

Acquisition of Estonian - Early Words (2012)

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In natural language learning, children pick up spoken sounds from their surroundings, attach meanings to the various sound combinations and begin to operate these combinations in ways that enable progressively more and more complex communication. This most important achievement occurs effortlessly in children. This paper covers a small part of an ongoing project concerned with investigating how Estonian language is learnt naturally.

The developing speech of three small boys living in different linguistic environments, two in Australia and one in Estonia, has been observed and recorded over several years, when they were between the ages of 1,5 and 3 years. The parents of one Australian boy chose to raise him as a bilingual, with his mother using Estonian and his father English. Both parents of the other boy in Australia spoke Estonian, even though his mother had learnt it herself only recently, and there was an older half-sister in the household who communicated mainly in English. Thus, both boys in Australia had some exposure to English. The third boy in Estonia lived entirely in Estonian surroundings, and could be regarded thus as a control. None of the boys attended any child care establishments, so home influence was predominant.

The observed and recorded speech of the boys has been analysed at word level, in terms of the lexical and grammatical meaning of each word in context of a particular discourse, as well as its acquisition status.

Morphological and syntactic development of the boys' speech has been described previously (e.g., Salasoo 1996, 1998a, 1998b, 2001, 2002a). The major parts of speech -- the verbs, nouns, adjectives and adverbs -- used by the boys have been looked at and reported on, lately concentrating on the semantic aspect of their utterings (Salasoo 2002b, 2003, 2010a, 2010b).

A particularly prominent, but puzzling group of words in the boys' early vocabularies, which seemed to need further attention, were onomatopoeic words. It was decided to investigate their appearance and role, questioning whether onomatopoeic words could be somewhat easier to acquire than other types of words.

1. Onomatopoeia

The term *onomatopoeia* has its origin in Greek, meaning 'word-making'. Onomatopoeic or onomatopoetic words mimic the sounds an object makes, and as such these words imitate, echo, or suggest the object or its associated action they are describing. As a simple example of onomatopoeia we can quote the English word 'clap', which in Estonian is *plaks* -- about the meaning of which no one can remain in doubt. According to Stefan Chiarantano (2006), in such words their sound represents the meaning of the word.

Onomatopoeia has not been investigated very much. However, it seems to occur in most languages, and Wai Chuen Thomas Tsoi and Chung Hoi Wai Clara (2004) claim that it occurs in all languages of the world.

In their study they chose 30 sounds grouped as:

1. Calls of animals
2. Sounds of nature
3. Sounds made by humans
4. Miscellaneous sounds

They compared onomatopes in twelve different languages: the Sino-Tibetan Cantonese and Mandarin, the Indo-European Italian, Spanish, German, English and Lithuanian, the Altaic Turkish, the Niger-Congo Swahili, the independent Korean and Japanese, and the Finno-Ugric Finnish. They found that in many of these languages the same phonemes are utilized as onomatopes conveying the same meaning, as shown in Table 1.

There are also other onomatopes that are not similar in all the languages, being modified by the characteristics of a particular language, by its phonological system either in hearing or, more likely, in reproduction, or its syllabic structure. For instance, some Asian languages lack the voiced fricative [z] to express the buzzing of bees and the nasal consonants [n] and [ŋ] are used instead, nor do these languages allow double consonants in their syllables, with a vowel inserted between two similar consonants.

Assaneo, Nichols and Trevisan (2011) reported a comparison of the actual sounds made by objects or actions with the anatomical features of the vocal imitation used, and they felt it opened a new venue for a quantitative study of word formation.

Many onomatopes related to human activities, such as eating, drinking, spitting, etc., seem to show a connection between the kinesthetic functions and the meaning of the word, e.g., to produce [am] to signify eating, the mouth is opened fully to produce [a] and closed to produce the bilabial nasal [m], thus imitating eating itself (Tsoi and Chung 2004).

