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QUANTITATIVE AND QUALITATIVE ASPECTS OF SWITCHING BETWEEN ESTONIAN SIGN LANGUAGE AND SPOKEN ESTONIAN

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Abstract. The central research question of the present paper is 'What variables influence switching (code-switching and code-blending) between Estonian Sign Language and spoken Estonian among bimodal bilinguals in a school environment?' The data from guided discussions involving deaf and hearing students indicated that bimodal bilinguals predominantly code-blend, i.e. simultaneously produce speech and signs. The main function of switching among the students was to emphasise a constituent in a clause, but they also switched to express themselves in an original way. In some utterances, it proved difficult to apply a single function to a switch, thus a sequential turn-by-turn analysis was employed. A deaf student's level of switching was influenced most by the hearing status of the interlocutor, and the amount of switching by the interlocutor.*

Keywords: sociolinguistics, bimodal bilingualism, code-switching, code-blending, Estonian Sign Language

1. Introduction

The bulk of the research on language contact in Estonia considers two spoken/written languages, e.g. Estonian-Russian (Zabrodskaja 2005, Verschik 2008) contacts. The main aim of this paper is to investigate switching, i.e. code-switching and code-blending, between Estonian and Estonian Sign Language in two deaf schools in Estonia: Tallinn Helen's School and the Tartu Hiie School. The majority of studies on bimodal bilingualism have been conducted on hearing bilinguals (Bishop, Hicks 2005, Emmorey et al. 2008). This study differs from them in the sense that both hearing and deaf bimodal bilinguals participate in the guided discussions. The language contact between Estonian and Estonian Sign Language is unique in that

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it is *cross-modal*, or *intermodal* – it involves one language in the visual-spatial and the other in the auditory-vocal modality. Also, elements can be combined both sequentially and simultaneously.

The central research question of the study is "What variables influence code-switching and code-blending between Estonian and Estonian Sign Language (EVK) in a school environment?" Researchers (e.g. Van den Bogaerde 2000, Kuntze 2000) have discussed the effect of different variables on the amount of code-switching. This study focused on the relationship between hearing status, the level of hearing loss, parental hearing status, hearing status of the interlocutor, Estonian language proficiency, interlocutor's switching and the number of switches.

It is expected that deaf and hearing students predominantly code-blend, i.e. they do not stop signing and start speaking or vice versa, but produce the signs at the time of speaking, and that the Matrix Language of the majority of code-blends is Estonian (Emmorey et al. 2008). Also, it is expected that the word classes used most often in code-blends and code-switches are nouns (Muysken 2004: 153, Van den Bogaerde, Baker 2008).

The functions of switching among the deaf and hearing bimodal bilinguals were determined (McClure 1981, Zabrodskaja 2005). In the cases where it is problematic to determine a single function of a switch, the conversations were analysed turn by turn according to Auer's (1995) conversational model. Speech act analysis of the excerpts was also carried out (Austin 1962, Searle 1976).

2. Estonian Sign Language

A common feature shared by the members of the Estonian deaf community is Estonian Sign Language, or *eesti viipekeel* (EVK). EVK[1] is a minority language with only 1500–2000 signers. In the database of the languages of the world, it is represented with the SIL code ESO (Sutrop 2005). Users of EVK are concentrated around bigger towns in Estonia, such as Pärnu, Tartu, and Tallinn. EVK has been influenced by the neighbouring sign languages, such as Russian and Finnish Sign Language. In Taniroo's (2007) study, out of 200 signs, 123 were identical in Estonian and Russian Sign Language. EVK was officially recognised on 1 March 2007, when several amendments were made in the Language Act (State Gazette 2007).

It has been found that sign order is relatively flexible in EVK, and usually the topic is signed first, followed by a comment (Laiapea 1992: 2101). Similarly to American and British Sign Language, the interrogative signs are signed at the end of the sentence in EVK. There are three main types of questions in EVK: yes/no questions, alternative questions and *wh*-questions. The signs in EVK are formed in signing space, which can be described as a three-dimensional area extending from the hips to the head, and from one extended elbow to the other. Signing space plays a vital role in expressing time relations. Trükmann (2006) found that the same time relations can be expressed in Estonian and EVK and the ways of expressing time in EVK are similar to those used in other sign languages. However, only one out of the five timelines in EVK, the vertical timeline, has the same location and function as in other sign languages. Signing space is also important in using classifiers.

[1] A thorough overview of EVK is given by Paabo (2010).

