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ENABLING TOOL: ESTONIAN-ENGLISH CODE-MIXING OF A 2-YEAR-OLD WITH BALANCED INPUT

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Abstract.[1] In recent years several studies have focused on bilingual children's code-mixing in light of usage-based theory (Gaskins *et al.* 2019a; Quick *et al.* 2020; Yow *et al.* 2018). However, most studies on bilingual children so far have focused on families that employ the one-parent-one-language or minority language at home strategies, in which cases children often receive significantly more input in one language. The current case study focused on a 2-year-old (2;4–2;10) Estonian-English bilingual whose language input was more balanced between her two languages. The results showed that the child's balanced input was reflected in the output proportions of her two languages and in her mean length of utterance scores. The child produced many code-mixed utterances, which also had the highest mean length of utterance score and were more complex than monolingual utterances.

Keywords: bilingualism, code-mixing, MLU, usage-based, balanced input, Estonian, English

1. Introduction

It is well known that bilingual children code-mix. Code-mixing in this current article is defined as "the mixing of elements of two languages together in one utterance" (Paradis *et al.* 2000: 245). For

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decades, researchers in different fields have studied code-mixing in adults and children. Most studies of code-mixing have adopted a formalist view (see Bernardini, Schlyter 2004; Cantone 2007; Gawlitzek-Maiwald, Tracy 1996; Genesee 1989; MacSwan 2000; Myers-Scotton 1997; Poplack 1980; Quay 1995), but a detailed discussion of them and their development over time is out of the scope of this article.

Recent studies have started to investigate code-mixing from a usage-based perspective. Researchers studying code-mixing in bilingual children have attempted to cover various language pairs, looked at switch placement in bilingual combinations, studied the relationship between code-switching and linguistic competency, and partially schematic constructions (Gaskins *et al*. 2019a; Quick *et al*. 2020; Quick *et al*. 2018c; Yow *et al*. 2018). Most of the participants in these studies have come from families where the one-parent-one-language (OPOL) strategy is used or where the minority language is spoken at home (ML@H). These strategies usually result in a situation where language input for the children is fairly unbalanced[2]. If the family resides in a country where one of the parents' languages is spoken, and especially in a situation where the primary caregiver also speaks the societal language, it often results in little input from the non-societal language. This, in turn, can result in bilingual children having a dominant language or varying development speeds in different languages.

The current study aims to fill a gap in the field by studying code-mixing in a child whose language input is more balanced and not separated by person or place. This allows us to see the interplay of two languages in an acquisition situation that to the best of author's knowledge is not yet covered in the literature. The research questions of this article are the following: 1) Does the child distinguish

[2] For example, Gaskins *et al*. (2019b) report 75% vs 25% input between two languages for two of their participants. However, it should be acknowledged that it is a complicated matter as various factors influence language balance for a bilingual child.

her languages? 2) How does the more balanced input influence the child's output proportions? 3) How much code-mixing takes place, and are there differences between languages? 4) What are the mean length of utterance scores (MLU) for monolingual and code-mixed utterances, and do they reflect the language input pattern?

2. Usage-based theory and its approach to code-mixing

The last two decades have seen a rise in studies involving usage-based theory. The main claims of this theory are that language emerges from usage events, children use innate cognitive skills (like intention reading, pattern finding, generalisation, analogy) to acquire language and they learn their language piece by piece (Bybee 2010; Tomasello 2003). This is in contrast to the generative approach, which claims that language learners do not receive enough input to fully learn a language and there is an innate Universal Grammar in place for language learning (see Valian 2014 for discussion on this topic). Universal Grammar also argues that the categories and principles of the core syntax do not have to be learned as people are born with them (Behrens 2006).

However, according to usage-based theory, language use is item-based, meaning it is organised around concrete, particular phrases, like *Could you please…, How-ya-doin?* These expressions are stored and produced as single units (Tomasello 2000; 2003). Language learning stems from usage (input and output) and takes place on a continuum with various levels of schematicity. First, children acquire fixed chunks (sometimes also called frozen phrases in the literature), which can be either single words, for example *cat,* or multiword expressions, for example *What's this?*. These chunks are unanalysed wholes, which later on in the acquisition process will be segmented and children will acquire their language piece by piece. Second, from fixed chunks they move on to frames with an open slot (also called slot-and-frame patterns), for example, *What's X?*, where the X can be replaced with other words or expressions (Tomasello

2003). The existence of fixed chunks and frames with an open slot in children's speech has been shown in literature. For example, Lieven *et al*. (1997) studied 11 children (1;8–2;8) and found that 60% of their recorded spontaneous speech was composed of the child's first 25 lexically based patterns, like the above-mentioned example *What's X*? and 31% were fixed chunks. This shows that children's early language use contains an abundance of reusing a limited number of patterns with different slot fillers. Third, from those fixed chunks and slot and frame patterns children move on to more abstract constructions (for example *NP aux neg Verb*). Each move along the continuum allows children to be more productive with their language (Ambridge, Lieven 2011).

