conception of it takes shape in a concrete social culture.

In communication it is possible to find three different types of information: info about cognition, motivation and the emotional condition of the speaker. The role of language is to play an active pragmatic part in the behaviour of a person.

In a communicative situation we are using different abilities of communication, among which the authors of the article mention analogy. The concept of icon is looked at more closely. Hand gestures are important factors in forwarding meanings and intentions; they are discussed in the part of the article where the creating of the meaning is in focus. The concept of multimodal communication is defined; the advantages of using video data in the process of gathering and analysing the material are presented. As an example the authors provide analysis of a communicative situation where one interlocutor is a 17-year-old girl with the mosaic variant of the Patau syndrome. While doing the conversational analysis the authors considered different traditions, combining,

e.g., the method of conversational analysis with the treatment of situation typical of discourse analysis. The communication patterns of the girl with the Patau syndrome underline very clearly the advantage of video material over dictaphone recordings.

In their analysis the authors affirm that if one takes into consideration collaboration between the collocutors as well as the multimodal components, one will certainly get a better understanding of a communicative situation. The dynamic functioning of a communicative situation and our analysis of this process will give us more opportunities to understand each other on every level of communication.

Keywords: *conversational analysis, discourse analysis, communication, nonverbal language, cognition, aphasias, Patau syndrome*

INTRODUCTION

This article presents an overview of the field that has become an important area of research as a functioning intersection of social sciences and humanities: studying of human communication in real-life situations, also describing use of language from a multimodal perspective together with the surroundings and the means employed.

Linguistics approaches the language use of humans with an emphasis on the factors inside the language: the colloquial language of communicators is analysed in the frames of language levels by including aspects of semantics and/or pragmatics, or by implementing gender linguistic methods. Since the birth of linguistics as a scientific discipline in the 19th century, the strongest emphasis has been on the study and analysis of texts. Studying a language in its use is relatively new, most of the research having been carried out in the second half of the 2oth century. Due to various theoretical grounds (Saussure, Peirce, etc.) and socio-economic reasons (WWII and decoding of encoded messages by formal linguistic means), 20th-century linguistics was prevailingly a field with ideal language categories (Chomsky) and structural and formal linguistic preferences. Next to the other sub-disciplines of linguistics (morphology, semantics, functional linguistics) that were cast aside from the mainstream, there was also no room for people – users of language in an actual social context.

In addition to spoken language of communicators, also their body movements – gazes and gesture are involved in a communicative situation as a social activity (Heath, Hindmarsh 2002) (e.g., see Kendon 1986, 1995, 2004, McNeill 1992, Streeck 1988, Streeck, Knapp 1992). From the point of view of communicative meaning, the situation as a whole is important (Schegloff 1984, Goodwin 1986, 2003, 2007). Language here is no longer understood as spoken language and written language present in texts. Our rough definition for language and language studies is as follows: **language is a person's speech, gesture, facial expression and body movement combined, as well as written**

language. Language studies are research of the methods used by people for creating and communicating meaning in a real-life situation or by means of texts.

Communication and bodily experience have been important for people throughout the meaningful human existence. A person learns about the space around him through movements. Repeating movement patterns are embodied in people's perception data. Perception, memory, and language form a part of human cognition. One of the leading memory researchers, Endel Tulving, has said that the level of detail in memory is connected to bodily movement. According to E. Tulving, humans are distinguished from the rest of the animal world by our autobiographic memory (Allik, Tulving 2003). The connections between language, perception, and memory come forward by, for example, movement.

A person's interpretation or view of the world is developed in a certain socio-culture. A person's self-awareness is manifested in, for instance, their conception of time and space, attitude towards justice and freedom, work, property, richness and poverty, position towards death and religion. Time and space are the parameters that determine the existence of the world, and are the main forms of human experience. Therefore, the categories that determine human consciousness are expressed by the concepts of time, space, change, reason, destiny, number, relationship between a part and a whole (Gurevitš 1992). These universal concepts are interrelated in every culture and in a way, they form a certain world model together – it is a network through which people perceive reality and build a world-view in their consciousness. Thus, a person is guided by some of the main categories of a world view in their consciousness and actions. The ways they are interpreted have a strong impact on behaviour of the person, the surrounding social groups, and the entire society. These categories are concealed in language, but also in other sign systems (languages of art, science, religion), and to think of the world without these categories is as impossible as to think outside the language categories.

Nowadays, language use as an area of research makes up a part of inter-disciplinary studies that include conversational analysis, discourse analysis, multilingualism studies, acquisition of another language, anthropology, micro-sociology, etc. On the one hand, interdisciplinarity has opened up new aspects in research of language use, but on the other side, the possibilities of language research have extended themselves due to integration with other disciplines, and development and implementation of new technologies.

USE OF LANGUAGE IN COMMUNICATION

Normal use of language as a part of a behavioural complex incorporates both verbal and non-verbal[1] aspects. Verbal communication studies after WWII were highly influenced by Noam Chomsky's views on language. Knowing that a language user is capable of producing an infinite number of meaningful sentences had a strong impact on analysis of verbal behaviour, but it increased the distance between verbal and non-verbal communication studies.

By now it has long been found that both verbal and non-verbal communication are communication processes in which the sender transmits information that will be encoded to signs or messages in different channels for a receiver who decodes the signs into information.

Although the messages are not communicated solely verbally or solely in a one-on-one conversation, the terms *speaker* and *listener* are used synonymously with the terms *sender* and *receiver*.

Based on generally recognised studies on human behaviour, three types of information can be distinguished in communication: information on cognitivity, information on motivation, and the emotional conditions of the speaker (Fiske 1990). In general, **cognitive state** is what the speaker is thinking at the moment; **motivational state** refers to the objectives that the speaker aims to achieve – his or her intentions; and **emotional state** corresponds to the physiological level of his or her emotions. The states are in constant change and interdependent. For instance, cognitive states can bring about emotional states and vice versa. Study of cognitive states also leads us to the question of **how is our knowledge of the world represented in brain and how do we communicate through language with this knowledge**. Motivational and emotional states can form a basis for some of our ideas or thoughts. The channels, in which information is encoded in interpersonal communication, correspond to human mind organs. Behaviour or signals are only signs since they carry information from speaker to listener.

[1] Hereby it would be suitable to note that nowadays, researchers no longer connect gestures with the concept of non-verbal communication. Adam Kendon has made a respective remark to S. Tenjes in the opinion on her doctoral dissertation (Kendon 2001: 1) and David McNeill discusses it in his manuscript sent to S. Tenjes. In that work, he says: "The most common mistake is to equalize gestures with 'non-verbal communication'. One of the meanings of a gesture is indeed non-verbal, i.e. a gesture is made with hands, arms, head, feet, and even the entire body, and with an articulatory apparatus not specialized for speech. However, the term 'non-verbal communication' is usually used … in the meaning … of three corners of semiosis: regulation, representation, expression. … Thus, in a traditional meaning, gesture is not 'non-verbal communication'. Gesture is a part of language, i.e., a part of verbal communication." (McNeill 1999: 5)

PRESERVERS OF CONTINUITY OF THE METHOD

The basis of studies on activities, reactions, and behaviours between individuals and groups lies in the simple fact that **speaking is a social activity**. One of the first ones to combine methods of studies on human behaviour was a Polish-born British anthropologist Bronislaw Malinowski (1884–1942). During his research work he noticed that it is important not only to interview the subjects but to also watch and listen the way they communicate to one another on everyday basis. Malinowski is the father of two main concepts of ethnographic theory of language: 1) context of situation, and 2) language as a mode of action (Duranti 1999: 215). Malinowski also noticed quite quickly that word-for-word translation of utterances or a direct translation of linguistic expressions does not help a researcher to understand the specific speaker – they need to understand the **situation** in which those words were used. So he came up with the concept of **context of situation**. The concept was developed for studies on language but it was not suitable for dead languages (e.g., Latin or Sanskrit). This, however, was the beginning of **ethnographic theory** of language.

While writing the second part of his book "Coral Gardens and Their Magic" (1935), Malinowski (1978 [1935]: 7) came to a conclusion that the main function of language is not expression of a thought or duplicating mental processes, but the role of language is to rather be an active pragmatic part of human behaviour.

In the 21st century we can say that these ideas have found their interdisciplinary ground in Europe (e.g., Levinson 1983) and even Malinowski's concept of verbal act (1978 [1935]:9) has influenced the coming of John Austin's speech act. George Herbert Mead has also provided a contribution to the bases of conversational analysis. He is the author of the concept of **symbolic interactionism**, according to which a person's **self** is a social product (Blumer 1969). The idea was developed further by his students Herbert Blumer *et al.*

Directly related to this concept is s**ocial interactionism** (Mead 1934, 1938). Speakers are members of a community, sharing the rules and agreements of this association. It enables them to participate in conversation. Speakers and listeners have to constantly guess one another's reactions and intentions throughout a conversation, and modify their behaviour accordingly. It is possible since interlocutors or parties of a conversation know that they are both members of a specific social community, sharing the rules of the social institutions of that community. One such social institution is legal system, the other is language. Parties of a conversation know the language rules and the way they are used. It enables speakers and listeners to anticipate one another's aims, guess the reactions, and to list them to contribute to cooperation. Speakers and listeners consider one another as so-called generalized other (Mead 1934, 1938) so that they can anticipate one another's reactions and recognize the intentions. This makes communication between them possible.

For instance, a speaker says: "I'm thirsty." The listener, by using rules of language and knowledge of language use, and knowing that both of them understand them, can attribute certain **intentions** to the speaker. Based on the

abovementioned utterance, a listener can attribute to the speaker an intention of trying to communicate his or her wish to have a drink to the listener. Moreover – in a certain context and situation (e.g., when walking by a cafeteria) and based by language rules that are known to both parties, the listener can conclude from that sentence that the speaker wishes to stop and have a drink. This approach is a foundation for the widely used concept of **commonly shared knowledge,** which is based on the Herbert Clark's cooperative process model in which information is shared between interactants who influence one another, having a common ground or common knowledge or beliefs (Clark 1992).

During the so-called cognitive revolution of the 1960ies, the highly behaviouristic approach of B. Malinowski seemed downright anachronistic: it was fashionable to speak of mind as a computer, etc. Those who studied movements of body did not go with that flow. Because when body's function and the location of speaking during communication is important for linguistic practices, linguistic behaviour in a situation is therefore also important. One of the most well-known representatives of this trend are Charles Goodwin (1981, etc.), also Adam Kendon, David McNeill, *et al.*

It should be noted that all of them study gestures, but C. Goodwin went on to analyse situations by using conversational analysis, and A. Kendon and D. McNeill have researched – albeit differently – the connections between speech and gestures.Although J. Austin had created a systematic theory on language as activity (Austin 1962), linguistics denied research on conversation for a long time. For linguists, conversation was too messy (Duranti 1999:245), full of false beginnings and incorrect grammar that did not enable them to analyse grammar in a suitable way. The possibility of analysis exceeding the boundaries of grammar was not considered suitable for linguistics. Research of movements and carrying out fieldwork has always mainly been a field for anthropologists.

Although conversational changes had always been important sources of information for anyone interested in cultural practices and social organization, conversation per se did not become an object of research before the 1970ies. It happened thanks to a small group of sociologists with the lead of Harvey Sacks and Emanuel Schegloff who concentrated on conversational changes. They named their programme **conversation analysis** to emphasise the fact that conversation can be an actual field of study in sociological research. Their efforts made conversation analysis studies important for those who were interested in the use of language in social interaction.

Conversation analysis has moved on with long strides in linguistics, having gone through a certain curve. By that curve we mean that conversation analysis has returned from sociologists to linguists who are interested in the same problems, but also a wish to have more consideration for the linguistic aspects.

In the beginning of the 21st century we can say that conversation analysis is a **method** that enables to analyse communicational and behavioural situations and can be used in discourse analyses.

CONVERSATION ANALYSIS AND DISCOURSE ANALYSIS

Two directions are evident in studies on the use of language in conversation. They are interrelated by different disciplines that have guided these studies.

The first discipline that studies conversations is **sociology**, more precisely the branch of sociology that deals with social interaction between individual members of a social community. Researchers in the field of **ethnomethodology** have given an important contribution to sociological studies in everyday conversation. The most well-known representatives are Harold Garfinkel, Harvey Sacks, Emanuel A. Schegloff, Gail Jefferson, and John Heritage. Ethnomethodologists are interested in implicit knowledge, methods, and procedures that the members of a social community are using and through which participants in a conversation determine, interpret, and communicate meaning in their everyday reality. For ethnomethodologists, the important aspects are social activities, the primary fields in which the social world of speakers is created. By studying conversations, ethnomethodologists aim to discover signs of the practices the parties are using for their social interactions, and the ways in which communicators define the social situation in a conversation among themselves. (van Rees 1992: 19)

Garfinkel found that studying social phenomena without including the use of language is useless. He included relationship between a person and a collective body in solving issues into his research on conversation analysis method, and started to lecture on conversation analysis at the University of California. This method has been firmly rooted in today's studies on sociology.[2] Conversation analysis is one of the methods; however, the subject of research is a person who behaves in an actual situation, at that communicating both by speech and gestures, and facial expressions, the entire body. A person communicates in a complex manner, transferring meanings through different channels/modalities.