Classifiers, or classifier constructions, are morphemes used for indicating spatial relations, movement, and the shape and size of the objects (Sandler and Lillo-Martin 2006). Laiapea (2007: 51–53) divides classifiers in EVK as follows: state predicates, process predicates, and action predicates. He also offers four types of classifiers for indicating a human. Some classifiers have lexicalised in EVK and started their life as new signs (Laiapea 2007: 53).

In EVK, there are three different ways to modify nouns (Miljan 2001: 176): the combination of a modifier and a noun; bracketing, in which case the modifier precedes and follows the head noun or the base sign; pre-nominal and post-nominal modifiers. As in many other sign languages, it is possible to express the singular, dual, trial, quadral, and plural in EVK (Miljan 2003: 219).

There are nine basic colour terms in EVK: MUST 'black', VALGE 1[2] 'white 1', PUNANE 1[3] 'red 1', ROHELINE 'green', KOLLANE 'yellow', SININE 'blue', PRUUN 'brown', HALL 'grey' and ROOSA/LILLA 'pink/purple' (Hollman 2010).

3. Code-switching in bimodal bilingualism

Researchers studying deaf people have discussed the effect of different variables on code-switching, for example, they have found that deaf people code-switch depending on their own hearing status[4], the hearing status of the parents, the hearing ability of the interlocutor. Language proficiency may also influence code-switching: the higher the deaf person's level of English, the greater the chances of switching (Kuntze 2000: 292). This study focuses on the relationship between hearing status, level of hearing loss, parental hearing status, hearing status of the interlocutor, Estonian language proficiency, interlocutor's switching and the amount of switching.

Emmorey et al. (2008) researched several aspects of Coda[5] communication. The result of the study showed that Codas prefer code-blending to code-switching when conversing with other bimodal bilinguals, i.e. they rarely stop talking and switch to ASL (ibid.). English was mostly chosen as the Matrix Language for conversations involving ASL-English bimodal bilinguals (Emmorey et al. 2008: 51). The results showed that for bimodal bilinguals, the most often used classes in code-blends and code-switches were verbs, as opposed to unimodal bilinguals, who show more code-blending in nouns (Muysken 2004: 153). Note that Van den Bogaerde and Baker (2008) found that in bimodal bilingualism, nouns dominated over verbs in the code-blends. Besides word classes, other factors play a role in switching, such as semantics and frequency of use (Backus, Verschik 2012), which have not been investigated in this paper.

The written language of Codas has been studied by Bishop and Hicks (2005) who found that Coda-talk is characterised by systematic code-blending, which differs from SimCom[6] and other forms of bimodal code-blending. Some features of Coda-talk are in line with the characteristics of ASL, such as leaving out the

[2] There may be several signs to refer to a particular colour. VALGE 1 is formed by stroking the left hand with the right hand.

[3] This sign is formed by making a round movement with the A handshape on the cheek.

[4] Grosjean (1996: 31–32) suggests that when communicating with a hearing monolingual person, deaf bilinguals deactivate the sign language and function in the monolingual mode. In interaction with other deaf bilinguals, they can mix sign and speech. However, Van den Bogaerde (2000) found that there were almost no instances of code-mixing in deaf children's utterances.

[5] The term *Coda* is used to refer to a hearing child of deaf adults.

[6] SimCom is short for *simultaneous communication*, which is used interchangeably with the term *code-blending* in the present paper.

subjects, copula, determiners, objects, auxiliaries or modals, prepositions and determiners, while others are only characteristic of Coda-talk: verb manipulation, unique glossing and lexicon.

4. Code-switching in unimodal bilingualism

In unimodal bilingualism, the grammatical (Myers-Scotton 1997) and sociolinguistic views (Auer 1984, 1995, Li Wei 2002) have been the most influential. Hopefully, combining these two approaches in the present paper gives a more objective overview of the contact between EVK and Estonian than only one would. Myers-Scotton (1997) provides a Matrix Language Frame (MLF) model for code-switching, which is based on the assumption that one language dominates in switching (Matrix Language, or ML) over the non-dominant language (Embedded Language, or EL) by supplying more words and morphemes to the sentence. According to the MLF model, there are three types of constituents: ML islands composed of ML grammatical and lexical elements, EL islands consisting of EL grammatical and lexical elements, and mixed constituents that have elements from both languages. The model claims that the ML determines the surface morpheme order in the mixed constituents (the Morpheme Order Principle), and all relevant system morphemes in these constituents come only from the ML (the System Morpheme Principle).