Children not only themselves produce a great number of chunks and slot and frame patterns in their speech, but also a significant proportion of their input contains these types of multi-word units. Cameron-Faulkner *et al*. (2003) conducted a detailed analysis of the speech of 12 English speaking children between the age of 2 and 3 years and their mothers. They showed that half of the utterances by the mothers were characterised by 52 item-based frames. They also found that 45% of the utterances the mothers said to their children began with one of just 17 words (and this excluded communicators like *hello, goodbye, thank you*, which if included would have increased the percentage even more). Other studies have also found that the frequency of frames in child directed speech (CDS) is connected to acquisition. Stoll *et al*. (2009) studied monolingual Russian, German and English two-year-old children and likewise found a considerable amount of lexical repetitiveness at the beginnings of utterances in CDS. The repetitiveness of CDS means that it is easier for children to detect patterns and to extract linguistic knowledge that facilitates their early language acquisition (Schmid 2017).

The repetitiveness of speech is connected to entrenchment. Entrenchment is a set of cognitive processes that takes place in the minds of speakers. These processes are mainly memory consolidation, chunking, and automatisation. A wide range of variables

influence entrenchment, but frequency and repetition in context are most prominent (Schmid 2017). According to usage-based theory, constructions become entrenched when they are used repeatedly. Every use of a construction, whether in comprehension or production, strengthens it (Dabrowska 2014). Once a construction is entrenched, it is activated more quickly and the activation itself requires less effort. Hence, those constructions are more likely to be repeated and used. Schmid (2017) calls this a feedback loop in which frequency is both the cause and the effect of entrenchment.

It is not only the repetition that leads to the abstraction of information. The mind recognises similarities and differences, forms categories and generalises from them by comparing the information that is already stored with new units. This way schemas are formed (Behrens 2006). Langacker (1987: 492) defines a schema as a "semantic, phonological, or symbolic structure that, relative to another representation of the same entity, is characterised with lesser specificity and detail." These generalisations allow the formation of patterns at different levels of abstraction, which were mentioned before as part of a continuum from fixed chunks to abstract constructions. Frame-and-slot patterns have an important role on the continuum of schematicity as the open slots are where the productivity develops and grows as the child inserts new words or phrases into the slots.

Usage-based theory is especially interesting in terms of bilingual children whose input includes more than one language. How do their two languages interplay as the child produces speech? One such phenomenon of language interplay is code-mixing. Code-mixing is prevalent in bilingual children's speech. Different studies report varying rates of code-mixing: 4–9% (Poeste *et al*. 2019), 7–10% (Quick *et al*. 2018a) and 1–10% (Allen *et al*. 2002). Various researchers have also attempted to examine the reasons why young children code-mix. One suggestion has been that children code-mix because of an imbalance between their languages (Bernardini, Schlyter 2004). When children speak in their weaker language they use code-mixing to fill their lexical and syntactic gaps (Gawlitzek-Maiwald,

Tracy 1996). However, studies like Cantone and Müller (2005) and Jorschik *et al.* (2011) have shown that gap filling can be excluded as the only reason for code-mixing as children had translation equivalents available in most occasions. Hence, there must be other reasons why young children code-mix.

According to usage-based theory one possible explanation for code-mixing could lie in partially schematic units. As mentioned above, a study by Lieven (1997) found that 60% of young children's speech is composed of the first 25 lexically based patterns (partially schematic units), like *What's X?* or *There's an X*. It seems like these partially schematic utterances provide a way for a child to produce longer and more complex utterances, and thereby, to be more communicative in expressing themselves. At first children's constructions are lexically fixed, whereafter some slot and frame patterns start to develop. The slot and frame patterns allow children to be more productive, as they already have a pattern in use and they learn to insert some other piece of their existing language into that open slot. Lieven *et al.* (2009) found in their study of four English speaking children that with increasing language experience the material inserted into the slots also became more complex. Moreover, Quick *et al.* (2018b) studied code-mixing of a German-English-Spanish trilingual child (1;10–3;1) and looked at the degrees of lexical specificity of his utterances. They found that slot and frame patterns were very important in his code-mixing as those utterances often formed a slot and frame pattern where the slot was filled with material from the other language (a partially schematic construction ***ich*** *x it* 'I x it' existed where the slot was filled with either German or English elements like ***ich*** *zip it* 'I zip it' or ***ich spielen*** *it* 'I play it'). They related their findings to entrenchment and activation issues of multi-word units or patterns.

Some other recent studies have looked at language interplay and acquisition regarding code-mixing. Quick *et al.* (2018a) studied three German-English bilinguals ages 2;3–3;11 and found that MLU for each child followed their input patterns and language preferences.