Another discipline for studying everyday conversations is **sociolinguistics,** a sub-discipline of linguistics. The most important representatives of this scientific discipline are, e.g., William Labov, Malcolm Coulthard, John McH. Sinclair, and William Edmondson. Sociolinguists have always been interested in the ordinary, everyday language use, but it was not until the end of the 20th century when they started to become more interested in variation in language in the frames of social macro-variabilities. Variabilities are represented by gender, ethnic background, class belonging, and age. Sociolinguists also became interested in the subject matter of conversation at the end of the 20th century.

More specifically, sociolinguistic studies of conversations are focused on connections between the form and function of language utterances, and the ways in which the utterances are combined in a conversation. Such research, carried out by sociologists, are often called **conversation analysis**; research mainly led

[2] In the researches of Estonian sociologists, however, we have not noticed systemic implementation of conversation analysis methods.

by linguists and sociolinguists are called **discourse analysis**. These two directions differ both in their aim and their method.

Conversation researchers consider that their aim is to provide a description of interactional procedures that the parties of a conversation use when forming and interpreting contributions to a conversation. A researcher describes step by step how interaction develops for each speaker. He or she deliberately avoids recognized theoretical viewpoints. Differences are brought out only when it has become clear based on the empirical data that they have been submitted by participants of the conversation. One of the recognized viewpoints is so-called observational naivety (van Rees 1992: 20): every detail may turn out to be important. This is also one of the reasons why they work with the "rough" material of recordings or their maximally precise transcription as much as possible.

Here are some of the most important anchors from the subject matter of conversation analysis:

1) conversation analysis evolved from the works of H. Sacks;
2) conversation analysis studies language as a social activity;
3) conversation in interaction is seen as systematically organized and arranged;
4) the primary research data are audio recordings of a natural interaction (and where necessary, or suitable, video recordings). Transcriptions support the materials of audio/video analysis;
5) transcription system provides a detailed description of the so-called mess of everyday conversation, concentrating on production of speech and organisation of turn exchange[3] (Wooffitt 2006: 13).

A widely used concept that is nevertheless difficult to define is **discourse**. Discourse is a concept interpreted slightly differently by different authors and some of those concepts have nothing to do with language. For instance, *racial discrimination discourse* is related to rather systems of ideologies and beliefs than specific languages, *wine discourse*[4] includes, in addition to special vocabulary used in wine-making process and degustation, also sub-discourses like text and design of a label, and crosses with other discourses (e.g., commercial discourse on a bar code).

Discourse can be defined as a situative use of language (He 2003: 429) both in written and oral texts. Firstly, it contains more than one sentence and is, in that sense, a parallel definition of a text. Discourse studies are first and foremost related to studying text both for sociologists and linguists. But in addition to text, discourse also includes relevant components of a **context**: firstly, relevant aspects of speaker and listener, starting from their objectives, prerequisites,

[3] Turns in speech are intuitively determined dialogue units, continuous verbal expression of one speaker.

[4] The example is taken from Raili Põldsaar at the doctoral seminar "Analysis of communication data and methods of analysis" ("Suhtlusandmete analüüs ja analüüsi meetodid") (26.11.2008).

background knowledge, etc., and ending with the social parameters of the communicators. In addition to that, it also includes parameters of a communication situation: whether talking takes place in a court or at a cafeteria, etc. Teun van Dijk has presented an overview of discourse studies (e.g., 1997: 1–34).

While conversation analysis is a method of study, discourse analysis can be seen as a field of study. Discourse analysis views how conversation between people is built up. At an earlier stage, usually a dialogue was studied and analysed, later, a situative analysis was added. When viewed from the side of discourse researchers, pragmatics is also a part of it.[5] Communication strategies, communication situation as a whole is viewed, and context observed. Exchange in turns of speech is monitored, e.g., how does a language allow to interfere with an utterance. It studies when and how can people be interrupted, etc. Mostly in America, phone calls to police and ambulance in case of accidents have been studied. These are situations in which maximum amount of information needs to be given quickly.

Studies on telephone conversations has been remarkable in Estonia as well, Tiit Hennoste's study group has dedicated several years to it (e.g., see Hennoste 2003a, Hennoste 2003b, Rääbis 2000, 2002). It can be presumed that the popularity and influence of conversation analysis method in Finland created the first opportunities to introduce the topic thanks to the work of Professor Auli Hakulinen (in Estonian see Hakulinen 1986), and influenced the emergence of Estonian communication studies. Today, Finnish humanitarians and social scientists who study discourse and conversation analysis have gathered around several universities all over Finland. The most well-known groups are at Helsinki, Tampere, Jyväskylä, and Oulu, but there are researchers also in Kajaan, for instance.[6]

Discourse analysers aim to describe the principles on how conversations are built. They search for rules that could explain success of utterances in conversation. A linguist studies conversation not from the point of view of the participants for whom interaction evolves step by step, but as a bystander who analyses conversation as a whole when it is over. In their analysis, they often use speech act theory as an analytical framework. They are first and foremost interested in connections between formal traits of utterances and the speech acts that can be presented together with those utterances at a specific time in a conversation. They are also interested in sequence of speech acts and in how large are the amounts of speech acts where different sequences of the acts can be described as successfully formed. Spontaneous use that contains material for analysis is usually cleaned out from the

[5] Although we mentioned pragmatist and a language philosopher J. Austin, pragmatic approach is left out of this article. We view pragmatism as a limited linguistic research area that mainly includes the theory of speech acts and studies on questions and answers, including different ways of asking and politeness theories, and does not contain sufficiently systematic method for analysing communication and behavioural situations

[6] On actuality of the topic in Northern universities and its connections to the University of Tartu, also see http://www.placeme.hum.aau.dk/ (30.09.2008).

elements that are considered to be irrelevant for the analysis, like false beginnings, pauses, partial overlaps, etc. Sometimes, a researcher works with the examples they have made up on their own (so-called armchair science). The most important is to clearly present and test the researcher's intuitions regarding the connection between form and function of utterances, and to the rules that determine the order in which they are to be presented.

Here are some of the most important anchors from the subject matter of discourse analysis:

1) discourse analysis has emerged from treatment of scientific knowledge in sociology (e.g., see Wooffitt 2006);
2) he established a side branch from realistic explanations of the actions of scientists to practices of studying scientific explanations;
3) discourse analysis claims that since language is used variably, explanations are construed from descriptive possibilities when researching, the explanations are tightly related to the context in which they are presented and the functions they represent (Wooffitt 2006: 18).

Both directions can boast considerable results in communication studies.

DYNAMISM OF A COMMUNICATIVE SITUATION: MEANING IS CREATED IN COMMUNICATION

When addressing a communication situation, it is important to note developments in human communicative ability. Many researchers (e.g., see Place 1998, Koch 2001, Sinha 2001, 2005, Itkonen 2005) have considered iconicity and analogy as the main mechanisms in development of symbolic language. Iconicity can be the fundamental ability for linguistic modalities that has evolved over human evolution. Iconicity as an ability to make a copy is one of the keys to evolution of communication that could develop and enter the development of communicative abilities and methods on several instances. The first general initial output of language may have been pantomime. Later, pantomime condenses into a gesture and eventually a vocal gesture or language presented by phonemes takes over the lead (Koch 2001). Studies on American sign language and the history of evolution of Chinese pictograms reveal that in development of a linguistic communication system independent of vocal speech, the earliest signs are generally **iconic** as a rule. They imitate the visual appearance of the object they are depicting. In all cases, development tendency of a sign system to move away from iconicity and towards arbitrary symbols that have no similarity with what they are representing could be seen. (Place 1998: 2).

In a communication situation, speech occurs together with its particularity, e.g., intonation, facial expressions, and specific gestures. There are different gestures, but the iconic ones are extremely widespread. An iconic gesture has a certain amount of isomorphism between the shape of the gesture and the entity expressed by that gesture. Gestures of that type have a relatively transparent

connection between form and function, they have an important role in communication (Kita 2000: 162).

Gestures with visual and verbal component bring about the functional significance or meaning of the gesture in human communication. Earlier research has already shown that gestures are an important factor in communicating meanings and intentions (e.g., see Kendon 1980, Kendon 1986, Goodwin, Goodwin 1986, Calbris 1990, McNeill 1992, Bavelas 1994, Bavelas *et al.* 1995, Cienki 1998, Cassell *et al.* 1999). For instance there are certain hardly perceptible gestures that occur only in a dialogue and that are perceived and reacted to by both speakers. Such gestures are called conversation gestures (Bavelas *et al.* 1995), e.g., movement of a hand in circles, having different names depending on the context, but first and foremost, it could be called *help me find the right word* (e.g., in the sentence *What was the name of that guy who ..*) (on that, also see Tenjes 2002). Communicative functions of gestures most commonly emerge through depiction, direction, or referring to the referent. Other body movements also provide for a lot of information, compared with a merely speech situation (e.g., a woman agrees to be offered a light, crosses the legs, etc.).

By studies of multimodal communication, we can analyse two interconnected levels: a person's use of language in a certain communication situation, and the dynamics of a communication situation. In order to understand communication and language use better, multimodal interaction communication research is needed, analysing connections between human cognition and the choice of repertoire of the means of communication, and selection of communication strategies have an impact on social and cultural aspects. **Multimodal communication analysis observes the use of different communicative means in the course of communication.** By using them, communicators establish a meaningful communicative situation.

VIDEO RECORDINGS AS A METHOD FOR GATHERING ORAL LINGUISTIC MATERIAL

Different components of communication in social interaction enable a more detailed view of the use of language, either through different language levels or embodied interaction. Studies on language use in which language users communicate and influence one another and their activities in a complex multimodal environment (also virtual) require video material for research. Gathering of language material by video camera(s), processing and analysing video materials is an irreplaceable instrument of modern interactional language studies and a primary requirement for obtaining detailed and diverse research material (Scollon, Scollon 2001, Heath, Hindmarsh 2002, Goodwin 2003, 2007).

Video materials are multimodal and multidimensional, thus marking the four main aspects of communication: language use, situation, time, and space. Next to research in non-verbal communication, the use of video materials is about to become or has become an inseparable tool in studying, for instance, multi-

lingual communication (e.g., Lehtonen 2004) or child language (e.g., Hassinen 2002). Usefulness of a video recording is especially eminent in studying communication in which some communication modality – e.g., speech – is hindered. While nothing can be recorded with a dictaphone in case of a speech disability, the use of other communication components can be captured on video recordings and then analysed.

Brigitte Jordan and Austin Henderson (1995) divide the subject matters of social interaction into two types: direct observation and reconstructing event, that is, retelling what had happened. Video materials fall under direct observation. Video material ensures higher methodological objectivity which is an important requirement in conversational analysis, but also in discourse analysis.

Video material has several advantages over traditional methods of gathering oral speech material. Video camera captures the whole of communication: on one hand, the verbal part, and on the other, the part of gestures, signs, positions, and the spatial location and movement of people. Therefore, video material reveals the phenomenon to be studied in the way it is, both verbally and visually. Both verbal and non-verbal communication is always visible. Material recorded in a video contains more context of the material under study than dictaphone recordings, and thanks to the opportunity to review a video tape, the context is always "there" (Vuokila-Oikkonen 2002: 72).

Another significant aspect is that video material enables simultaneous and multi-level study of communication between several informants. When studying oral speech based on audio material, some of the factors are inevitably cast aside. According to our judgment, implementation of video material helps to seek for and find the answers to many questions that have so far been unnoticed. The advantages of video material are that it enables to

1) study the versatility of interaction;
2) study communication as a whole (speech, gestures, facial expressions, body positions, etc.);
3) capture the situation in time and space;
4) analyse communication in its "visible" context;
5) study social interaction in detail.

Regardless of the above-listed advantages of video material, gathering of and working with video material are most certainly problem-free for researchers. Päivi Vuokila-Oikkonen (see more in 2002: 72–73) states that separation of the important factors needed for the phenomenon under consideration for a researcher of video materials.

Analogically with any other empirical study, general problems with gathering language materials are not avoidable also for video materials.

Each research process can be seen as a sequence of different meetings that influence all parties in one way or another (Vuorinen 2001: 243). The impact of the researcher is impossible to avoid. Researcher's impact on a recording situation is called an Observer's Paradox (Labov 1972: 209) and everyone who has gathered language materials have encountered it. Both informant and interviewer

subconsciously later their behaviour and language use, trying to "behave" and be likable to the researcher. That is why the attempt of conversation researchers to gather material in natural conditions is justified, and they also address behaviour of the research group members as another type of data that needs to be considered in the future (Duranti 1999).