The proponents of sociolinguistic or pragmatic approaches to code-switching have attempted to determine the reasons for switching and describe how code-switching emerges in conversation. Zabrodskaja (2005) mentioned the following reasons for switches: reported speech; language play; expressive function; side-comment; reiteration, or quasi-translation; the relationship between the participants; and insufficient language skills. Other reasons for code-switching include addressee specification, emphasising a constituent in a sentence, attracting and retaining attention (e.g. McClure 1981), participant make-up, activity type, topic shift, and topic-comment structure (Auer 1995: 120). Each instance of code-switching is unique, and may have multiple functions, a general taxonomy of the functions cannot possibly account for all cases of switching. The entire conversation has to be taken into account in order to be able to determine the reasons for a particular switch.

One of the most influential pragmatic theories on code-switching is the Conversation Analysis (CA) approach to bilingual communication. CA focuses on the individual's actions to achieve interactive goals, which distance the approach from those dominant in macro-sociolinguistic studies. More specifically, CA looks at the way meaning emerges, or is brought about in interaction through code-switching (Li Wei 2002: 167). The advantage of the CA approach is that the language choice of one turn influences the choice for the next turn – the process is sequential; and this limits the researcher's influence, as the analysis focuses on the participants' reflections of their utterances, as seen in their language choices (Auer 1984: 5–6). Thus, one sentence is not enough for analysing code-switching. The previous and the following turns have to be taken into account, as well as the context in which the interaction takes place. Auer (1995) distinguishes four patterns of code choice in conversation (Table 1).

Table 1. The patterns of code-switching (Auer 1995: 125–126)

Name	Pattern*
Ia	A1 A2 A1 A2//B1 B2 B1 B2
Ib	A1 A2 A1 A2 A1//B1 B2 B1 B2
IIa	A1 B2 A1 B2 A1 B2 A1 B2
IIb	A1 B2 A1 B2 A1//A2 A1 A2 A1
IIIa	AB1 AB2 AB1 AB2
IIIb	AB1//A2 A1 A2
IV	A1[B1]A1

* The letters refer to the languages A and B; the numbers indicate the speakers 1 and 2

Auer (1995) refers to type I switches as discourse-related switches, as they are connected with the organisation of the conversation; type II switching is seen as preference-related, as it relies on the personal preferences of the interlocutor or is done for political reasons; type III switching may be both discourse and participant-related, whereas type IV is termed *transfer*.

5. Data

The material was videotaped in two deaf schools in Estonia, one of them an oral school (Tartu Hiie School) and the other bilingual (Tallinn Helen's School). The Tartu Hiie School, which was established in 1941 employs mainly the oral method in educating the deaf students – speaking, lipreading, fingerspelling and writing are used. The Estonian language is taught as the mother tongue and English as a foreign language. Tallinn Helen's School provides bilingual education for the deaf students, which means that EVK is taught as the first language and Estonian as the second language. Both hearing and deaf teachers work at the school, instructing mainly in EVK and (written) Estonian[7]. Sign language interpreters help the teachers who do not have the necessary knowledge of EVK. English is taught as a foreign language. Hearing children interested in social work and EVK were admitted to the upper secondary school from 2003 to 2008[8].

The guided discussions lasted approximately 290 minutes and consisted of 4104 utterances[9]. A total of 47 students, of whom 12 were hearing and 35 were deaf, took part in the guided discussion. In Tallinn Helen's School, 12 deaf students aged 14–20 and 12 hearing students aged 16–19 participated in the guided discussion. As the hearing students in the Tartu Hiie School do not sign, two groups of deaf students were formed by an expert from the school for the purposes of this study: deaf persons with profound hearing loss and deaf persons with slight hearing loss. Thirteen deaf students with profound hearing loss aged 11–16 and ten deaf students with slight hearing loss aged 14–18 participated in the guided discussion. The analysed material from Tallinn Helen's School lasts approximately 141 minutes and from the Tartu Hiie School 149 minutes.

In Tallinn Helen's School, each deaf student participated in two conversations: one with another deaf person and one with a hearing person while the order of

[7] The situation is changing, as more hearing impaired students enter Tallinn Helen's School – their speaking skills need to be developed.

[8] The last class of hearing students finished school in spring 2011.

[9] Utterance was determined by the use of pauses – an utterance was usually surrounded by longer pauses.

signing was randomised. In the Tartu Hiie School, the same design was applied to the two groups formed there. The subjects were told that they did not have to sign all the time; they could to use both Estonian and EVK. The students were provided with five topics that were written on a large piece of paper and placed where the participants could see them: introducing yourself to each other (name, sign name, age, form); family; hobbies; spring holidays; free topic. The topics were also explained to the subjects in EVK. The researcher was present when the subjects were conversing about the first four topics and left the room when the students were discussing the free topic.