However, code-mixed utterances were the ones with the highest MLU, and they were also syntactically more complex. Also, Gaskins *et al*. (2019b) and Quick *et al*. (2018b) report that MLU follows input patterns and language preference. Quick *et al*. (2020) involved in their research several language pairs to see if the same findings about the length of MLU hold true. Their study of German-English, English-Polish, Finnish-English and French-Russian bilingual children found that children's input patterns reflected their MLU scores and their language use. Also, the children's code-mixed utterances had a higher MLU score than their monolingual utterances and were also syntactically more complex. However, though covering different language pairs, most of these participants received significantly more input in one of their two languages (the exception being Lily in Quick 2018a), leaving the question of whether these findings hold true in a more balanced input situation.

But why have some studies found that compared to monolingual utterances code-mixed utterances are longer and more complex? Quick *et al*. (2018a) suggest that entrenchment plays a role in it. The more entrenched a particular unit is, the easier it is for the speaker to activate it. If a particular structure has low entrenchment in Language A, it can result in being uttered as a fragment in monolingual utterances. But if the child has higher entrenchment for an equivalent structure in Language B, then he/she can use that instead thereby forming a code-mixed utterance and being able to form a full sentence. This also makes code-mixed utterances have a higher MLU and be more complex. One can therefore say that bilingual children employ all of their language resources and code-mixing helps them to communicate better.

Above-mentioned studies by Quick *et al*. (2018a 2020) and Gaskins *et al*. (2019b) have shown that MLU tends to follow the input quantity and code-mixed utterances are the longest and more complex than monolingual utterances. Do the same findings hold true in a situation where the input is more balanced between the two languages involved? In this paper the language proportions

(monolingual Estonian, monolingual English, code-mixed utterances) of a simultaneous English-Estonian child along with her MLUs and utterance complexity are investigated to see if her language proportions and MLU reflect her input patterns. This study also aims to add to the small amount of literature on Estonian-English early bilingualism that is currently available.

3. Methodology

3.1. PARTICIPANT AND DATA

The participant of this study was a simultaneous English-Estonian bilingual child. The mother is Estonian-speaking and the father English-speaking, but both parents speak the other's language well. The family resides in Estonia, but the child has not attended daycare, and therefore, most of her input up to the end of recording sessions had come from her immediate family. The family uses a language policy where Estonian is spoken on Mondays, Wednesdays and Fridays by the entire family and English is spoken on Tuesdays, Thursdays, Saturdays and Sundays. This has been a consistent family language policy since the birth of the first child. Taking into account sleep, naptime, media usage and visits/phone calls from grandparents the child's input during an average week is fairly balanced between Estonian and English.

The recording sessions took place at home during play and snack times. Most of the recording sessions took place with the mother present, but sometimes also with the father or older siblings. The parents did not use code-mixing in their speech, but the older siblings did use it occasionally (5% of the speech of the 5-year-old brother and 4% of the speech of the 7-year-old sister were comprised of code-mixed utterances[3]). The recordings were done between the ages of 2;4 and 2;10. The recordings were usually done weekly, but

[3] For the 5-year-old there was 10 h 45 min of data and for the 7-year-old there was 6 h 59 min of data.

sometimes due to time constraints there was a longer gap between sessions. On average, each month had 4–6 h of recordings (all together 35 h). There were more recordings done on days when the family spoke in Estonian, but each month had at least one English session. 6,853 utterances were included in the analysis. The data were recorded and transcribed by the author using the CLAN program and the CHAT format (MacWhinney 2018).

3.2. ANALYSIS

All utterances were coded as Estonian monolingual, English monolingual or code-mixed. Unintelligible utterances were left out of the analysis. Also, utterances where it was not possible to determine the language (*yep, mhmh, okei/okay*) were left out of the analysis. While yep instead of *jah* ('yes') or *yes/yeah* was fairly frequent in the recordings, other ambiguous utterances were quite rare. Language proportions were calculated.

MLUs, in words, were calculated separately for Estonian, English and bilingual utterances. Quick *et al*. (2018a) was followed for the rationale of calculating MLU separately for monolingual and code-mixed utterances. Also, to see changes over time, MLU was calculated for 3 periods: for data from October to December, January to February and March to April.

Utterances were also coded for syntactic completeness and complexity. This was done separately for monolingual and code-mixed utterances. Three different groups were created for coding: sentences, phrases and fragments (Table 1). An utterance was assigned into the sentence category for Estonian utterances when it included a subject and a verb or only a verb when the verb ending indicated the subject as well. For example, *istun emmega* ('I am sitting with mommy') does not include a subject, but the verb ending *-n* indicates that the subject is *I*. An utterance was coded as a sentence in English if it included a subject and a verb. In the case of a code-mixed utterance both languages were taken into consideration. For example,

an utterance *jumpis siin* ('He was jumping here') was coded as a sentence because though the verb is in English and would require a subject, the Estonian case ending indicates the subject clearly. Utterances were assigned to the phrase category when they formed a group of words which acted together as a grammatical unit, but did not form a sentence. For example, *mommy pliiatsid* ('mommy's pencils') belonged to the phrase category. Utterances which did not fit into the sentence and phrase category were assigned to the fragment category. Examples of fragments were *seal* ('there'), *no* ('ei') and *emme two (*'mommy two'*).* For the complexity analysis one recording session from each month was included.