The first innovation in conversation analysis was a simple methodological requirement that the research objects shall be recordings of conversations that have taken place in the most natural way possible, i.e., conversations that took place by chance, unplanned or uncontrolled by researchers. It was contrary to the material received during ethnographic interviews or after that in test situations, where people were asked to play a role.

Gathering of language material is naturally influenced by the means of gathering data, e.g., a dictaphone and a video camera. In a perfect working situation, a taping dictaphone or a recording video camera should be like a piece of furniture, unnoticed both by interviewee and the interviewer. In order to gathering of linguistic material to succeed, a researcher shall make the interviewee feel comfortable in a recording situation, so that the language use of the informant would be the same in a recording situation and an ordinary situation (e.g., see Labov 1972: 61). This methodology mainly belongs to the field of socio-linguistics.

Gathering of video material and analysing the material base is a laborious and time-consuming work process in different stages, requiring logical thinking: 1) selection of the material gathering method and the informant; 2) solution to technical issues (camera, recorder, time and space); 3) recording; 4) selection of the sections to be analysed; 5) visual, so-called outer analysis of video clips; 6) limitation of video clips; and 7) detailed analysis of the material according to the aims of the research. As to research objectives, we can say that material of a communication situation captured in a natural situation provides the basis from which new and relevant results emerge.

PRESENTATION OF MATERIAL

We have selected a section of a recorded video material to emphasize the dynamic dimension of a communication situation. Audiotyping of the video clip also includes an analysis. Detailed conversation analysis is based on the system of G. Jefferson (Sacks *et al.* 1974) and the works of Paul ten Have (2004, 2006). The material concentrates on communication of a 17-year-old girl who is inarticulate according to regular standards. We claim that in a communicative situation, meaning can form even when colloquial abilities of one party are limited. The girl has been diagnosed with mosaic trisomy 13, or Patau syndrome.[7] Patau syndrome

[7] Patau syndrome or trisomy 13 may occur as a mosaic version. In that case, some of the cells have two copies of the 13th chromosome, and some have three. This syndrome is relatively rare (1:12 000...1:29 000) and the mosaic version has been described on only a few occasions.

is accompanied by alalia or dysphasia[8], although hearing is not affected. Since people with Patau syndrome have often died at birth or lived for a very short while, there is not enough information about this diagnosis in the world. All the more valuable is the possibility of analysing this material.

The sample selected for analysis has been recorded in an informal situation at the home of the conversation partners.

Time: 16 June 2007, about two in the afternoon.

Participants: a 17-year-old girl, her older brother, their mother.

Positioning of the participants: brother is sitting at a computer, the sister is standing next to him, mother is standing 1.5 meters away and is recording.

Only one video camera has been used in recording. The main parties to the situation are the girl and her brother. Mother who is recording the situation with a camera is participating by supporting questions and comments. Due to peculiarity of the recording situation, one of the participants, mother, is hidden behind the camera, which is why only colloquial part has been recorded from her.

A system of abbreviations is used in marking participants in the conversation. Since several first names are mentioned in speech on various occasions, abbreviations are used instead. Anonymity of all informants is guaranteed and the recordings are used upon agreement by the participants. Participants in the situation are indicated as follows:

T – 17-year-old girl;
V – her brother;
E – their mother;
S_1 – relative 1, a 4-year-old girl;
S_2 – relative 2, a 3-year-old boy.

In the conversation, T wants to know where is S_1 – a 4-year-old girl, her little relative. This choice of topic has a hidden purpose. T knows that S_1 is at her grandparents' summer house in Pangodi. T would like to get there herself, so she guides the conversation to a suitable topic.

(1)

1 T: öhö?
Translation: *an universal interrogative*
((Uses signs and holds her left hand on her brother's shoulder so that V would definitely respond. Uses the sign CHILD in Estonian sign language, i.e., shows the height of a person with a hand)) ((translation of the utterance: Where is S_1? or What is S_1 going?))

2 V: kodus on
Translation: *is at home*

3 T: [öhö?]

[8] Alalia or dysphasia is a speech development disorder caused by organic damage to the speech centre of the cortex.

4 V: [mängib]
Translation: *plays*
5 T: [öhö?]
6 E: näita T veel seda [märki]
Translation: *show T this sign again*
7 T: [öhö?]
((Holds one hand on her brother's shoulder, waves into distance with the other. Argues, saying that S_1 is in Pangodi))
8 E: [S_1 või]
Translation: *S_1 or*
9 V: [pangodis või]
Translation: *at pangodi or*
10 T: aa ((affirmative utterance shortned from Estoninan 'jaa'))
11 V: jah olime pangodis
Translation: *yes we were in pangodi*
12 T: öhö?
13 V: [käis] ujumas
Translation: *went swimming*
14 E: [kas] S_1 tuli tagasi ka või
Translation: *did S_1 return*
15 V: jaa
Translation: *yes*
16 E: tartusse
Translation: *to tartu*
17 V: mängib S_2-ga seal
Translation: *plays there with S_2*
18 T: iaa?
Translation: *here*
((Directs to the floor, i.e. uses the sign THIS PLACE HERE))
19 V: siia.
Translation: *here*
20 T: aa
Translation: *yes*
((Uses the sign HERE again))
21 V: ma ei tea seda
Translation: *i don't know that*
22 T: AA-AAA
Translation/explanation/interpretation: *oh right, now I remember*
((Knocks against her chest, shakes the hand in the air and finally grasps the root of her nose with fingers. Interpretation: I remembered that I had to go to Pangodi as well))
23 (.)
((The sister is looking at her brother intensely, waiting for an answer: she wants to go to Pangodi as well, brother would have to take her there.))

24 T: ühaäe?
((Points at her brother because the question is aimed at him.))
Translation: **ühaäe** *is adapted from Estonian* pühapäev *(Sunday), weekday that is a generalization of any day of the week → what day will you go to Pangodi*
25 V: homme võib-olla lähen jah
Translation: *tomorrow maybe going yes*
26 T: öhö?
27 V: aga võib-olla hoopis tõlgin
Transaltion: *but maybe instead I'll translate*
28 T: aua?
((Points at herself.))
Translation/interpretation: *with the syllable* **aua** *the speaker signifies herself → what will I do tomorrow*
29 T: emme
Translation: *mummy*
((Makes a sign indicating a BOAT in Estonian sign language (two hands together on one side like a bowl), moves the hands away from her.))
Translation/interpretation: *shall I go on a boat trip tomorrow*
30 E: laevaga sõitma või
Translation: *boat trip or*
31 T: jah
((nods))
Translation: *yes*
32 E: nojah memm planeeris seda et
Translation: *well granny was planning this that*
33 V: ((laughter))
34 T: ee memmu
((picks up a phone))
Transaltion: *ee granny*
35 E: et kui on hea ilm siis
Transaltion: *that if the weather is good then*
36 T: ee-memmu-memmu
Translation: *ee-granny-granny*
((Holds a phone in her hand.))
Translation/interpretation: *let's call grandma*
37 E: hakkad memmele helistama või
Translation: *you start to grandmother to call or*
38 T: aa
Translation: *yes*
39 E: no V valib sulle numbri siis
Translation: *V will dial for you the number then*

ANALYSIS OF THE MATERIAL

Conversation reveals T's motivation in guiding the conversation. T's means of communication are combined with one another in a complex way and serve one purpose – to make oneself understandable. T mainly uses movements to communicate (gestures, facial expressions, body positions), but her self-expression also includes cognitional elements (adapted mother's tongue, sounds, syllables). Hence, her language consists of auditory-verbal and visual side. The semantic fields of signs and gestures are wide and depend on the specific context. In a conversation, T mainly wants to ask questions to guide the conversation into the direction she prefers. She also expects her dialogue partner to help her in phrasing her thoughts, i.e. in a more accurate expression: she wants her gestures to be translated into words so that she can indicate whether or not the "translation" was successful. This type of linguistic behaviour can be interpreted as T's control mechanism that enables her to learn whether or not the conversation partners have understood her (e.g., see the sections 1–5).

T's universal interrogative word is *Mh?* that, combined with signs and/or gestures can take the place of any interrogative word. The conversation starts with this question and means "Where is S_1?" or "What is S_1 doing?". Sister holds her left hand on her brother's shoulder so that the latter would definitely respond. Physical contact ensures more intimacy and the asker can thus not be ignored.[9] In addition to sounds, T uses the sign used for CHILD in Estonian sign language, i.e. shows low with her hand, close to the ground, marking a short person. The brother responds that S_1 is at home. Since this was not the correct answer, the sister continues asking by using the same simplified question (meaningful syllable). Now she is told that S_1 is playing, but that is also not the answer she was hoping for.

The mother who is filming interferes and asks T to show the sign CHILD again. T repeats the sign and her question *Mh?*, keeping her left hand on her brother's shoulder and waving to the distance with the right hand. This is her way of arguing with her brother, saying that S_1 is in Pangodi. At the same time, she questioningly looks at her brother, as if verifying if her question was understood (seeking help).

Utterances 9 and 10 reveal that the other two participants are trying to help her with elaborating questions by speaking over each other, and T responds by affirmative utterance. No meaning would form in the dialogue and it could not be developed if the participants would not have common pre-existing knowledge. This topic has been discussed earlier and therefore it is easier for the participants to understand one another.

[9] Touch is also a separate communication modality with which T creates her communication space. This modality was pointed out by Mathias Broth and Paul McIlvenny at the 5th workshop of PlaceMe, "Distributed and Mobile Interactions" on 10-11 November 2008 in Aalborg, Denmark.

The sign that this time carries the meaning 'Pangodi' is obviously more general in Estonian sign language and its meanings are 'there' or 'far'. T's gestures are usually not correct signs, she has simplified them and made them easier for herself. She also uses gestures.

In the conversation analysed, section 22 in which T claims that she suddenly remembered that she had to go to Pangodi as well, is psychologically interesting. Expressing that thought is a highly complex intellectual activity (let us keep in mind: she has a certain chromosome disorder). Expression of that thought is expressive, it involves the entire body, voice and facial expression. T knocks to her chest, indicating I, then shakes her hand in the air – this is a sign of trying to remember something, and then grabs the root of her nose with her fingers. In speech, she drawls vowel **a**, varying it in a wide range and expressively. The face of the girl is extremely expressive at that time, a worried face with a frown, lighting up when she remembers what she was trying to recall.

The girl understands the speech of her companions, making understanding her easier for the others. T is also capable of deciding whether what she said was "translated" correctly. Based on A. Kendon (1986), we know that the meanings do not transform into gestures and speech in a uniform way. Gestures can be formed directly, independently, and irrespective of oral language, or speech.

SUMMARY

The article presented an analysis of multimodal communication, showing how oral or colloquial language alone cannot transmit communicative meaning. It presented emergence of meaning through cooperation of the parties.[10] Previous traditions were taken into consideration in communication analysis: **methodology of conversation analysis and situational approach of discourse analysis**. Consideration of multimodal components enables better understanding of a communication situation. The communication patterns of the girl with a Patau syndrome presented in the material analysis of the article clearly mark the advantages of video material over a dictaphone recording. Video material enables to observe the connection between oral language and hand gestures that are inevitably cast aside in a dictaphone recording, or presented in an incomplete manner, based on the memory and notes of the researcher. Observation of the situation and the detailed linguistic and motional behaviour in words, signs, and video also has relevance: what is going on in communication? how do the participants in the conversation react to one another's contributions? who are the active and passive conversation partners and what is their behaviour? what are the connections, if any, between gestures and the oral part, etc.? The situation was a good example of acting together, in which language, cognition, and activity were the elements of the situation. Participants in this situation are trying to include important phenomena

[10] We thank Dr Paul McIlvenny from Aalborg University for keeping up the faith on the future of discourse and conversational studies.

from the surroundings by using their different modalities (e.g., pointing at an object in a distance – Pangodi, etc.). In this situation analysis, the girl was able to communicate even what happened in the past and will take place in the future. Dynamic functioning of a communicative situation and its analysis provides more opportunities for mutual understanding on every level of communication.

TRANSCRIPTION KEY

(.) micro-pause (0.2 seconds or less)
. falling intonation
? rising intonation
[beginning of overlapping
] end of overlapping
(( )) comment
capital letters (e.g., AHA) using a louder voice

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II. MULTIMODAL COMMUNICATION IN LANGUAGE LEARNING AND LANGUAGE USE SERVICES

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Abstract. Multimodal communication in language learning and language use services. In the present article an overview of the scientific study carried out by Tartu University`s Department of Estonian as a Foreign Language is given. We observe more closely the part of the department`s research which is performed in co-operation with MUSU group, including the collaboration with Institute of Germanic, Romance and Slavonic Languages and Literatures. These activities are supported by the Estonian Science Foundation (ETF) grant project. It is also important to mention the co-operation with the Nordic Universities in the framework of PlaceMe project. The research topics of the doctoral students are implementing different methods of discourse studies for analyzing the multimodal communication, communicative competences and communication strategies in the process of language learning and use.