6. Transcription and analysis

Three points were analysed in depth using the ELAN software (Language Archiving Technology 2008): the signs along with relevant gestures (EVK), the spoken components (Estonian), and word classes. The utterances in EVK were transcribed according to the guidelines designed by Toom et al. (2006): the signs were written in upper-case and the letters in fingerspelled words were written in lower-case, separated by dashes. In the first line there are signs in EVK, the second line contains spoken Estonian, the English glosses are in the third line, and the fourth line translates the utterance (see example 1). As pauses and latching form an important part of the analysis of switching, they were separately marked (Table 2).

Table 2. Transcription conventions

[	start of simultaneous talk
]	end of simultaneous talk
=	latching (no interval between turns)
(.)	micro-pause (max. 0.2 seconds)
(2.0)	length of silence in seconds
h h h	laughter
{---}	incomprehensible or inaudible utterance

The names of students were randomly replaced by codes, including S, number, and D or H, indicating the hearing status of the informant's parents. In the excerpts the students' names were further replaced with names common in Estonia. The analysis of each guided discussion started quantitatively. EL and ML in code-blends of Estonian and Estonian Sign Language cannot be determined by counting the number of morphemes, as the modalities and morphologies differ significantly. Thus, ML and EL in code-blends were determined in considering features of EVK and Estonian. EVK was considered to be the ML if role-shift[10] and classifiers were used. Estonian was the ML if a word was fingerspelled[11] instead of signing. The following aspects were considered in more detail: word order,[12] expressing time, question formation, the category of number, adjectival modification, and agent nouns, as discrepancies in these areas may trigger code-switching.

[10] Role-shift is a common feature in sign languages and is also used in EVK. It refers to the possibility of shifting between the characters in a narration (Laiapea 2007: 59).

[11] Although some researchers, e.g. Kuntze (2000: 296) view fingerspelling as a code-switch if it is used instead of a sign, fingerspelled words were not considered as code-switches in this study.

[12] The word order of an affirmative sentence in Estonian is usually SVO. EVK is a topic-comment language (Laiapea 1992: 2101).

Pearson's product-moment correlation coefficient or Pearson's *r* was used to study the relationship between the number of switches and the following variables: hearing status of the subject, level of hearing loss, parental hearing status, hearing status of the deaf person's interlocutor, scores on an Estonian language proficiency test, and the interlocutor's switches.

The functions of code-switching were determined and the main reasons for switching among deaf and hearing bimodal bilinguals outlined by using the taxonomies compiled by Zabrodskaja (2005) and McClure (1981). Speech acts were analysed according to Searle's (1976) typology. The following speech acts were considered: statement, question, correction, request, doubt, order, refusal, explanation, recommendation, and thanking. Sometimes Austin's (1962) classification of speech acts into locutionary, illocutionary, and perlocutionary acts was also used.

The language background of the students was investigated by using a questionnaire, and the Estonian Language level was measured with a test designed on the basis of an exit exam for year 9 students, which is used for those who study Estonian as a second language.[13] The sign language levels of the deaf and hearing participants were determined by a deaf expert (Maret Õun) according to the Estonian Sign Language Proficiency Scale (compiled by Regina Toom). The hearing students from Tallinn Helen's School received the best results (M = 92.3, SD = 5.9)[14] in the Estonian language proficiency test, followed by the deaf students from the Tartu Hiie School with slight hearing loss (M = 57, SD = 22.7) and profound hearing loss (M = 44.8, SD = 25.0), and deaf students from Tallinn Helen's School (M = 44.5, SD = 24.8). The deaf students from Tallinn Helen's School had better results (B1-B2) in EVK than the ones from the Tartu Hiie School (A1-A2) and the hearing students from Tallinn Helen's School (A1-A2).

7. Quantitative aspects of switching

The guided discussion in Tallinn Helen's School consisted of an elicited conversation under two conditions: deaf-deaf and deaf-hearing interaction. The total number of utterances under both conditions was 2062, of which 1374 were produced by the deaf and 688 by the hearing students. The subjects produced significantly more utterances containing code-blends (M = 17.7) than code-switches (M = 9.0). Overall, 34.7% of utterances contained some type of switching.

The guided discussion in the Tartu Hiie School consisted of a conversation among deaf students with profound hearing loss and a conversation between deaf students with profound hearing loss and deaf students with slight hearing loss. The total number of utterances in the guided discussion was 2042, of which 1397 were produced by the profoundly deaf students and 645 by the deaf students with slight hearing loss. The informants produced more utterances containing code-blends (M = 5.3) than code-switches (M = 3.4). Overall, only 9.6% of the utterances contained some type of switching.