Table 1. *Examples of complexity analysis*

Level	**Examples**
Sentence	*Emme doggy smellib me* 'Mommy, doggy is smelling me' *Emme where is mommy sitting?* 'Mommy, where is mommy sitting?' *I vaatan instructionit.* 'I am looking at the instruction' *Look emme!* 'Look mommy!' *Istun emmega.* 'I am sitting with mommy'
Phrase	*Mommy pliiatsid* 'Mommy's pencils' *Veel üks car* 'One more car' *Something to süüa* 'Something to eat' *Väga sunny* 'Very sunny'
Fragment	*Pole* 'not' *Emme two* 'Mommy two' *No* *This* *Bye*

4. Results

4.1. LANGUAGE PROPORTIONS

The data shows that the child adheres to the family language policy by speaking mostly in the language of the particular day. However, the data also reveals that the subject uses a lot of code-mixing. The percentage of code-mixed utterances (40–42% depending on the language day, see Table 2) is higher than is reported in most other studies for simultaneous bilingual children of similar age (Allen *et al*. 2002; Bernardini, Schlyter 2004; Quick *et al*. 2020).

Table 2. *Language proportions by speaking day*

	Estonian days	**English days**
Code-mixed utterances	42%	40%
Estonian utterances	44%	15%
English utterances	14%	45%

The data shows that, regardless of which language the family is speaking that day, the percentages of code-mixed utterances and monolingual utterances are strikingly similar. 44–45% of the utterances were monolingual in the language that the family spoke that day and 14–15% were monolingual in the other language. Based on the data, it is clear that the more balanced input between two languages is reflected in the results as the child produces about the same percentage of utterances in both languages.

4.2. MLU SCORES

First, mean MLUs (measured in words) across all data will be reported. Thereafter, the changes in MLU scores over time will be shown. The mean MLU across all data for monolingual English utterances was slightly higher (2.28) than for Estonian utterances (2.12), but the difference is rather small. The difference could also be

due to differences in the morphology of the given languages, as Estonian uses more case endings while English uses more pre- and postpositions. However, MLU for all code-mixed utterances is higher (3.88) than for monolingual utterances in either language.

Looking at MLU scores longitudinally reveals a similar picture (Figure 1). For the first few months of recording sessions, the Estonian MLU was a bit higher (2.23) than the MLU for monolingual English utterances (2.04), and the code-mixed utterances had the highest MLU (3.62). For the next two months, the MLU-s had increased, except for Estonian monolingual utterances, where it stayed about the same (2.17). For the last two months of the recording sessions, the MLU for English monolingual utterances was higher (2.91) than the MLU for monolingual Estonian utterances (2.36). However, code-mixed utterances had the highest MLU again (4.30).

Hence the data reveals that the MLU for code-mixed utterances was higher (approximately 1.5–2 words) than for monolingual utterances throughout the recording period.

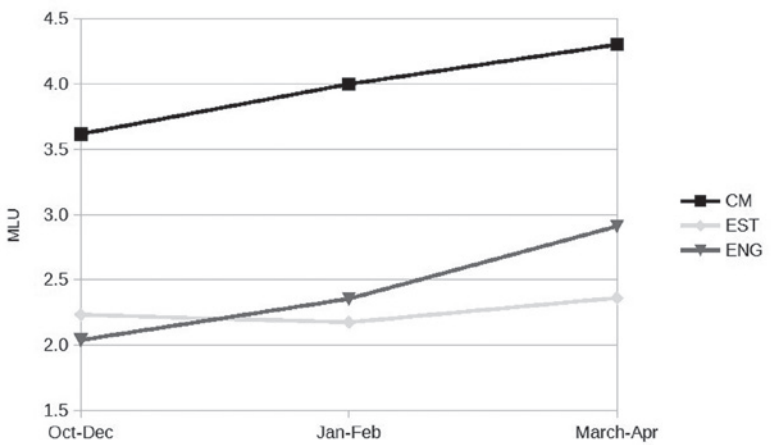

Figure 1. *MLU scores developmentally*

4.3. COMPLEXITY ANALYSIS

All utterances were categorised into sentences, phrases and fragments. The complexity analysis revealed that the code-mixed utterances were more complex than monolingual utterances (Figure 2). 78% of code-mixed utterances belonged to the sentence category, while 39% of Estonian and 35% of English monolingual utterances could be included in that category.

The input balance is also evident in the results of the complexity analysis. Monolingual utterances had proportionally similar percentages in each category. 39% of monolingual Estonian utterances were in the phrase category and 22% were fragments. The numbers for monolingual English utterances were respectively 38% and 27%.