Keywords: *discourse analysis, context, multimodal communication and its analysis, language learning and teaching, language use*

1. INTRODUCTION

What are discourse, context, and multimodal communication, and how should language learning and use in the framework of these concepts and areas of research be addressed? How are these topics addressed in the scientific research of the department of Estonian as a Foreign Language at the University of Tartu? These are the questions we aim to answer in the following dissertation.

Any form of studying a foreign language also requires contact learning. How does a teacher forward grammatical information? How could a student understand it better to grasp the language more easily? How should abstract concepts be explained? How to emphasise the important information? What kind of strategies should be used in effective teaching of grammatical units, taking into consideration the frame of multimodal communication? These are just a few of the questions that language learners and teachers encounter in the learning process.

These are the topics – with a focus on studying, teaching and using Estonian as a second language – that the post-graduates in the department of Estonian as a Foreign Language are addressing, under the guidance of Silvi Tenjes. The

department is also home to the Multimodal Communication group (MUSU), which is partly supported by a grant from the Estonian Science Foundation.

2. DISCOURSE, CONTEXT AND COMMUNICATION

A common frame for different studies is provided by the method of *discourse analysis*, which includes the context of both written and spoken communication. T van Dijk formulates discourse as action and interaction in society (van Dijk 1997:13). Discourse has a linguistically analysable structure: sounds and letters, sentence form and linguistic meaning. However, discourses also have a connection with social activities in a society or a smaller unit through language users, thus linking discourse with the society and cultural phenomena. Instead of abstract ideal structures, it is more purposeful to study language in its natural environment of use, via the activities of the users. Analysis of contextual functions helps to better understand both the person and the society.

Gathering of data on discourse is guided by the theoretical framework of communication, in relation to which it would be useful to take a look at Roman Jakobson's (1960) communication elements. Jakobson identified six elements that are characteristic to all communication:

1) an addresser (sender) who initiates communication of the message;
2) the message, which indicates to the recipient that it refers to something other than itself;
3) an addressee that is the intended recipient of the message;
4) context, which enables the addressee to understand that the message refers to something other than itself: for example, if someone is screaming for help, but is lying on the ground motionless, it is not difficult to understand that the message refers to the specific situation;
5) form of contact through which physical, social, and psychological contacts are established between the addresser and the addressee;
6) code that provides the signs and structural information needed to construct and decode the message.

Thereafter, Jakobson indicated that each of these elements correlates with a different communicational function:

1) emotive: indicates the presence of the addresser's emotions, attitudes, social status, etc. in the message;
2) conative: refers to the assumed effect – physical, psychological, social, etc. that the message should have on the addressee;
3) referential: refers to the fact that the message has been constructed to communicate information (e.g. *Main Street is located two blocks to the North*);
4) poetic: refers to the fact that the message has been constructed in some artistic manner (e.g. *Frosty is the morning but the sun is bright, flooding all the landscape with its golden light*);

5) phatic: indicates that the purpose of the message is to establish a social contact (e.g. *Hi, how are you?*)
6) metalingual: indicates that the purpose of the message is to refer to the code used (e.g. *The word* noun *is a noun*).

Jakobson's discourse analysis includes ascertaining who says what to whom, when and where it is said, and how and why it is said. Due to that, discourse is motivated and shaped by the background, the meaning of the message, the participants and the aims of each speaker. Thus, discourse also makes emotional demands on all of the participants involved in a social situation (Danesi and Perron 2005).

Context plays an important role in describing and explaining written text and speech. Different scientists use the concept of context quite differently. It helps in defining if we say that *context is a production of all characteristics of a social situation* (product), *or reception of a discourse* (reception and interpretation) (van Dijk 1997:19). Contextual traits affect a discourse and vice versa – typically, a discourse may restrict or change the characteristics of a context. Context is analysed through factors such as time, place, and circumstances; participants and their different communicational and social roles (speaker, boss, friend); aims, intentions, etc. In a discourse, we lay down activities and activity procedures (e.g. teaching, legal proceedings, reporting of news, carrying out a scientific experiment, mountain climbing). We specify the way the participants are involved in interaction as members of a social community or institution, and elaborate on their characteristics (addition to social roles by oppositions, e.g. blacks-whites, men-women, young-old, employers-employees, students-teachers).

In fact, traces of a context can be found on all levels of a discourse: e.g. where do the participants come from, what is their gender, nationality, position inside a certain group. At the same time we have to keep in mind that social contexts are not predetermined and static. This flexibility of context, in which participants themselves are developing new possibilities, makes life interesting, but analysis more difficult. For example, forbidding of social norms or rules may provide a creative change, but may also provoke rage and devastation (e.g. the same person may be a criminal or a hero depending on the context).

Discourse analysis is used in different disciplines, e.g. linguistics, sociology, anthropology, social work, cognitive and social psychology, international relations, human geography, communication and translation studies, each of them having their own matter, dimensions of analysis, and methodologies. The term *discourse analysis* was first coined in the beginning of 1952, in Zellig Harris's works on transformational grammar. In the 1960s and 1970s, the new disciplines in humanitarian and social sciences, e.g. semiotics, psycholinguistics, sociolinguistics, and pragmatics, developed the concept of discourse analysis without further references to Harris (true – Harris himself also stopped developing this concept in his work).

The most widely used concepts in the field of study are *communication* and *modality*. The encyclopaedic definition of communication historically connects us with Latin: *communicatio* – 'communication', 'contact', 'connection'; 'route of communication'. The word *communication* is used extensively. The approach to communication varies in sociological, economical or military contexts. The exact definition of communication is highly complex. Almost any kind of form or effect that one system possesses over another can be called communication: both the communication system of animals and the one of brain cells can be treated through the concept of communication. In that case, an uppercut is communicational since it carries a connection, as well as the swaying of a blade of grass in the wind or a lizard's trail on a rock ... The word *communication* has a specific meaning in the humanitarian field – both in linguistics and language philosophy: communication marks any kind of intentional behaviour that is presented in an open manner and with an aim of giving the addressee an opportunity to recognise something. (Keller 1998: 89). How? In what way? By implying to the addressee, through the use of signs (in the widest meaning of the word) that thing to which someone wants to direct the addressee, in the hope that this knowledge is sufficiently reasonable for them to allow themselves to be influenced in the desired way.

The prefix *multi-* refers to more than one and *modality*[1] means 'a way', 'a manner'. Modality is connected to the types of communication channels and is used for transmitting and receiving information. *A way* or a *manner* refers to a situation in which a part of information is isolated or interpreted to communicate the determined meaning. For example, methods include gestures, movements, prosodic features of speech, speech, writing and image. How do we use language (words and grammar), prosody and movements to express an actual fact? This is what is studied through multimodal communication.

3. MULTIMODAL COMMUNICATION AND ITS ANALYSIS

Multimodality as a concept has mostly been used in "communication" with a robot (e.g. multimodal conversations with autonomous mobile robots, see Lemon et al 2001*). The "trinity" of multimodality is language in the meaning of 1) words and grammar, 2) prosody, and 3) movements of the body.* Multimodality is obviously an antonym for monomodality. In the context of this article, *monomodality* could mean a linguistic approach mainly in the meaning of *spoken language*, which is actually only one – although a large – communication modality. Even more – we often use the concept of *language* only in the meaning of spoken language.

According to Kress (2004), multimodality is addressed by all means that a person possesses to create meaning, referring to the means of representation like

[1] In linguistics, modality is used in the meaning 'category that shows the speaker's relationship with the utterance, and the utterance's with reality'. (ÕS 1999: 470)

drawing or writing. The author claims that each method makes individuals contribute to the meaning, either intentionally or not.

Multimodality is based on the use of those sensory modalities by which people receive information, e.g. touch, vision, hearing, etc., and requires the use of at least two response modalities as to presentation of information, like verbal and manual activity (Baber and Mellor 2001).

Five modalities or units can be differentiated in more detail in multimodal communication: 1) speech, 2) prosody, 3) gesture, and movement of 4) face, 5) head and body positions. At that, the so-called facial movements are the movements of mouth, gaze, eyes, and eyebrows. The abovementioned five modalities signalise information in a different manner (Magno Caldognetto et al 2004). As a certain generalisation, linguistic, actional and visual communication can be called multimodal (Ya-Chun Shih and Mau-Tsuen Yang 2008).

There are also computer programmes for analysing multimodal communication, e.g. Michael Kipp's ANVIL (*Annotation of Video and Spoken Language*) that was created in the period of 2000–2003 (see Kipp 2001), and the programme MUMIN (see Allwood et al 2007) in the Nordic countries.

Analysis is based on description of different types of modalities, typologising, transcribing semantic presentations, and fixating, describing, and analysing semantic functions.

1. Description. A gesture or a movement is described based on its perceived characteristics. For example, a gesture can be described as transcribed into words ('right hand makes a curve in air') and as minimal units of gestural communication, the so-called gestural phonemes (Stokoe 1980) in case of having a programme. Facial and bodily movements are also described ('raises eyebrows').
2. Describing typology. A gesture or a movement, including a touch and non-communicative event (e.g. 'hands in the lap') is classified based on gestural typology.
3. Meaning. A movement is analysed by words and phrases.
4. Typology of a meaning. The meaning of each movement or gesture is classified based on a semantic taxonomy that differentiates information about the world, the speaker's identity, and the speaker's sensuous rational activity. Sensuous activity in this context means activity of human senses (the abovementioned sensuous-motoric modalities like seeing, hearing, etc.), and rational occurs in the meaning of "thinking activity" (e.g. studying).
5. Semantic functions. In analysing, a gesture or a movement is compared with the accompanying speech, and five different functions, that is, five types of connections between them are identified. These are:
   1) repetition, if a gesture or a movement carries the same meaning;
   2) adding, if a gesture or a movement adds meaning to the word;
   3) replacement, if a gesture or a movement replaces a word that was not uttered;

4) confrontation, if a gesture or a movement communicates something opposite to what was uttered;
5) lack of connection, if it forms a part of another, different level of communication.

The most expressive component of such a marking system is identifying the meaning of each movement or gesture and translating it into words or sentences. For example, in a scene where a verbal phrase is accompanied by a rising intonation, the vertical raising of an index finger, the raising of eyebrows, half-turn of a body, etc.

In analysing the multimodal components, documentation of social practices and speech in interaction is facilitated by video equipment. It enables us to observe the way parties organise their interaction, being focused on the wide selection of multimodal resources: gestures, gaze, facial expressions, head movements, body positions and body movements.

Multimodality has been widely studied in the world, in language learning, teaching and use, i.e. the book "Gesture as a Communication Strategy in Second Language Discourse" (1998) that grew out of M. Gullberg's doctoral thesis; also Gullberg 2008, also see Heath 1992, Chen, Rao 1998, McCafferty 1998, Allen 1999, Stam 1999, McCafferty, Ahmed 2000, Guichon, McLornan 2008, Chen 2009.

4. INTERNATIONAL COOPERATION, RESEARCH GROUP AND DOCTORAL SEMINAR

The post-graduates and researchers of UT have participated in a project "PlaceME: Place, Mediated Discourse and Embodied Interaction" since 2006 (2006–2009, project manager Dr Paul B. McIlvenny, Aalborg University, Denmark); the Estonian coordinator is Silvi Tenjes. Under the project, seminars for post-graduates and researches of the Nordic universities are held twice a year on social interaction, multimodal communication and discourse studies. Cooperation on these topics includes colleagues from Denmark, Sweden, Finland, a bit less from Norway, and the lecturers at the seminars have been from France, Great Britain, etc. For instance, the organiser and one of the main lecturers of the PlaceME third seminar "Analysing Embodied and Object-Focused Interactions: Studies of Real-Time Work and Learning", held in Tartu, in 2007, was Jon Hindmarch, from London's King's College; the other main lecturer who fascinated the listeners with his approach was Prof Kalevi Kull, from the University of Tartu.

The Research Group on Multimodal Communication (established in 2009, coordinated by Silvi Tenjes and Raili Põldsaar) has grown out of the Hand Gestures' Research Group established at the University of Tartu in 2003 and is a good example of multi-level cooperation: even the management is done in cooperation with the researchers of the department of English. The MUSU

group includes post-graduates and researchers from the department of Estonian Language and Culture for Non-Estonians, the departments of English, Spanish, Scandinavian Studies and Classical Philology, as well as from outside the University of Tartu. The MUSU group is focused on discourse studies, cognition, and applied linguistics. The main directions of the scientific research of the group include multimodal communication and studies, social interaction, conversation analysis, discourse analysis, power in written and oral communication, interaction between text and context, sensomotoric mechanisms and movement, hand gestures and speech in communication. The group addresses discursive methods in analysing communication units. The MUSU group analyses the role of details in modes of communication on a time-space axle of speech, touch, language studies and acquisition. The analysis of learning and teaching activities has gained primary importance in the research topics of several post-graduate students.