The hearing informants in Tallinn Helen's School produced significantly more switches (31.6%) than the deaf informants (14.0%) and the deaf informants with slight hearing loss in the Tartu Hiie School produced significantly more switches

[13] The questionnaire and the language test can be found in Hein (2012: 329–350).

[14] M = mean, SD = standard deviation. Note that the maximum number of points on the test was 100.

(14.8%) than the ones with profound hearing loss (7.4%). The percentages of code-switches, code-blends and switches in Table 3 show that the students mostly code-blended.

Table 3. The percentage of utterances containing code-blends, code-switches and switches produced by deaf and hearing subjects of Tallinn Helen's School and the Tartu Hiie School

Informants	Code-switches	Code-blends	Switches
Deaf – Helen's School	12.4	22.1	24.5
Hearing – Helen's School	22.5	48.5	55.1
Profound hearing loss – Hiie School	3.9	7	7.4
Slight hearing loss – Hiie School	8.7	13	14.8

In order to study the connection between different variables and the number of switches, Pearson's product-moment correlation coefficient was used (Table 4). The interlocutor's hearing status influenced the results most. In Tallinn Helen's School, there was a strong positive correlation between the hearing status of the interlocutor and the number of switches, $r = 0.54$, $p \leq 0.01$ (one-tailed). In the Tartu Hiie School, a medium positive correlation occurred between the hearing status of the interlocutor and the number of switches, $r = 0.48$, $p < 0.05$ (one-tailed).

The amount of switching may also be influenced by the amount of the interlocutor's switching. In Tallinn Helen's School, Pearson's *r* showed an inexplicable strong negative correlation between the number of switches produced by deaf students and their hearing interlocutors, $r = -.66$, $p \leq 0.01$ (one-tailed). In the Tartu Hiie School, Pearson's *r* showed a strong positive correlation between the number of switches produced by the deaf students with profound hearing loss and their interlocutors, namely the deaf students with slight hearing loss, $r = 0.93$, $p \leq 0.01$ (one-tailed).

Besides the variables presented in Table 4, the relationship between EVK proficiency and the number of switches was also studied. The results illustrate the opposite tendency with regard to EVK proficiency and the number of switches: the hearing subjects from the two schools most proficient in EVK switched less than those with the lower EVK abilities.

Table 4. Correlation between variables and the level of switching

Variables	Tallinn Helen's School guided discussion	Tartu Hiie School guided discussion
Hearing status	$r = 0.37$*	$r = 0.26$
Level of hearing loss	$r = -0.20$	–
Parental hearing status	$r = 0.39$*	$r = 0.02$
Hearing status of the interlocutor	$r = 0.54$*	$r = 0.48$*
Estonian language proficiency	$r = 0.33$*	$r = -0.16$
Interlocutor's switches	$r = -0.66$*	$r = 0.93$*

* The correlation is significant at 0.05 level.

In Tallinn Helen's School, the most often used word classes in code-switches were nouns (26.5%) and verbs (25.2%). In code-blends, nouns (36.1%) were used more often than verbs (23.0%), which may be caused by the fact that verbs are often produced with a particular mouth pattern which does not allow them to be present in code-blends so often. In the Tartu Hiie School, the most often used word classes in code-blends were also nouns (54.9%) and verbs (15.8%). In code-switches, nouns (31.0%) were also most often used, followed by pronouns (23.4%) and verbs (23.0%).

In Tallinn Helen's School, Estonian appeared to be the ML in most of the code-blends (R 20.1%, E1 13.7%, E2 28.9%)[15] rather than Estonian Sign Language (R 11.5%, E1 40.3%, E2 24.3%). In the Tartu Hiie School, most of the code-blended utterances also appeared to have Estonian as the ML (R 30.1%, E1 39.9%, E2 36.6%) rather than Estonian Sign Language (R 24.3%, E1 30.5%, E2 30.7%).

The ML could not always be determined, as some utterances were too short, consisting only of one word. Also, some subjects produced semantically non-equivalent code-blends[16]. Some examples of these types of blends consisted of lexical items produced with differing word order in each language, making the utterance syntactically correct both in Estonian and EVK. In example (1), the utterance in the sign language follows the rules of EVK, as the question word occurs at the end (AGE HOW MANY). At the same time, an Estonian-like utterance is produced: the question word is at the beginning and the pronoun *sa* 'you' has been added.