To summarise the findings, it can be argued that the input balance is reflected in language proportions, in MLUs and in utterance complexity. The data also showed that the child uses a high proportion of code-mixed utterances, which have the highest MLU, and are more complex than monolingual utterances. In the next section, a usage-based explanation is proposed for the results.

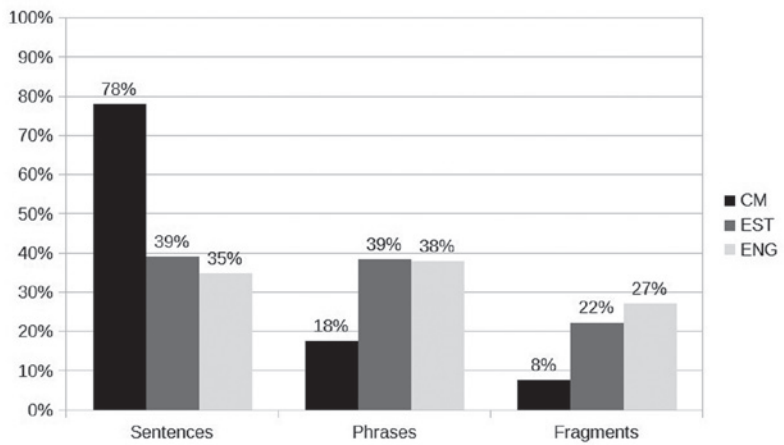

Figure 2. *Results of the complexity analysis*

5. Discussion

In this study the language development of an Estonian-English bilingual child (2;4–2;10) was analysed by measuring her language proportions along with code-mixed utterances, calculating her MLUs for monolingual and code-mixed utterances and conducting a construction type analysis. The data showed that the child distinguished her two languages and used a high proportion of code-mixed utterances when speaking in both of her respective languages. Code-mixed utterances also had a higher MLU and were more complex than monolingual utterances.

In line with previous studies (Gaskins *et al*. 2019b; Quick *et al*. 2018a 2020), the results of this study found that the MLU of a bilingual child reflected her input pattern. In above-mentioned previous studies the input of a bilingual child had been unbalanced. These studies involved children who had a dominant language (with the exception of one child, Lily, in Quick 2018a) and the analyses demonstrated that the more a child received input in one language the more he or she also produced output in that language, and this, in turn, according to the results, was also evident in the MLU score. The data from this study revealed that when the input from both languages is balanced then the output proportions and MLU scores are also more balanced. Though this is only a case study and more data with similar input pattern is required to further support these findings, these results further support the argument that MLU scores in the respective languages mirror the input pattern.

The MLU was the highest for code-mixed utterances, which were also more numerous in the speech of the participant than has been reported in other studies (Allen *et al*. 2002; Poeste *et al*. 2019; Quick *et al*. 2018a, 2020) with same-aged children. It could be suggested that this was the case because her input was not separated by place or speaker, as is the case with OPOL and ML@H strategies, which have been prevalent in most studies reporting on code-mixing. Dedicating specific weekdays to speak specific languages

creates a supporting environment for code-mixing; this is despite the fact that the input itself encouraged language separation as caregivers themselves did not use code-mixing in their speech. With both parents and siblings speaking both languages to the participant and the lack of other constant prevalent monolingual environmental factors[4] (like daycare), an environment may have been created, which did not cue her to monolingual mode where she would have felt that only monolingual speech was accepted. The lack of monolingual cues and being understood when using code-mixed utterances could, therefore, be a factor contributing to the high rate of code-mixed utterances.

Another suggestion for the high rate of code-mixing is that it could be developmental at this stage of language acquisition and the supportive environment simply increases the use of it. Code-mixing being a developmental phenomenon has been suggested by Gaskins *et al.* (2019a) and Gaskins *et al.* (2021). Code-mixing is suggested to be more prevalent during this age of language development due to the lack of complete mastery of vocabulary and grammar. Genesee *et al.* (1995) point out that at times most (if not all) children code-mix at least until age three. Moreover, Yow *et al.* (2018), for example, point out that the code-mixing rate has developmental shifts and different stages have different reasons for engaging in it. According to Yow *et al.* (2018), younger children tend to code-mix to fill lexical gaps while older children do it for sociocultural or pragmatic purposes. As this data covers only a six-month long period, it is not possible to look at the developmental shifts in the rate of code-mixing, though the present data does lend support to previous research presenting

[4] It should be noted that the participant was 1;9 when COVID-19 pandemic reached her region and subsequent lockdowns and recommendations for reducing social gatherings were in place before, during and after the recordings took place; hence, the child spent more time in her only bilingual environment as other social gatherings were often restricted or not recommended by the government. Subsequently the child spent majority of her time with her bilingual family and spent less time in only monolingual environments (e.g., grandparents) as would have been typical in normal circumstances.

the presence of code-mixing in the speech of 2-year-old bilingual children. It would be extremely beneficial to extend the time period of longitudinal studies of bilingual children to cover more than the year or two they usually are. This would allow the researchers to better determine developmental shifts in code-mixing while keeping some factors constant (as much as it is possible in the ever fluid factors surrounding bilingualism).