Taking into consideration the multimodal ways enables us to also include in the analysis the use of objects of different material, documents, and technical artefacts in the course of interaction (e.g. calling or sending a message on a mobile phone). These are the topics of the PlaceME project that incorporates Nordic universities. New opportunities for social practices include, for instance, writing and reading of a text (with or without a computer), using a map or an image in a GPS device, using a computer for interactive communication, etc.

In addition to that, positioning of participants in a room must be taken into consideration. Studies in an interactional room must take into consideration the way the room is in a constant state of change, including due to activities of the participants, which may even be only blinks or hand gestures.

International cooperation with the Nordic countries became a starting ground for a university-wide doctoral seminar "Analysis of communication data and analysis methods" (started in 2008) that provides a systematic overview of the methods of analysis for oral or written communication data and the field of multimodal communication. The seminar addresses the methods and applications of discourse analysis and conversation analysis in different fields of study, both in written and oral contexts. The course covers these issues, concepts, and fields with an emphasis on interdisciplinary and multimodal approaches. In the centre of attention are the methods used for analysis of multimodal communication process, analysis of the so-called rough material, means for taking notes of the data, and the areas of use. The seminars focus on the problems arising in relation to the methodology and the students acquire experience in working with an actual dataset.

With studies of multimodal communication, we are analysing two interconnected levels: a person's use of language in a certain communication situation, and the dynamics of a communication situation in social interaction. The activities of the MUSU group are supported by the Estonian Science Foundation's grant "The structure of multimodal communication and the choice of communication strategies" (2009–2012); the person responsible is Silvi Tenjes.

The project presents and analyses the structure of multimodal communication, since earlier research has analysed communication situations mainly from the narrow aspect of speech behaviour. The project focuses on both the connections of selection of the means of communication with shaping of communication strategies, and the connections of the means of communication and the communication strategies with the social and cultural aspects of the behaviour of the communicators. The study results allow for a better understanding of the communicational processes and cognitive functions, both theoretically and practically (e.g. the results of analyses of communication situations are helpful in situations that require fast and precise communication).

Analysis of multimodal communication is more dynamic than the studies based on the methodology of conversation analysis[2] because multimodal communication involves not only spoken repertoire. Analysis of involvement in a communication situation also enables one to study how the participants bring out complicated information with an interactively organised gesture and body position by common participation in this interaction (Goodwin 2002). This somewhat unusual aspect is absent from many studies on linguistic pragmatics.

One important component of a communication situation is feedback that may affect the selection of means and strategies of communication. This is why description, analysis, and connections of these mechanisms with a person's cognition in interaction are within the sphere of interest of our communication's group (for feedback, see Jokinen et al 2007 and 2008). From the point of view of communicative meaning, the situation as a whole is important (Schegloff 1984, Goodwin 1986, 2003, 2007, et al). Methods and strategies of communication can be successful only when the communicators take into consideration the discourse registry aspects of the participants in the situation, like experience, interpersonal and textual resources. It means that the social and cultural practices of the participants in communication play an important role in successful selection of communication strategies and bringing out the meaning.

5. TOPICS OF DOCTORAL THESES RELATED TO COMMUNICATION STUDIES

The topic of textual discourse is addressed by post-graduate student in Spanish philology Triin Lõbus (the supervisors are Prof. Jüri Talvet and Dots. Silvi Tenjes). Her doctoral thesis addresses time relations in a fictional narrative in a comparison of the Spanish and Estonian languages. Based on works in Spanish, the author studies the function of Spanish time and aspect forms in a narrative

[2] A persistent and successful cultivator of conversation analysis in the University of Tartu is the Research Group of Spoken Estonian, led by Tiit Hennoste. In cooperation with Prof Mare Koit and professor emeritus Haldur Õim, they are addressing establishment of a dialogue system, thus also formalisation of communication.

discourse, and analyses the respective possibilities of expression in the Estonian translations.

The fictional narrative can be addressed as a practice text that has developed in socio-cultural interaction. Fictional types of discourse have developed on the basis of a primary oral speech communication model by transforming it, and are thus a result of more complex cultural communication. The main defining characteristic of a narrative can be considered its structure, which is based on sequence in time. In more general terms, it functions in a way as a thinking strategy, enabling us to structure and understand the experience, and the particularity of a narrative as a fictional genre is also based on that. Thus, analysis of the time relations in a narrative addresses the most constitutive characteristic of such discourse, through which meaning is created and communicated.

A comparison of Spanish and Estonian is interesting, since an author of a narrative in Spanish categorises the events based on the rules by a grammatical aspect category that is not reflected in the Estonian time experience in the same way, but nevertheless plays an important part in expressing and interpreting the time structure of a narrative. Since in Estonian, the grammatical aspect does not manifest itself systematically, these issues have been studied less than in case of aspect languages. A comparison with Spanish also helps to bring out and acknowledge the particularity of the Estonian means of expression and the possibilities in expressing time-aspectual relations.

Leila Kubinyi, who teaches Estonian at the University of Warsaw, is studying the possibilities of communicative language learning in a multilingual society in her doctoral thesis. In the European Union, language and cultural policy is aimed at ensuring integration of all citizens. For that, a common system on language teaching has been established, the versions of which serve as a basis for compiling the learning materials in many countries; its concept is in a constant development, especially the socio-cultural aspects and treatment of communication strategies (Trim 1997).

Naturally, the language situation is different in every country. The research examines the teaching of Estonian to new immigrants, thus also covering the aspects of Estonian as a second language. The communication situations to be learned should support the everyday use of language and help the students to cope in the new linguistic environment. The aim of the thesis is to determine the communication strategies that the beginner-level learners of Estonian use in conversation with Estonians of their age; how does the selection of communication strategies depend on their social and cultural experiences, as well as the course of interaction; how to achieve competent communication skills with the most effective methods. The theoretical bases of the research includes outlooks of pragmatics and discourse analysis on language and communication (see Leech 1983, Levinson 1983, Brown and Levinson 1987, Brown and Yule 1983), since they provide a model that is suitable for analysing intercultural communication problems.

Studies of Estonian as a second language play an important role in shaping the attitudes of students. Since 2003, integration projects for new immigrants in Estonia have been carried out, with a textbook based on communicative language learning method "Astu sisse!" ("Come in!") (Rannut et al 2004) being published and different interactive learning materials having been developed.

The biological-psychological aspects of learning capability mechanisms are examined in the doctoral thesis by Ingrid Rummo. The learning capability mechanisms are not yet entirely clear. Multimodal analysis provides an opportunity for clarifying them, including, for example, determining sensomotoric mechanisms where language and movements are components of key importance. Ingrid Rummo's field of research and the topic of her doctoral thesis "Intellektipuudega subjekti keel ja suhtlusstrateegiad" ("Language and communication strategies of a subject with intellectual disability" is connected to acquisition of language. In this topic, it is interesting how a meaning emerges in a communicative situation when the (speech) linguistic abilities of one of the conversation partners are limited due to Patau syndrome: there is no speech in its traditional sense (also see Tenjes et al 2009).

The linguistic subject matter of the research is mainly made up by spontaneous everyday speech situations and conversations on some certain topic. The data is gathered by filming the communication situations with video technical means, and participant observation. Different communication modalities that help the subject of research and his/her conversation partner(s) to compensate for the restricted capacities of one of the parties are analysed (both from the point of view of transmitter of the message, and that of the recipient).

The topic is novel, since the means and strategies of communication of persons with a genetic mental disability – trisomia to be more precise – have not been studied in Estonia before. There is also very little data about this type of communication in the world. At the

same time, this area is important and has a significant practical value since the individuals with this type of disability – expressive speech disorder[3] – also have a need and a right to participate in human communication, receive information and make themselves understood. Among other sources, the research is also based on the works on aphasia by U.S. professor Charles Goodwin. Important keywords in the research by Ingrid Rummo also include common shared knowledge, communication situation and context as a whole, discourse studies and conversation analysis, language and cognition, and non-verbal communication.

The topic of language use is examined by Dmitri Kulakov, whose doctoral thesis "Peipsi järve äärsete põliselanike kakskeelsus" ("Bilingualism of indigenous people at Lake Peipus"), is based on empirical bilingual language information. The dissertation studies bilingualism that has emerged upon contact

[3] A person can understand the speech of another person, but production of their own speech is rendered difficult or is lacking completely.

between the Estonian and Russian indigenous communities living on the shores of Lake Peipus in a direct communication situation. The research material is made up of conversations gathered using the interview method, taped in audio and video format. The material comes from a unique area – the eastern border of the European Union.

Bilingual communication dataset offers diverse opportunities for studying acquisition and use of another language from a discoursive perspective. The material is largely related to the natural social activities on the areas around Lake Peipus from the first quarter of the 20th century until today (friendship with children of another nationality, common jobs at the area around Lake Peipus and on the outside, close blood relations, communication inside and between villages). It is often difficult to draw a distinctive line between the situations of language acquisition and use, because another language, whether it be Estonian or Russian, is acquired in the course of actual interaction. Decrease in the frequency of common social activities also decreases interaction. In that case, indications of the second language disappearing also tend to appear. Comparative treatment of representatives of Estonian and Russian indigenous communities enables one to determine both the differences and the similarities that are characteristic to each ethnic group (in the representatives of Estonian indigenous communities, acquisition of Russian in the Soviet army or as a result of deportation was more common; for the representatives of Russian indigenous communities, language was learned on common jobs with Estonians or in communication between villages) and provides interesting knowledge of the social situation along the Estonian-Russian border area. Secondly, the analysis enables one to determine connections between use of another language and certain types of communication modalities in an actual interaction during an interview.

The doctoral thesis of Eva Ingerpuu-Rümmel examines consideration of multimodal components in a language class. A foreign language class is a complex communication situation in which interaction between a student and a teacher is influenced by the cultural and linguistic capacities of the parties, as well as their previous experience (there are naturally other factors as well, for instance, age, gender, use of space, etc.). The choice of the means of communication and the communication strategies may be very diverse, in turn determining the mutual understanding and acquisition of new knowledge. Nowadays, acquisition of language as a means of communication is the most important aspect, influencing the nature of a class, the selection of language components to be studied, and the depth at which the topic is covered.

In a language class, a teacher is both a mediator of language and culture, and a living example (Dabčne 1984: 131). A teacher is the one to be imitated by students trying to acquire similar pronunciation, intonation, sentence structures, and at the same time, also gestures and facial expressions. Although hand and face movements are not universal, the teachers do not use the gestures knowingly and have not received the training in a way that is taught, for example, at a university – breaking words into pieces or determining the grammatical times.

All teachers use gestures and facial expressions. If the language to be taught is their mother tongue, are they certain that students understand their facial expressions and gestures as expected and vice versa – does the teacher understand what the students are trying to express? If the language to be taught is a foreign language to a teacher, a situation may occur in which a gesture used in a class means something completely different in the culture to be taught. It may also happen that a student fails to acquire numerous everyday means of communication if the teacher does not explain the gestures of the culture to be learned, although it should be a part of the curriculum, along with introducing holidays or eating habits.

And yet, an important task of a teacher is to help to understand, for example, the meaning of words and a certain way of thinking. If the words by themselves are not sufficient for explaining the meaning, teachers often use movement. Already M. L. Knapp (1972:14) found that a class is a "gold-mine" of non-verbal communication. It was also confirmed by a study conducted in Estonia, in which it was analysed how teachers of French origin teach French to Estonians (Ingerpuu 2002). That way, a language class becomes an excellent source of communicative activities for researchers, and enables them to look for new solutions for an effective and more exciting language learning.

6. SUMMARY

The department of Estonian as a Foreign Language at the University of Tartu studies and implements communication methods. Cooperation with the Institute of German, Romance and Slavonic Languages and Literatures takes place by coordination of the MUSU group, supervision of post-graduates, and a university-wide seminar. A large part of the research activity that is applied in language learning, teaching, and use, are connected to Nordic researchers (e.g. the PlaceME project or participation of Silvi Tenjes as a representative of the Baltic States in the work of the committee of a conference on Nordic discourse and interaction in 2010) by ethnomethodology, conversation analysis, discursive psychology and interaction analysis topics, and develops them quantitatively by studying the composition of everyday conversations. New technologies add pressure for the reviewing and complementing of methodologies. Discourse studies, communication studies, and interpersonal communication is the framework in which critical and descriptive methods shall be used to analyse oral and written communication and to develop the interaction of a student, teacher, and a user in everyday situations. Under these theoretical and methodological approaches, the post-graduates of UT and the members of the MUSU group study textual, pedagogical, cognitional, and functional discourse.