(1) S1H: VANUS MITU
kui vana sa ole-d
how old you:2SgNom be-Pr2Sg
'How old are you?'

Thus, the MLF model may not be the best tool for describing the sign language-spoken language contact.[17]

8. Functions of switching

The main reason for switching both in Tallinn Helen's School and the Tartu Hiie School was to emphasise a constituent. Sometimes the students also used switching to express themselves in an original way, which took the form of humour and language play. The subjects in Tallinn Helen's School also often switched to side-comment. Other more common functions of switching in Tallinn Helen's School were to attract attention, change of participant make-up (addressee specification; including, excluding, and marginalising participants)[18], change in topic, and reiteration.

[15] R = researcher's opinion; E1 = first expert; E2 = second expert.
[16] See Emmorey et al. (2005, 2008) for the categories of semantically non-equivalent code-blends in ASL-English hearing bimodal bilinguals.
[17] ML is not always clearly defineable in spoken languages either, as found in Russian-Estonian contact, because of the EL word order in the bilingual clause, and problems in determining morpheme type (Zabrodskaja 2009: 60).
[18] The functions of attracting attention and participant make-up were sometimes used in Tallinn Helen's School in connection with the hearing researcher.

8.1. Emphasising a constituent

First, the switching function used most often, to provide emphasis on a particular constituent, will be discussed. In some utterances, it was necessary to distinguish between particular signs. In (2), the deaf student (S20D) from Tallinn Helen's School produces a single word during a signed question in order to emphasise the sign VEND 'brother'. First, the sign POISSˆVEND[19] is uttered, and to make sure that the hearing interlocutor understands the sign, fingerspelling and speech are used. S46H answers the question in a code-blended mode, as usual. S20D then continues with a signed utterance, which is accompanied by a single word. Here, the word *õde* 'sister' is uttered at the same time as the sign TÜDRUKˆÕDE, which is a combination of the signs TÜDRUK 'girl' and ÕDE 'sister', and is often used to mean 'sister'. The word ÕDE 'sister' is accompanied by speech to distinguish between the terms *sister* and *brother* which share the same sign. The excerpt ends with S46H's code-blended utterance. The last three utterances are statements.

(2)

S20D:	SINA	OLEMA	POISSˆVEND	v-e-n-d	OLEMA	POLE
	–	–	–	vend	–	–
	you	be	boy sibling	brother:NomSg	be	NEG + be
	'Do you have a brother?'					
S46H:	POLE					
	Pole					
	NEG + be					
	'No, I don't.'					
S20D:	MINA	OLEMA	TÜDRUKˆÕDE			
	–	–		õde		
	I: 1SgNom	be	girl	sibling:NomSg		
	'I have a sister.'					
	(2.0)					
S46H:	–	POLE				
	mu-l	pole				
	I-1SgAde	NEG + be				
	'I don't.'					

8.2. Side-comment

One of the most prevalent reasons for switching in Tallinn Helen's School was to create a side-comment, which was mainly used by the hearing informants. The hearing subject (S40H) has problems understanding the deaf interlocutor in (3). S38H asks a question about S40H's travel plans for the summer, and the latter does not understand. He/she expresses this in Estonian only; this statement functions as a side-comment.

[19] ˆ is used to indicate that it is a compound sign.

(3) S38H: SUVI SÕITMA r-e-i-s KUHU
suve-l sõit-ma reis kuhu
summer-AdeSg ride-inf trip:NomSg where
'Where are you going to travel in the summer?'
(2.2)
S40H: ma ei saa aru
I:1SgNom NEG get sense
'I don't understand.'

8.3. Topic shift

Topic shift also caused some code-switches and code-blends in Tallinn Helen's School. In the following interaction, the deaf student (S1H) frequently code-blended, but the hearing student (S43H) always signed without switching the code. Example (4) shows that a change in the topic affects S43's behaviour and he/she starts code-blending as well. S1H asks about the bowling tournament in a code-blended mode. As there is a pause, he/she offers an explanation, also by code-blending. S43H answers in the form of a code-blend that he/she does not know either, which is a statement. S1H and S43H then continue conversing by using both sign and speech. S1H comments that the tournament was supposed to be the day before, which is an explanation. After a pause, S43H gives a reason why the tournament was cancelled, which can also be seen as an explanation. After another pause S43H recalls that the tournament takes place in the same week as open house week, which is a statement.