Several authors have suggested code-mixing to take place due to lexical gap filling. Cantone and Müller (2005) claim that filling a lexical gap and an uneven development of languages are sometimes the reasons for code-mixing, but that those are not the only reasons to code-mix for bilingual children. In their study of four 2-year-old bilinguals, Cantone and Müller (2005) found that translation equivalents were present for most code-mixes in the same recording; hence suggesting that though sometimes lexical gap filling is the reason to code-mix, it is not the sole reason behind it. In the current study, MLU and construction analysis indicated that the languages of the participant were evenly developed, indicating that the uneven development of languages was not the driving force behind code-mixing. Though it was not one of the research questions of this article, the high amount of code-mixed utterances raised the question about the existence of translation equivalents in the speech of the child. A review of the data indicated that the child had translation equivalents available in her speech, but she opted for code-mixing[5]. For example, in the transcript of a recording from the same day the following utterances can be found:

> *Mommy, mul ei ole bite in my mouth.* 'Mommy, I do not have a bite in my mouth.'
> *Emme, mina võtsin see bite.* 'Mommy, I took that bite.'

[5] The analysis of translation equivalents was not overarching as it would have been out of the scope of this article. However, enough data were analysed to see the existence of translation equivalents.

So we can see that the word for *mommy* is used in both languages in close proximity to one another. Hence, also the findings of this study lend support to the claim that there are other reasons beyond lexical gap filling for using code-mixing.

Several studies (e.g., Quick *et al*. 2020; Yow *et al*. 2018) have suggested that code-mixing is a tool that bilingual children use to enhance their communicative competence. This argument of code-mixing being an **enabling tool** is supported by usage-based theory, which claims that children learn their language piece by piece. It has been shown that multi-word units (fixed chunks and slot-and-frame patterns) form an integral part of children's language acquisition, and this holds true for input and output (Quick *et al*. 2019). Such multi-word units could play an important role in a child's code-mixing. A study done by Quick *et al*. (2018c) with a German-English bilingual child found code-mixing to be very formulaic and that it contains many partially schematic utterances. Using lexically fixed items and partially schematic utterances in speech production requires less effort, as they are easier to store and easier to retrieve. If a given slot and frame pattern is entrenched in one language, it is more likely to be activated and used, whereafter the open slot can be filled with an item from the other language. This activation of units could contribute to code-mixed utterances having higher MLUs, as when children use both of their languages they are able to use a wider array of syntactic and lexical elements available to them due to using two languages. They can then pick the constructions that are more entrenched, easier to activate and do so regardless of the language, producing then code-mixed utterances. However, to evaluate entrenchment, a denser dataset would be needed than what was available for this study. A dense dataset involving children with different input patterns, including a more balanced bilingual child, would possibly shed more light on the role of entrenchment in code-mixing.

In the same regard, to understand better why some children code-mix more than others it would be necessary to study the

environmental factors surrounding the participating children (family language policies/strategies, bilingual/monolingual environments surrounding the child, variety of different recording environments, etc.). Future research should also tap into the developmental shifts in code-mixing rates and see if entrenchment is an important variable only in younger age groups of bilinguals and what kind of a role it has for older children.

6. Conclusion

In this paper the language proportions, MLU and utterance complexities of a 2-year-old (2;4–2;10) Estonian-English balanced bilingual child were examined. Unlike in other studies of bilingual children, the family of the participant separated the two languages by days of the week, rather than by speaker or place, as the common OPOL and ML@H strategies do. This, in turn, meant a more balanced input in both languages. The analysis showed that the balanced input was reflected in the language output proportions, as the child adhered to the family language policy by producing more speech in the respective language of the day. Interestingly, however, the participant produced a high proportion of code-mixed utterances (approximately 40%). The code-mixed utterances also had a higher MLU score and utterance complexity analysis revealed that the code-mixed utterances included more sentences, while monolingual utterances had more phrases and fragments. Code-mixing has an enabling effect on the child's speech allowing her to form longer and more complex utterances. Code-mixing is a tool enhancing communicative competence because it allows the child to use pieces from both languages to communicate a thought. Also, for the child in this study, the surrounding environment was supportive of code-mixing, as the input was not separated by speaker or place. According to usage-based theory, children learn language piece by piece, in chunks and slot and frame patterns. As some chunks and patterns become more entrenched, some neurological paths are activated

more easily. This could possibly be one explanation for code-mixing, though further studies need to be done to further evaluate this claim.

REFERENCES

Allen, Shanley; Genesee, Fred; Fish, Sarah; Crago, Martha B. 2002. Patterns of code mixing in English-Inuktitut bilinguals. – Proceedings of the 37th annual meeting of the Chicago Linguistic Society 2, 171–188.