MUSU group is an interdisciplinary research unit that deals with the discursive methods in analysing both oral and written communication modalities. The group in interested in learning ability and wider functioning of sensomotoric mechanisms (see Jokinen et al (to be published)), also studying, for

instance, connections of activity representation with a sensory space in order to perform and learn movements (see Simm and Tenjes 2006, Tenjes, Simm and Jokinen 2007). The output of the group is development of multimodal commnication models, analysis and development of communication competencies and strategies, and language learning.

RECOGNITION

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III. CONCEPTUALIZATION OF TIME IN THE CONTEXT OF PATAU SYNDROME

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Abstract. This article studies communication in the context of the mosaic variant of Patau syndrome. The analysis of two sample situations focuses on creating and understanding the concept of TIME. The article discusses the semiotic foundation of communication dimensions (Peirce 1931–1958) as well as its physical basis (Itkonen 2005). The approach is based on discourse analysis and considers semiotic categorization of signs.

The article describes communication possibilities of people with language impairments, in the context of research done on aphasia and conversation by Charles Goodwin (1995, 2003). Further, the article introduces discourse analyses in clinical communication studies (Müller, Guendouzi, Wilson 2008). We also give an overview of human cognition and the mosaic variant of Patau syndrome.

Specifically, we examine how an abstract concept (TIME) is formed, presented and forwarded when the traditional communication modality – the ability to speak – is missing. The subject (N) comprehends the speech addressed to her, understands everyday topics and questions and is able to answer them, but her means of replying are incomplete. The majority of her communication proceeds by hand and head movements accompanied by sounds. Thus we also consider the role of how gestures are used to bring out meaning in cooperative communication.

The examples are two videotaped communicative situations where the subject of our research is one of the interlocutors. The topic of TIME is present in both of them.

The analysis of the communicative episodes showed that the subject is able to indicate a calendar month (June) using the hand sign for April. However, she visualizes as well as generalizes the name of one month to all the other eleven months. From the discussion we concluded that with the help of communicative gestures, the subject is able to have a "conversation" on the topic *When someone's birthday is?* while using the hand movement of 'flower' to indicate the event of birthday. She has the ability to communicate and express herself via hand gestures. We also found out that the subject has a certain memory of situations, e.g. a birthday frame and the ability of conceptual categorization, which is mainly expressed via hand movements.

Keywords: *discourse analysis, interpersonal communication, communication, nonverbal language, cognition, aphasias, Patau mosaic syndrome*

1. INTRODUCTION

Our research is motivated by the question "Does the structure of conception also include iconic-motional content?" We are interested in the connection between communicative modality and an ability to make semantic and/or figurative connections.

Theoretical bases proceed from the studies on interpersonal communication, including verbal and non-verbal behaviour, but also on cognition. Interpretations of meanings and movements rest upon semiotic categorisation based on the views of C. S. Peirce. The theoretical grounds and methodology are viewed more closely in the 2nd part of the article. The analysis of the research is connected to an approach on human cognition and time studies, as well as an overview of conceptualisation of meaning.

Attitude towards disabled people were derogatory and depreciative throughout the Soviet era. Today, this situation has somewhat improved; however, people who have not had any contact with this topic are still experiencing difficulties in understanding that people with different speech and/or mental disabilities also have their own world of thoughts and feelings, wishes and needs to share with others. So far, there have been no scientific studies on the communication problems of persons that are inarticulate or have a severe speech disability in Estonia. This article aims to give its contribution in this matter.

2. THEORETICAL BASES AND METHODOLOGY

In communication studies, structures of aims and knowledge are considered important since people use pre-existing knowledge in conversations. In order to achieve the desired objective the communicators must have knowledge of their communication partners, for example, their preferences, background, and habits. They also need a base knowledge of interaction procedures and strategies, and the social contexts in which they communicate.

2.1. Interpersonal communication and interaction

The foundations of our research are based on the long line of interpersonal communication studies. Interpersonal communication involves verbal and nonverbal communication and social interaction[1]. Interpersonal communication theory and research seeks to understand how individuals use verbal discourse and nonverbal actions, as well as written discourse, to achieve a variety of instrumental and communication goals such as informing, persuading, providing emotional support to others, etc. (Berger 2008: 2473). Interpersonal communication has been traditionally conceived of as a process that occurs between

[1] Social interaction is (as a generalisation) an "instrument" for achieving many objectives, a goal-orientated activity using different knowledge (Berger 2002: 205, 181).

people in direct communication. The rise in the field of social interaction has also included the use of such communication technologies as computers, mobile phones, and other new possibilities. (Marby 2008: 4677) The beginning of studies in interpersonal behaviour can be placed on the vast timeline of communication studies to the period before World War II, when the topic of social interaction and social relations were discussed in the United States, at the Harvard Business School in the 1920s and 1930s, and the impact of these relations on work efficiency inside a group was analysed.

The 1930s were a period of introduction of some important concepts used today, such as *feedback, conflict, interaction sequences*[2] or *social networks*[3] (Knapp et al. 2002). Interaction or communication with counteraction is the central concept in communication studies. Most researchers find that it would be correct to regard it as an interaction *process* – an on-going, constantly changing event. Understanding a communication's process largely means understanding what is happening in the course of a certain time period. Interaction can be a process in a philosophical meaning, but for research, a less radical approach is implemented: we can learn from a process by observing it over a course of time – fixating and analysing communication on several consecutive moments in time.

The interaction process has been studied on the basis of time characteristics. It is important to know, both from the viewpoint of a speaker and a listener, how often does certain behaviour occur in a certain period of time. Verbal and non-verbal behaviour have been researched most consistently. The non-verbal direction grew rapidly starting in the 1950ies. Conversation analysis researchers dealt solely with the field of speech. By today, both of these directions have undertaken a lot of efficient cooperation and the main attention now is on studies on social interaction, sensing of signals, connections of perception and cognition processes with behaviourism. Behaviour in a situation reveals the cognitive abilities of a person.

2.2. Cognition in communication research

As said above, a person, an individual, communicates via his or her cognitive abilities. Thus, cognition – an individual's ability to sense their surroundings and create new connections – is involved in communication.

One of the most important discussions on this topic is Varela's, Thompson's and Rosch's (1991: 172) argumentation on sensing the outside world as

[2] The idea that is followed is that any conversation is constructed as sequences, meaning tha the round of speech is constructed in such a manner that it would fit, for the most part, with directly preceding rounds. Each statement creates a context in the conversation for the next statement.

[3] The meaning of this concepts has somewhat changed nowadays due to the new technologies.

embodied cognition. By using the term *embodied,* Varela, Thompson and Rosch (1991:173) point out two important aspects:

1) cognition depends on the experiences that a person obtains through his or her body in mediation of different sensomotoric abilities, and
2) individual sensomotoric abilities are a part of a wider biological, psychological and cultural context.

At first, feelings and thoughts exist only "inside" one person, being embodied to him or her. In the course of communication, these feelings and thoughts come forward; their meanings vary and develop further. People obtain information through sensomotoric abilities, but, at the same time, have an ability to actively influence and control the outside world on their own through communicative activities.

In our research, cognition studies are interlinked with perceived time (further discussed in part 4). Human cognition connects behaviour with thinking. A thought of some aspect of our experience can potentially impact behaviour in each interaction (Knapp et al 2002:13). The units to be studied here are thoughts of self, the other, and the situation. At the same time, information for the thought referred to is gathered before and/or after the interaction to be studied, and rarely during the course of it. Consideration of perceived information on the communicators is a relatively new factor in communication studies. For example, the thoughts that impact behaviour may be relatively abstract ('Friends help in need) or, in the contrary, highly specific ('Marek always brings a spare bike). When thoughts affect behaviour, behaviour in turn reshapes the original idea, but also the consecutive thoughts.

2.3. People with special speech needs in communication

There can be several reasons for partial lack or loss of speech. There are different disabilities (including genetic mental disabilities) and damage to the cortex speech centre areas (for example, aphasias) that result in the inability to speak.[4]If a person has no speech or only has some sounds, it is very difficult to assess his or her actual linguistic abilities. Here is where communication researchers are aided by taping of situations with audio and video equipment, and analysing the material discursively.

Charles Goodwin has studied communication of a subject suffering from severe aphasia in several of his works (e.g. Goodwin 1995 and 2003). Aphasia brings about the loss or reduction of an ability to produce and/or understand speech. It is caused by damage to the areas of the brain that manage speech processes. The individual studied by Goodwin had a stroke, as a result of which the right side of his body remained paralysed and he almost completely lost his

[4] Research has been carried out on the communication of people with different special needs as well, for example, egocentric speech of a blind-deaf child (Junefelt 2007).

ability to speak. As a result of speech therapy, he relearned to pronounce just three words in English: 'yes','no', and 'and'. At the same time, the individual understood the speech of others, was able to gesticulate with his left arm, and use the intonations and tones of voice that carry meaning.

The material researched by Goodwin (1995, 2003) has enabled him to discover the skilful combined use of several modalities. The subject under consideration signals, using gestures, facial expressions, or head positions, whether he needs help from his companion in phrasing his thoughts or whether he should not be interrupted at the moment. Goodwin has used the method of conversational analysis in his research, often relying on the part of the method that deals with improvement mechanisms – the speakers continue to improve and specify what was said by themselves or their partner(s) in order to convey the meaning as accurately as possible. This approach also serves as an incentive for our material, but our research is complemented by an analysis of motional modalities (also manipulations). Systematic cooperation between participants in a dialogue builds the meaning of a communicative unit. Usually, an utterance and the accompanying gesture are produced by the same person, that is, the person who is speaking. However, Goodwin's examples indicate that *the gestures of the inarticulate person are given meaning through the speech of his or her conversation partners*, i.e. by the support of those who are trying to understand that person.

The mechanisms that enable persons to create meaning and understand the meaning in a context are far from being completely established in science. Discourse analysis has been used both in determining aphasies and on other clinical purposes (on that, see Müller, Guendouzi, Wilson 2008:3–31).

2.4. Research methodology

Methodology of our research consists of several phases. Firstly, an analysis corpus is gathered, the base material of the research, mainly obtained by filming with a video camera, but also by participant observation and taking notes in a diary on the outcomes. The corpus contains 9 hours and 42 minutes of video material, from which 4 hours and 16 minutes were audiotyped as at the end of 2010. Secondly, we have defined the initial criteria of selection of the segments to be analysed. Selection of the analysed units takes place in the context of specific relations (communication partner, the surroundings, manipulators, etc.). Thirdly, the selected units were analysed qualitatively. The initial results of that analysis will be presented in the analysis section of the research.

The aim of this research is to determine the possibilities of a Patau individual to make oneself understandable in case of limited abilities of self-expression, and the ways of doing so. A more specific aim is to understand how a subject that has the mosaic variant of Patau syndrome constructs the concept of TIME and by what means is TIME expressed in communication when colloquial abilities are extremely restricted. Comprehension of another important category – SPACE –

is covered more thoroughly in soon to be published research (Jokinen et al. (to be published)).

The individual being studied is currently (December 2010) 20 years old. Gathering of data started 3.5 years ago. Two video clips have been analysed in this research – during the filming of the first one, the subject was 17 and in the second 18 years old. The method of analysis is transcribing taped conversation using Jefferson (Sacks et al. 1974) transcription that has been adapted according to the need.

3. INTERPRETATION OF MEANING

The other important question is how to interpret a meaning by behavioural signals? In short, this can be viewed by several levels: word-for-word meaning of a text[5], b) reaction/response to the way the partner interpreted the previous response, c) determination of how a partner should respond to the message, d) whether further interaction (now or later) is desired, etc. (Knapp et al. 2002). How is meaning understood in interpersonal communication? Although the meanings of a meaning are not distinguished in human communication, three approaches to it can be seen in communication studies (Littlejohn 1989): structural, interactional, and cognitive. The main common aim of these different approaches is to "localise" the meaning in space and time and to try to specify how the meaning gradually emerges. Our research has the same aim. The expressions of a meaning in linguistics will be presented only in discussions over conceptualisation of TIME. We will only refer to the conceptual and semiotic meaning.

3.1. Conceptual meaning

The conceptual theories of meaning are mainly related to so-called sanity of a person. Different sub-theories of conceptual meaning share a common presumption that concepts have a certain structure. The meaning of a word is a structured idea, a "concept"[6] in the mind of the person who uses that expression. Growing up in a certain cultural space, we acquire immense amount of prepackaged concepts in the form of word-meanings (Goddard 1998:7−8). In cognitive science, concepts are generally structured mental representations with a subpropositional[7] content (Margolis, Laurence 2006:817). The concept of a CHAIR is a mental representation with the meaning of *chair*. it contains thoughts of a chair and is connected with categorisation processes that function as determinants (is something a chair). Conceptual meaning of a word is a

[5] Text in its wide, discursive meaning.