(4) S1H: MILLAL TULEMA BOWLING VÕISTLEMA
millal tule-b bõuling –
when come-Pr3Sg bowling:NomSg competition
'When do we have the bowling tournament?'
(1.7)

S1H: BOWLING
bõuling
bowling:NomSg
'Bowling.'
(2.0)

S43H: MITTE_TEADMA APRILL =
– aprilli-s =
not know April-IneSg
'I don't know; in April.'

S1H: = EILE PIDAMA MUUTMA
= eile pid-i –
yesterday:NomSg have to-Impf3Sg change
'It was supposed to take place yesterday but they changed it.'
(1.5)

S43H: VÄHE INIMENE INIMENE KOOL
vähe inimes-i – kooli-s
little humans-PartPl person school-IneSg
'Few people at school.'
(4.0)

S43H: SAMA NÄDAL – LAHTI_UKSED –
sama nädal kui lahtis-te us-te nädal
same week:NomSg as open-GenPl door-GenPl week:NomSg
'The same week as open house week.'

8.4. Reiteration

Reiteration was another function of code-switching utilised in the guided discussion in the two schools. This means that the utterances were repeated in another mode, e.g. simultaneous communication and fingerspelling. In (5), which originates from the Tartu Hiie School, S52H asks a question in Estonian, and as there is no answer within three seconds, he/she utters the question again, this time in the code-blended mode. To make sure that the interlocutor understands, fingerspelling is used. S51H then produces the answer by code-blending and then switches to EVK, which is a statement. S52H then continues in Estonian in his/her statement, and S51H produces the question in EVK. The final statement is given by S52H also in Estonian.

(5) S52H: kas sa käi-d ekskursioon
if you:2SgNom go-Pr2Sg school trip:NomSg
'Do you take part in the school trips?'
(3.0)
S52H: k-a-s s-a k-ä-i-d e-k-s-k-u-r-s-i-oo-n
kas sa käi-d ekskursioon
if you:2SgNom go-2Sg school trip:NomSg
'Do you take part in the school trips?'
S51H: KÄIMA LÄTI
käi-sin –
go-Impf1Sg Latvia
'I have been to Latvia.'
S52H: Läti (.) mina ka Läti
Latvia: NomSg I:1SgNom too Latvia:NomSg
'Latvia? Me too.'
S51H: KÄIMA LÄTI VALMIS
go Latvia:NomSg ready
'You have been to Latvia?'
S52H: Nod
Jaa
'Yes.'

8.5. Expressive function

Expressive function was occasionally employed in both schools: the informants changed the code because they wanted to be original, to emphasise something, to make a joke, or to play with the language. In example (6) from the Tartu Hiie School, S68H gives the reasons for giving up basketball training in EVK, which is a statement. S67H comments on it, also in Estonian, which is also a statement. S68H then goes on explaining, and to emphasise the dullness of the daily routine utters the word SAMA 'the same' three times simultaneously in EVK and Estonian.

(6) S68H: KORVPALL LÕPP PRAEGU TRENN LÕPP (.)
basketball end now practice finish
'I finished practising basketball.'
S68H: LÕPP MITTE-TAHTMA
finish not want
'Finished. Don't want.'
S67H: LÕPP
finish
'Finished.'
S68H: LÕPP IGA_PÄEV PALJU (.)
finish every day a lot
'Finished. Every day a lot.'
S68H: ARVUTI KORVPALL SAMA SAMA SAMA IGAV
– – sama sama sama –
computer basketball same same same boring
'Every day the same: computer and basketball. It is boring.'

In some conversations at Tallinn Helen's School, the interlocutors signed only. This often happened in deaf-only interactions where code-blending was rarely employed. Also, some hearing subjects chose to sign during the whole conversation with the deaf subject. Some conversations, on the other hand, contained only code-blending, that is, the deaf and hearing participants simultaneously signed and spoke throughout the whole conversation. Sometimes the hearing subject tended to code-blend, whereas the deaf subject signed, and vice versa.

8.6. Sequential analysis

In some conversations, a deaf or hearing subject code-switched or code-blended for a particular reason. In others, the function of the switch remained unclear; as the switches were the result of the previous turn. Thus, a sequential analysis of the turns (Auer 1995) was needed. The excerpt below (7) is an example of one such interaction that takes place in the second stage of the guided discussion where the subjects could discuss any topic. The deaf student (S38H) tries to find topics to discuss by code-blending. As S40H produces only a nod for an answer, S38H asks a question in EVK after a 1.6-second pause. Instead of an answer there is another pause, and S38H has to continue signing. As the previous turn is signed, S40H signs as well. The pattern of turns (AB1 A2 A1 A2) displays the form of number IIIb in Auer's (1995) classification, as one of the interlocutors abandons the AB

code and continues talking only in one language. As for speech acts, all utterances are statements except for one question. The overall analysis of speech acts in the data showed that most of the speech acts in excerpts were statements, although questions were also produced.