Ambridge, Ben; Lieven, Elena 2011. Child language acquisition: contrasting theoretical approaches. Cambridge University Press.

Behrens, Heike 2006. The input–output relationship in first language acquisition. – Language and Cognitive Processes 21, 2–24. https://doi.org/10.1080/01690960400001721.

Bernardini, Petra; Schlyter, Suzanne 2004. Growing syntactic structure and code-mixing in the weaker language: The Ivy Hypothesis. – Bilingualism: Language and Cognition 7, 49–69. https://doi.org/10.1017/S1366728904001270.

Bybee, Joan 2010. Language, Usage and Cognition. Cambridge: Cambridge University Press.

Cameron-Faulkner, Thea; Lieven, Elena; Tomasello, Michael 2003. A construction based analysis of child directed speech. – Cognitive Science 27, 843–873. https://doi.org/10.1207/s15516709cog2706_2.

Cantone, Katja Francesca; Müller, Natascha 2005. Codeswitching at the interface of language-specific lexicons and the computational system. – International Journal of Bilingualism 9, 205–225. https://doi.org/10.1177/13670069050090020501.

Cantone, Katja Francesca 2007. Code-switching in bilingual children. Dordrecht: Springer

Dabrowska, Ewa 2014. Recycling utterances: A speaker's guide to sentence processing. – Cognitive Linguistics 25, 617–653. https://doi.org/10.1515/cog-2014-0057.

Gaskins, Dorota; Backus, Ad; Quick, Antje Endesfelder 2019a. Slot-and-Frame Schemas in the Language of a Polish- and English-Speaking Child: The Impact of Usage Patterns on the Switch Placement. – Languages 4, 8. https://doi.org/10.3390/languages4010008.

Gaskins, Dorota; Frick, Maria; Palola, Elina; Endesfelder Quick, Antje 2019b. Towards a usage-based model of early code-switching: Evidence from three language pairs. – Applied Linguistics Review 12, 2, 179–206. https://doi.org/10.1515/applirev-2019-0030.

Gaskins, Dorota; Bailleul, Oksana; Werner, Anne; Endesfelder Quick, Antje 2021. A Crosslinguistic Study of Child Code-Switching within the Noun Phrase: A Usage-Based Perspective. – Languages 6, 29. https://doi.org/10.3390/languages6010029.

Gawlitzek-Maiwald, Ira; Tracy, Rosemarie 1996. Bilingual bootstrapping. – Linguistics 34, 901–926. https://doi.org/10.1515/ling.1996.34.5.901.

Genesee, Fred 1989. Early bilingual development: One language or two? – Journal of Child Language 16, 161–179. doi:10.1017/S0305000900013490

Genesee, Fred; Nicoladis, Elena; Paradis, Johanne 1995. Language differentiation in early bilingual development. – Journal of child language 22, 611–631. https://doi.org/10.1017/S0305000900009971.

Jorschick, Liane; Quick, Endesfelder Antje; Gläßer, Dana; Lieven, Elena; Tomasello, Michael 2011. German-English speaking children's mixed NPs with 'correct' gender. – Bilingualism: Language and Cognition 14, 2, 173–183. https://doi: 10.1017/S1366728910000131.

Langacker, Ronald W. 1987. Foundations of cognitive grammar: Theoretical prerequisites. Vol 1. Stanford University Press.

Lieven, Elena; Pine, Julian M.; Baldwin, Gillian 1997. Lexically-based learning and early grammatical development. – Journal of Child Language 24, 187–219. https://doi.org/10.1017/S0305000996002930.

Lieven, Elena; Salomo, Dorothé; Tomasello, Michael 2009. Two-year-old children's production of multiword utterances: A usage-based analysis. – Cognitive Linguistics 20. https://doi.org/10.1515/COGL.2009.022.

MacSwan, Jeff 2000. The architecture of the bilingual language faculty: evidence from intrasentential code switching. – Bilingualism: language and cognition 3, 1, 37–54.

MacWhinney, Brian 2018. CLAN Manual. https://doi.org/10.21415/T5G10R.

Myers-Scotton, Carol 1997. Dueling Languages: Grammatical Structure in Code Switching. Oxford: Clarendon Press.

Paradis, Johanne; Nicoladis, Elena; Genesee, Fred 2000. Early emergence of structural constraints on code-mixing: evidence from French–English

bilingual children. – Bilingualism: Language and Cognition 3, 245–261. https://doi.org/10.1017/S1366728900000365.

Poeste, Meike; Müller, Natascha; Arnaus, Gil L. 2019. Code-mixing and language dominance: bilingual, trilingual and multilingual children compared. – International Journal of Multilingualism 16, 459–491. https://doi.org/10.1080/14790718.2019.1569017.