[6] *Conception* – a word with its meaning.

[7] Proposition is the part of the meaning that includes the "objective" facts provided in a sentence, and thus proof can be demanded; a statement, thesis; in logic: proposition.

dictionary definition that refers to the concept. Conceptual meaning has been also alternatively described as a cognitive ('perceptual', 'knowledge-based') or denotive ('designative', 'identifying') meaning (also see Lyons 1977, 1981). Since our division of movements is based on Peirce's semiotic categorisation, we will now address the semiotic approach to meaning.

3.2. Semiotic meaning

Semiotic approach to meaning is also called translational (Goddard 1998:10). Since we communicate in meanings even when we are trying to talk about them, the semiotic view states that we can never escape language (Goddard 1998: 10). It does not mean that we cannot describe and analyse specific meanings. True – we cannot move outside the system of expression of meanings or reduce the meanings into something else (individual ideas, patters of brain waves, Plato's mystical forms, patterns of use, etc.). If we want to describe the meaning of an expression in a language we have no choice but to do it in the terms of the meanings of other linguistic expressions. And why not? After all, an unknown word can always be explained by using known words. The approach is "translational" because a meaning of a linguistic expression is seen as a translation in a way, i.e. we give a meaning to an expression by translating it into another expression. It is called "semiotic" because semiotics takes the world of "signs" as a non-reducible one. (Goddard 1998) C. S. Peirce (1893−1914), an American logician and philosopher has emphasised the "non-reducibility of a sign". One of the main positions of Peirce (Peirce 1931–1958, 2:230) claims that it is impossible to reduce a sign to elements that are not signs themselves.

Peirce was interested in how a sign is connected to the object it represents. A number of classifications were born from it, but the most fundamental of these until today has been his so-called second trichotomy. According to that, all signs divide into three types: icons, indexes, and symbols. (Lotman 2002: 519) An iconic sign is connected to the object by its similarity (e.g. visual signs that indicate male and female bathrooms are signs; a photo of an uncle is an icon of the uncle, etc.). An indexical sign is connected to the object it signifies by a spatial relationship, through reality according to Peirce (e.g. smoke is the index of fire; it refers to fire and indicates its location). A symbolic sign is connected to its object only as a basis of agreement, by a rule or definition according to Peirce. The most conventional symbols are the words of a natural language. We will not enter Peirce's heavy discussion on the nature of a sign in this research; we only point out that the explanation of the meaning of the abovementioned linguistic expression solely through another expression is based on the idea that we can denote anything with a word as an initial semiotic point, but the word itself cannot be denoted by anything else but a word.

3.3. Iconicity and gestures in communication

By using the concepts of icon, index, and symbol, we are following Peirce's classification of signs in the most general manner. Iconic and indexical dimensions are primarily non-verbal, but symbolical dimensions are primarily verbal (Hirsch 1995:14). At the same time, the primary means of communication for the deaf, for instance, is a sign language in which they use gestures for indicating the meaning. According to Peirce, the three fundamental semiotic dimensions – iconic, indexical, and symbolic – are a part of knowledge or cognition (Hirsch 1995).

Iconicity is considered to be the basis of human communication modality (see, e.g. Koch 2002, Itkonen 2005). The communication scene itself is more colourful and is not limited to only iconicity. For instance, Itkonen says that a person can use four fundamental physical dimensions: vertical, horizontal, diagonal, and temporal. Speaking takes place in one of these basic dimensions – in time (Itkonen 2005:114–115). If speech modality is almost completely lacking, alternative modalities are used (e.g. gestures).

If a gesture is connected with the iconic dimension and meaning of language in a different way (on that also see Kendon 1995, 2004, McNeill 1992, Streeck, Knapp 1992, etc.), can it also occur separately from the ability for oral speech, being related to the cognitive abilities of a person? Our analysis provides a possibility to take that into consideration (see situations 1 and 2) in which the meaning of TIME is expressed by cooperation and hand gestures between the communicators.

An iconic gesture depicts the outlines of a (described) activity, event, or object with its form. The gestures used in communication are undoubtedly communicative in their function and symbolic in their form. We call them *communicative gestures* (also see Bavelas et al. 1992, Bavelas 1994, Bavelas et al. 1995, Goodwin 1995 et al.) with a semiotic (communicative) dimensional basis (see Peirce).

Since the focus in our research is on finding out the communication possibilities of an inarticulate person by explaining her concept of TIME, we will now continue with the topic of addressing time.

4. APPROACHES TO TIME

Studies of time[8] are carried out in the field of chronemics – a science that researches the concepts and processes related to temporality of humans, and temporal connections since human communication takes place in temporal frames (Bruneau 2009:96). Chronemics is the newest field in non-verbal communication studies and it seems that this new focus brings together all

[8] Stefan Klein's popular approach "The Secret Pulse of Time" („Aeg. Aine, millest koosneb elu") (2009) is also published in Estonian.

modalities of non-verbal communication for the first time. All non-spoken communicative messages include time factors, e.g. something that takes place *before*, and that which comes *after*. We are temporal people (*Homo temporalis*); we possess a comprehensive brain identity, a mix of different time experiences obtained on the level of an individual. Time researchers divide this field into two: there are objective and subjective times. Subjective or personal time, in turn, divides into four. Here, we will stop only on the parts that are the most relevant to the research (see Bruneau 2009 for more details). Objective time addresses human behaviour in relation to time measuring devices and calendars. These means are connected with the way we organise communication events and time our everyday activities. Most of us observe their habitual daily proceedings routinely and regularly. We have created the "pedometers" of time to manage our everyday life. Time measuring devices help people to regulate their personal time, and coordinate it with a sociocultural approach to time, its tempo and rhythm. Objective use of time is in balance with subjective or personal use of time.

Subjective time connected to human individuality has several facets. From the viewpoint of our research, the perceived time is important since it forms an integral part of interpersonal communication and social interaction.

1) Genetic and biologic time – research has shown that each gene contains a structure for measuring time, the control clocks of which ensure stability and the transient clocks refer to changes (Bruneau 2009: 98). Every one of us has a unique biological time that is inherited from our ancestors. Genetic time concerns the counteraction between the conditions and processes of human genes. There are always biological variations, but they are often subconscious, influencing us as transmitters and receivers in communication processes. Biological time includes biological rhythms, impulses, and organisation of tensions stemming from our biological needs. If the biological processes of two persons are very different, it has an impact on their attentiveness and perceptions in communication.
2) Perceived time concerns sending non-verbal hints or signals. Signalised communication refers to how our brain receives communication from others. Such communication is often called semiotic. The brain receives signals that are caused by different natural, physical, technical, and social environments. We process light waves (seeing), sound waves (hearing), pressure waves (touching), molecular (smelling), biochemical waves (tasting) and other rhythmic stimulus inputs. The waves are converted and channelled to our brains sensorically.

   The meanings are not transferred directly: the things transferred are only non-verbal messages or signals, perceived time, temporal divisions, and tempos. When the non-verbal or signalised side of messages has been interpreted and made representative, we are talking about meanings and psychological time.

3) Psychological time – the human brain is not based on only biological and chemical codes or non-verbal signals, but it also concerns memories (we call it the past), attention, and perception (the present), and expectations (the future) and a time system. The human brain is a temporal organ that reaches through our bodies and is projected to many environments by our senses. Next, we will address the methods used by a subject with a chromosome disorder to communicate or create the concept of TIME.

5. PATAU SYNDROME

How does interaction take place when an individual's ability to speak has been severely damaged? In order to determine that we have studied communication of an individual who has the mosaic version of Patau syndrome. Patau syndrome or trisomy 13 is a chromosome anomaly.[9] A chromosome anomaly or disease is a pathology that is caused by a change in the number or structure of chromosomes. A person has 23 pairs of chromosomes; it means that normally, everyone has a total of 46 chromosomes. In case of trisomies as numeric anomalies of autosomes, there is a triplet in place of some of the pairs. The most common (approximately 1 case per 800 new-borns) is Down's syndrome, in the case of which an additional copy of the 21st chromosome has been formed. Edwards's syndrome (+18)[10] occurs with a frequency of 1:6000, and Patau (+13)[11] is the rarest with "just" 1:12 000 new-borns. In the case of a mosaic version of a chromosome anomaly, like in the case we are studying, some of the cells are healthy, some affected by the disease, the severity of the condition may be very variable and most of the typical symptoms may be missing completely. Since diagnosing the mosaic version of the Patau syndrome is complicated, it has been studied sparingly and rarely described in medical literature. In the case of the subject we are studying, a sub-speech occurs as a disturbance to expressive speech – although the person understands the speech addressed to her, the possibilities of expressing oneself by oral speech are limited. An ability to create and use non-verbal signs may be preserved in such individuals. A large part of the subject's communication takes place via gestures and simplified signs of Estonian sign language. A large part is played by facial expressions and prosody accompanying the voice, especially intonation. The voice comes forward since the oral speech of the subject contains some simplified words. The simplifications indicate that the subject avoids consonants that are formed by straining the vocal organs, the most quotable have been the labials *m* and *b*, also *v*. All vocals are represented and used.

[9] The mosaic version of Patau syndrome has been marked with a code Q 91.5 in the currently valid 1oth version of the International Classification of Diseases (ICD-10). See http://www2.sm.ee/rhk/index.asp (03.03.2011).

[10] Edwards syndrome (+18) – additional copy has formed of the 18th chromosome.

[11] Patau (+13) – additional copy has formed of the 13th chromosome.

5.1. Situation 1: presentation of material

The dialogue took place in June 2007 (the name of the month is especially important here!) when N was 17 years old. The communication was participated in by the subject (N), her brother (V), and their mother (E). (Mother is videotaping, which is why she is not visible on the recorded material, but her voice can be heard.) The video clip is 33 seconds long; its audiotyping in full length contains 19 utterances.

(1)
1 E: mis kuupäev täna on
Translation: *what date is it today*
2 N: appil ?
((Uses Estonian sign for APRIL and smiles.))
Translation: *April*
3 V: $april$
4 E: j(h)aa aga tegelikult mitmes juuni on
Translation: *yes but actually what day in June is it*
5 N: ((Smiles, understanding the joke, and combs her hair over her head with fingers.))
6 N: ((Turns her head slightly for a moment, indicating that she is thinking.))
7 E: kuusteist jah
Translation*: sixteenth yes*
8 E: kuusteist juuni
Translation: *sixteenth of June*
9 N: ((nods))
10 E: ei ole aprill N
Translation: *it is not April N*
11 N: ((Looks at her, thinks, smiles.))
12 E: ütle aprill uuesti
Translation: *say April again*
13 N: appil ?
((Uses Estonian sign for APRIL and smiles.))
Translation: *April*
14 E: aga sa ütlesid mai ka
Translation: *but you said May too*
15 E: kuidas sa mai ütled
Translation: *how do you say May*
16 N: ai ?
17 E: mai ?
Translation: *May*
18 N: ai
((Uses Estonian sign for APRIL.))
19 E: siis sa ei pea pikka nina näitama kui mai on

Translation: *you don't have to show APRIL when it's May*
((N starts to walk towards the camera.))

N makes a similar motion in the stages 2, 13 and 18 of the analysed section[12] (see drawing 1):

APRIL

Drawing 1. 'April' in Estonian sign language, also see http://lihtsustatudviiped.edu.ee

5.2. Situation 1: analysis

After starting filming, mother asks for the date. The answer by N indicates that she has understood the question because she gesticulates the *name of the month* as an answer. N, who has studied the simple signs of Estonian sign language, has made them even more simple and convenient. As one of the modalities, she uses a sign that is accompanied by the word 'April' pronounced inaccurately [apill]. The same word is used by N *to generalise all twelve calendar months*. Even more: the same word indicates *calendar* as an object, as well as *a wish to look at the dates from the calendar with someone* to determine the times when certain activities/events take place. 'April' may mean the question *when* (if the intonation is rising), but also an answer to the question *what date is it,* etc.

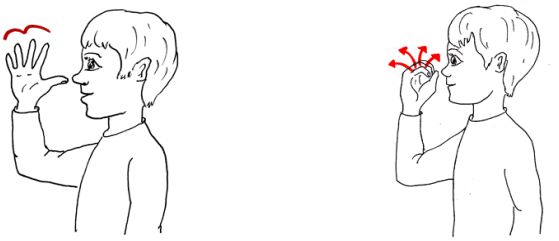
In section 4, mother wants to know the exact date. Since N does not know how to express numbers in words (she can point out a date from a calendar, if it happens to be around), she uses facial expressions up until section 13 (thinking? doubting?) and finally lets the asker (mother) answer to the question herself.