(7) S38H: ÕPPIDA IGAV
õppi-da igav
study-Inf boring
'It is boring to study.'
S40H: nod
(1.6)
S38H: SINA ÕPPIMA HEA
you study good
'Do you study well?'
(1.5)
S38H: MAGAMA
sleep
'You are sleeping.'
S40H: MAGAMA
'Yes, I am sleeping.'

9. Conclusions

The results of the guided discussion show that the students in Tallinn Helen's School and the Tartu Hiie School mostly code-blend rather than code-switch, as also found by Emmorey et al. (2008). This implies that as opposed to unimodal bilingualism, in sign language-spoken language switching producing two languages simultaneously is common.

It was found that the deaf subjects predominantly signed with their deaf interlocutors, which contrasts with Grosjean's (1996: 32) suggestion that deaf bilinguals can communicate in the bilingual mode by mixing sign and speech while interacting with other deaf subjects. The results of the present paper are more similar to the study conducted by Van den Bogaerde (2000) who found that there were almost no instances of code-mixing in the deaf children's utterances.

The previous research on bimodal bilingualism has covered several factors that influence code-switching and code-blending among deaf people. In the present study, the strongest and most significant correlations occurred between the hearing status of the interlocutor, interlocutor's level of switching and the number of switches. This indicates that the deaf students switched more with hearing interlocutors, whereas the interaction between two deaf persons was mainly signed. The correlation between the interlocutor's level of switching and the number of switches yielded opposing results, which cannot be easily explained.

Research on bimodal bilinguals has shown mixed results on the use of nouns and verbs in code-blends and code-switches. Emmorey et al. (2008) found that the most often used word classes in code-blends and code-switches are verbs. Van den Bogaerde and Baker (2008) reported the dominance of nouns over verbs in code-blends. In the present study, nouns were used more often in code-blends and

code-switches, which may be caused by the fact that there were more nouns (2886) than verbs (2131) in the data. Besides word classes, other aspects have to be taken into consideration, such as frequency and meaning, which are linked to different types of switching (Backus, Verschik 2012).

The analysis of the Matrix Language and Embedded Language of the code-blended utterances shows that most of the utterances were produced with Estonian as the ML. The results along with the previous findings in bimodal bilingualism (Emmorey et al. 2008) indicate that in sign language-spoken language contact, the spoken language tends to be the ML. Some utterances possessed both Estonian and EVK features, so it was difficult to determine the ML and EL. The results show that using the MLF model (Myers-Scotton 1997) may pose difficulties in sign language-spoken language code-blending, as has also been noted in some spoken language pairs (Zabrodskaja 2009).

In conclusion, the results of the guided discussion show that deaf informants switch for different reasons and use various patterns of code choice. Sometimes it was problematic to apply a single cause for a switch, because it was caused merely by the code choice of the previous turn. In these instances, the sequential model of switching compiled by Auer (1995) was utilised.

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EESTI VIIPEKEELE JA SUULISE EESTI KEELE VAHELISE KOODIMUUTUSE KVANTITATIIVSED JA KVALITATIIVSED ASPEKTID

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Artiklis uuriti, mis näitajad mõjutavad koodimuutust (koodivahetust ja koodisegunemist) koolikeskkonnas bimodaalsete kakskeelsete hulgas. Suunatud vestlustest kogutud andmed näitasid, et bimodaalsed kakskeelsed eelistavad koodisegunemist, s.t nad viiplevad ja räägivad samaaegselt. Kuigi koodisegunemise maatrikskeel oli enamasti eesti keel, jäi see mõnikord määramata, kuna koodisegunemine võis esineda erineva sõnajärjega eesti keeles ja eesti viipekeeles.

Kuigi peamine koodimuutuse funktsioon õpilaste seas oli lauseosa rõhutamine, muudeti koodi ka huumori ja keelemängu eesmärgil. Mõnedes lausungites osutus koodimuutuse funktsiooni määramine keeruliseks, seega analüüsiti vestlust voor vooru järel (Auer 1995). Kurdi õpilase koodimuutuse tase sõltus kõige enam sellest, kas vestluspartner oli kurt või kuulja ning mil määral vestluspartner koodi muutis.

Võtmesõnad: sotsiolingvistika, bimodaalne kakskeelsus, koodivahetus, koodisegunemine, eesti viipekeel