Poplack, S. 1980. Sometimes I'll start a sentence in Spanish y termino en espanol': toward a typology of code-switching. Linguistics 18, 581–618. https://doi.org/10.1515/ling.1980.18.7-8.581.

Quay, Suzanne 1995. The bilingual lexicon: Implications for studies of language choice – Journal of Child Language 22, 369–87.

Quick, Antje Endesfelder; Lieven, Elena; Backus, Ad; Tomasello, Michael 2018a. Constructively combining languages: The use of code-mixing in German-English bilingual child language acquisition. – Linguistic Approaches to Bilingualism 8, 393–409. https://doi.org/10.1075/lab.17008.qui.

Quick, Antje Endesfelder; Lieven, Elena; Carpenter, Malinda; Tomasello, Michael 2018b. Identifying partially schematic units in the code-mixing of an English and German speaking child. – Linguistic Approaches to Bilingualism 8, 477–501. https://doi.org/10.1075/lab.15049.qui.

Quick, Antje Endesfelder; Backus, Ad; Lieven, Elena 2018c. Partially schematic constructions as engines of development: Evidence from German-English bilingual acquisition. – Cognitive contact linguistics: placing usage, meaning and mind at the core of contact-induced variation and change. Ed. Eline Zenner, Ad Backus, Esme Winter-Froemel. De Gruyter Mouton, 279–304. https://doi.org/10.1515/9783110619430-010.

Quick, Antje Endesfelder; Hartmann, Stefan; Backus, Ad; Lieven, Elena 2019. Entrenchment and productivity: The role of input in the code-mixing of a German-English bilingual child. – Applied Linguistics Review 12, 225–247. https://doi.org/10.1515/applirev-2019-0027.

Quick, Antje Endesfelder; Gaskins, Dorota; Bailleul, Oksana; Frick, Maria; Palola, Elina 2020. A gateway to complexity: A cross-linguistic comparison of child bilingual speech. – International Journal of Bilingualism 25, 3, 800–811. https://doi.org/10.1177/1367006920956721.

Schmid, Hans-Jörg 2017. A framework for understanding entrenchment and its psychological foundations. – Entrenchment and the psychology of language learning. How we reorganize and adapt linguistic knowledge. Ed. Hans-Jörg Schmid, Boston, MA: De Gruyter, 9–39.

Stoll, Sabine; Abbot-Smith, Kirsten; Lieven, Elena 2009. Lexically Restricted Utterances in Russian, German, and English Child-Directed Speech. – Cognitive Science 33, 75–103. https://doi.org/10.1111/j.1551-6709.2008.01004.x.

Tomasello, Michael 2000. First steps toward a usage-based theory of language acquisition. – Cognitive Linguistics 11, 1/2, 61–82.

Tomasello, Michael 2003. Constructing a language: a usage-based theory of language acquisition. Harvard University Press.

Valian, Virginia 2014. Arguing about innateness. – Journal of Child Language 41, 78–92. https://doi.org/10.1017/S0305000914000336.

Yow, W. Quin; Tan, Jessica SH; Flynn, Suzanne 2018. Code-switching as a marker of linguistic competence in bilingual children. – Bilingualism: Language and Cognition 21, 1075–1090.

RESÜMEE

VÕIMENDAV TÖÖRIIST: EESTI-INGLISE TASAKAALUS SISENDIGA KAKSKEELSE 2-AASTASE KOODIVAHETUS

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Viimastel aastatel on järjest enam uuritud kakskeelsete laste koodivahetust kasutuspõhise teooria valguses (Gaskins jt. 2019; Quick jt. 2020; Yow jt. 2018). Kuid suurem osa uuringutest on siiani keskendunud perekondadele, kes kasutavad keelte eristamiseks üks vanem, üks keel või vähemuskeel kodus meetodeid. Nende puhul on tihti tegemist situatsioonidega, kus laps saab ühes keeles märkimisväärselt rohkem sisendit kui teises. Käesoleva artikli juhtumianalüüs keskendub 2-aastasele (2;4–2;10) eesti-inglise kakskeelsele, kes saab sisendit mõlemas keeles üsna võrdselt, sest peres on keelekasutus jagatud nädalapäevade järgi.

Uuringu tulemustest ilmnes, et lapse tasakaalus sisend väljendus ka tema kahe keele väljundi proportsioonides ja väljendi keskmise pikkuse (VKK) skooris. Eesti ja inglise keelsete lausungite VKK oli uuringuperioodi algul sarnane (2.23 ja 2.04) ja uuringuperioodi lõpus oli inglise keelsete lausungite VKK mõnevõrra kõrgem (2.91 ja 2.36). Lapse kõnes esines rohkelt (ligikaudu 40%) koodivahetusega lausungeid, mille VKK oli kõrgeim (alguses 3.62 ning lõpus 4.30) ja need olid ka komplekssemad kui ükskeelsed lausungid.

Võtmesõnad: kakskeelsus, koodivahetus, VKK, kasutuspõhine, eesti, inglise

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