In section 15, mother asks N to pronounce the word *May*, which she does in section 16. In section 18, she repeats what was said together with a sign, but the gesture used is the same old one that marks 'April'. This choice may have two reasons:

1) since the signs for April and May are similar in Estonian sign language (see Drawing 2), they may have been converged into one in N's ability of conceptual or figurative categorisation. The reason for N to make hand signs that are not sharp and lack clear boundaries may be the fact that her ability to

[12] This sign acts as a generalisation also in sign language itself, first indicating the Fool's Day, April 1st, and then the entire month of April.

perform detailed hand gestures has not been localised in the brain with sufficient accuracy;



APRIL MAY

Drawing 2. 'April' and 'May' in Estonian sign language, also see http://lihtsustatudviiped.edu.ee

2) since the name of the month 'April' is generalised by N in communication to all other months in the meaning of 'April' as 'calendar month', she may also generalise the respective sign to May.

5.3. Situation 2: presentation of material

The dialogue took place on 15 November 2008, when N was 18 years old. It is a dialogue in which the mother (E) and the subject to be studied (N) are communicating. Since mother had been away in the meantime, the subject had gathered a lot of news and her wish to communicate them was noticeable. N changes the topic often, trying to keep up with several topics at the same time.
The communication took place at the home of N and her mother. The filming party – mother – is behind the scenes here as well, which is why only the colloquial part is recorded from her. The video clip is 1 minute and 6 seconds long, containing 28 utterances.

Description of the situation: N has just turned on the TV and watched it for a while, keeping the hands in the pockets of her trousers. Then *she remembers* a birthday of a relative[13], she turns to her mother, looks at her, and asks a question.

(2)
1 N: emme [eabu] [emme] eabu emme emme
[name sign] [name sign]
Translation: *mommy viva! mommy viva! mommy mommy.*
Explanation: *Liisa is going to have a birthday.*
((When initiating communication, she looks at her mother, takes her right hand from her pocket during the second utterance, raises it, and

[13] An alias has been used instead of the real name of the relative in the transcription.

gesticulates with it twice at the height of her face. Uses the sign name *Liisa* created in a sign language class.))
2 E: kas sa räägid liisast või
Translation: *are you talking about Liisa or*
3 N: ea emme eabu emme eabu
Translation: *yes mommy viva! mommy viva!*
((Both hands are back in her pocket.))
4 E: liisa sünnipäev on viieteistkümnendal detsembril
Translation: *Liisa's birthday is on December fifteenth*
5 N: aa ee [aupo] aa
[sign THERE]
Translation: aa ee car aa
Explanation: we talked about it in car when we went there
((When making the pointing gesture THERE, she removes her right hand from her pocket again and points to the distance (there is a glass door on the right with a long view) and brings it back to herself, wipes the corner of her eye.))
/--/
13 N: emme eabu
((Turns back to her conversation partner at the same time.))
Translation: *mommy viva!*
14 N: eabu ((louder)) EABU ((even louder))
Translation: *viva! VIVA!*
15 E: kas te liisaga rääkisite autos liisa sünnipäevast
Translation: *did you talk about Liisa's birthday in a car with Liisa*
16 N: [ee]
[((nods))]
Translation*: yes*
17 N: emme eabu öhö?
((sign FLOWER))
Explanation: will we take a flower when going to the birthday
((After saying the first word, uses the sign FLOWER in Estonian sign language – raises her hand and shows an opening flower. At the end of the utterance N uses her universal interrogative word *öhö?,* the meaning of which depends on the context of what is said, and the gestures, signs, and other movements it is used with.))
18 E: lille peab viima jah
Translation: *a flower has to be taken yes*
19 N: [õõ]
[((a very slight nod))]
Translation: *yes*
20 = N: ühaäe?
Translation: *Sunday*
Explanation/interpretation: *when is this birthday*

21 E: see on viieteistkümnendal detsembril
Translation: *it is on December fifteenth*
22 N: õõ oo aa
Explanation/interpretation*: 'oo' may mean 'wait'(in Estonian 'oota', but it is not very clear in section 22.*
((Starts to move towards a cupboard backwards. Reaches out a right hand behind her to open a drawer.))
23 (0.2)
23 N: emme oo emme
Translation: *mommy wait mommy*
Explanation/interpretation: *it is more clear in section 23 that 'oo' means 'wait'.*
((Pulls open the drawer.))
24 E: ei see on uus kalender sa pead seina pealt võtma selle kalendri
Translation: *no, that is a new calendar, you have to take the calendar from the wall*
25 E: seina pealt saame vaadata kalendrist et mis päev see on
Translation: *from the wall on the calendar we can see what day it is*
26 N: ühaäe ühaäe
Translation: *Sunday Sunday*
((Closes the drawer and puts the remote control of the TV on the cupboard.))
27 E: seina peal on selle aasta kalender
Translation: *on the wall is this year's calendar*
28 N: ((Notices a magazine on the cupboard and loses interest in the topic.))

5.4. Situation 2: analysis

In the beginning of the video clip, N asks about a birthday, showing the sign for the name of the person with a hand gesture and using the utterance 'viva!' (in her pronunciation *eabu*), that indicates a birthday, or rather a *birthday party*. By combining a gesture and a simplified word, she makes up a phrase, introducing a new conversational topic. Here, it is not yet clear that she would also like to express something regarding the time of the birthday taking place. The following sections (section 5) reveal that she had recently talked with the birthday girl on that topic (she drove N in her car). In section 17, N expresses a wish to bring flowers. We assume that the subject has certain *knowledge of communication events,* a certain type of situational frame. In this case, she knows that a birthday is an event for which flowers are given. Immediately after mentioning the flowers, a question follows in section 20 on *when will the party be held*.

To ask the question, she uses an utterance "ühaäe" which is a simplified version of the word 'pühapäev' (English 'Sunday'). After that, N extends a

certain temporal category – the name of a specific weekday – *to all other weekdays*. Rising intonation makes this utterance a question. So, *When?* is expressed only by intonation (section 20). Mother responds to her with the date of the party. N goes to a cupboard that has a calendar in its drawer. Mother says that this is the next year's calendar and she cannot find that specific date there. The subject closes the drawer. She notices a magazine on the cupboard and gets distracted.

There are several reasons for developing the topic of a birthday. N wants to know when will the birthday be held. She wants to go there. And she wants to communicate on that matter. When analysing the situations provided in the article in detail, we saw that the subject's gestures, signs, utterances, and the accompanying prosodic means are polyfunctional – she expresses different aspects by one means of language. For instance, by using the sign FLOWER (section 17), N indicates a *birthday,* but it also means a *specific flower* for her that cannot be forgotten when attending the party. The analysis shows that the phonetic part together with the accompanying prosodic means tries to bring out an abstract concept. At this point, we refer to the definitions of social interaction and interpersonal communication in the theoretical part of the article, having an important role in studying communication process. In communication with counteraction (interaction) it is clearly visible that all communicators provide their contribution. When viewing the other situation it is clear that the conversation would not have been successful without common (background) knowledge and cooperation.

The search for a calendar, starting from line 22 of the audiotyping, illustrates an expression of the concept of TIME by a *specific object* which is a *calendar*. Time is an abstract perceptual category; but as a calendar day, it is visible and even touchable. Although it was already made clear in sections 4-21 that the party will be held, and when, looking at a calendar would help to record new information.

6. DISCUSSION AND CONCLUSION

The article addressed construction and expression of the concept of TIME by different communication modalities (utterances, manipulations), but mainly by communicative gesture. Analysis of the first communication episode showed how the subject that has a mosaic version of Patau syndrome expresses the calendar month 'June' in interaction by using a gesture. For meaning and semantic expression of 'June', she uses a slightly rounded sign of Estonian sign language on 'April' or 'May' – both interpretations are possible. We conclude that this is a merged meaning since the gesture provides such possibility of interpretation. The subject has made an obvious generalisation or maybe also a conclusion that a calendar month – concretisation of TIME – means a sign similar to 'April'.

Analysis of the material reveals the subject's ability to draw conclusions as a cognitive ability. The subject's concept of (calendar) month is expressed by an utterance indicating different months, and an iconic gesture (cocks a snook). Cognitive abilities of the subject (drawing conclusions, forming a concept) have been presented in interaction through minimal verbal and mainly non-verbal behaviour.

Analysis of the second communication episode revealed that by manipulating an object, making utterances and communicative gestures, a subject with a mosaic version of Patau syndrome can make oneself understandable and "converse" on the topic "When is X's birthday?" The subject knows how to show dates on a calendar (manipulation of an object as a part of communication behaviour).

Analysis of the submitted material showed that the subject uses different means to express TIME – vocalised, prosodic, and motional, and she uses them in combination with one another. At the same time, each of her means of expression may have several meanings from which the ones related to TIME are gathered under a concept of some subcategory (calendar, month(s)).

The analysis revealed how N uses her mother as a so-called translator to express the things she cannot phrase herself. Taking into consideration the brief medical description of the syndrome, our analysis serves as a contribution to elaborate the cognitive abilities of people with a mosaic version of Patau syndrome: N is able to *understand* concepts, and to *express* concepts by communicative gestures and manipulations. What is N's precise mechanism for *forming* concepts and creating additional connections in meanings cannot be said as a result of this research.

People use the principles stemming from their intuitive world vision when constructing the concept of TIME. How much of it is provided by a specific language is too soon to tell conclusively, but communicative abilities are a part of human cognition in communication – creating and understanding a meaning. Lack of speech modality does not prevent communication.

The word *time* stands for a human concept that is characterised by accordance with the events and connectedness with an objective and subjective approach to time. Together, they structure our experiences and provide an opportunity for interpersonal communication.

ABBREVIATIONS AND MARKS OF TRANSCRIPTION

N	subject of the research
E	mother
V	brother
(.)	micro pause: up to 0.2 sec.
(…)	length of a pause in seconds
.	falling intonation
?	rising intonation

(( ))	comment of the transcriber, description of activity
=	pronouncing two separate units together
[	beginning of an overlap or a simultaneous movement
]	end of an overlap or a simultaneous movement
AHA	(capital letters) using a louder voice
w(h)ord	(*h* in brackets inside a word) the word has been said with laughter
$.....$	a word or a longer section uttered with a laughing voice, but not real laughter
/--/	lines left out of the transcription

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ANNEX 2

Ethical aspects of the doctoral thesis

Justification of the need for human research. Current thesis presents the first Estonian study of multimodal communication, and explores coping ability of an individual with mental retardation and dyspraxia in communicative situations. In addition, communication means of people with various trisomies have not been studied here before, and throughout the world there are very limited data on such communication. At the same time, the field is relevant and loaded with enormous practical value, because individuals with such disability – impairment of expressive speech – yet have the need and the right to participate in interpersonal communication, to receive information and to make themselves understandable. Raising the awareness of Estonian society on this topic is an example of one immediate necessity. Sole consciousness of the approach based on multimodal microanalysis might enhance comprehension of people with such disabilities in their everyday life.

The author of current thesis considers it important to develop a suitable communication methodology for individuals with expressive speech impairment and for their communication partners; this study constitutes the first step in the wishful direction. The study presents the lexicon of the subject, which is systematized by communication modalities. The objective of compiling the lexicon was to improve life quality of the subject – existence of the lexicon enables the individual's communication partners to comprehend her and to communicate with her, ensuring thus a smoother communication. I also propose the idea of creating a modality-based lexicon (corpus), which would consist of sub-lexicons (one subsection for each individual in need of such corpus), but would also be usable in its whole entirety. Usability as a whole ensures that people close to the speech impaired individuals as well as their other communication partners receive from the corpus help, support and ideas for expanding their discourse depository. Mute or speech impaired people depend in their communication to a very large extent on the interlocutors. In ideal cases the latter translate into verbal language that part of information which the speech impaired person expresses nonverbally. In such communication searching for the necessary word does not concern only one communication partner, but requires systematic collaboration between the dialogue participants. Meanings are established via the described process. In normal communication the utterance and the accompanying gesture are produced by one and the same person – the person, who is currently speaking. When one of the participants is speech impaired, his/her movements are supplied with meaning through the speech of the dialogue partners. Roles are exchanged in such conversation – the listener contributes to the communication the part which is usually provided by the speaker. The intended application of a modality-based lexicon or corpus would include the above mentioned circumstances.

Human research was also necessary for exploring and describing cognitive abilities of people with Patau syndrome. Communicative capacity is part of human cognition in communication – in creating the meaning and comprehending it.

Sensitive personal data. Video recording and participant observation were used for achieving the goals of the study, because these are the most relevant methods of material collection in discourse studies. The author of the doctoral thesis ensures anonymity of the subject and will not reveal or publish her name. As the subject was not able to give her consent for the research because of her diagnosis – she is incapable of weighing the pros and cons – the recorded materials have not been added to the doctoral thesis in order to avoid privacy violation. Source materials of the dissertation will be kept in a way which restricts the access of third parties.

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