Table 1: Characteristic phonemes of some common onomatopes
(from Tsoi and Chung 2004)

Sounds	Characteristic phonemes
blowing wind	[u]
dripping water	[t,d]
laughing	[h]
crying	[w] + [a]
murmuring	[m]
speaking quickly	[p,b] + [l] + [a]
eating	[a] + [m]
drinking	[k,g] (+ [l]) + [u]
glass breaking	[ŋ] / [n]
ringing	[t,d] / [r] + [i] / [a] / [o] + [ŋ] / [n]
car beeping	[p,b]
explosion	[p,b] + [a] / [u] + [ŋ] / [n] / [m]

Because of the universality of onomatopoeia, some linguists believe onomatopes were the first words spoken by humans when language evolved (Tsoi and Chung 2004). Imitation of natural sounds would have been easily understood and related to their source objects (certain animals, natural occurrences), as well as the actions of these objects. Over time these primitive sounds have developed into the onomatopes used today, which include some words we may not usually associate with their sources.

2. Onomatopoeia in Estonian

Estonian is very rich in onomatopoeia, with 20% of its words being onomatopoeic, according to Rätsep (1983). The lexicographer Enn Veldi has made an extensive study of onomatopoeia, describing it as “a phonosemantic subsystem modelling extralinguistic acoustic phenomena by means of the phonological structure of words in a given language” (1987). On such basis he has classified an inventory of 735 Estonian onomatopoeic words into 18 types, with 20 patterns, and has found that 39% of the inventory fit into two types:

- Type 1 - The Instants, with 161 onomatopes, e.g.
TIKK-TAKK ('tick-tack' of a clock); *KLÖPS* (a light clicking sound, like closing a purse); *KLUKSuma* (like water flowing unevenly out of an opening, esp. the throat); *SIDistama* (to make a succession of short rapid sounds, like a bird), and
- Type 10 - The Tonal Postpulse Instants-Continuants, with 126 onomatopes in two subgroups, e.g.
 - Subtype A - short, like *TÜMPSuma* (to make repeated dull sounds when striking with a heavy blunt object); *PONTSatama* (sound made by the falling of a soft heavy object); *KOLKSuma* (making repeated loud unpleasant sharp sounds, like metal striking upon metal); and
 - Subtype B - prolonged, e.g., *PLÖNNima* (to play a stringed instrument without skill or care); *PIMM-PAMM* slow and repeated deep resonant sounds of a large bell; *KILL-KÖLL* (clear resonant sounds of small bells; *TILL* (a prolonged high-pitched sound, like a cash register).

Another 40.8 % are made up of the following types:

- Type 5 - The Quasi-Instant Frequentatives, with 88 onomatopes, e.g., *(P)RAKSuma* (making sudden explosive sounds of ice or burning logs); *KRAKSti* (sudden sharp explosive sound as in braking); *PLARTSti* (sound of a body falling into water); *SIRTSuma* (making short sharp sounds, like birds or insects);
- Type 2 - The Tonal Continuants, with 76 onomatopes, e.g., *PIIP-PIIP* (beep-beep, the high-pitched tone of a motor horn or telephone); *TUUT-TUUT* (toot-toot, the low-pitched sounds of a horn); *SIITSuma* (to cheep like young birds);
- Type 3 - The Pure Noise Continuants, with 69 onomatopes, e.g., *SISisema* (to give a high-pitched prolonged sibilant sound, hiss); *SOSistama* (to whisper); *LÖHisema* (to make the sound of tempestuous flames); *SIUH* (the sound of cutting through the air, swish); *KAHisema* (to whisper gently through the leaves like the wind, to swish like taffeta);
- Type 6 - The Pure Frequentatives with 67 onomatopes, e.g., *URisema* (to make deep rough throaty sound like a dog, to growl); *TIRisema* (to make a high-pitched continuous vibrating sound like an alarm clock, to ring); *PÖRisema* (to make a deep continuous vibrating sound by a succession of quick strokes like an engine); *SIRistama* (to sing in a trilling manner like a bird, to chirr like a grasshopper); *KÄRisema* (to make a tearing sound).

The remaining 20% are scattered among the remaining types.

3. Onomatopoeia Among Observed Children Acquiring Estonian

When classifying the words in the early utterances of the observed boys, sometimes it was quite difficult to decide whether a particular word indicated an object, and was thus a noun, or some action, and was thus a verb, or whether it was even meant to qualify nouns or verbs and was thus an adjectives or an adverb. Such units often seemed to imitate sounds made by certain objects, being onomatopes, or consisted of vigorous brief utterances, being exclamations.

A difficulty also occurred when trying to draw a clear distinction between exclamations, onomatopes and so-called baby-talk expressions. Nevertheless, an attempt was made, by examining such expressions in context. An utterance was regarded as being an exclamation when it was spontaneously uttered in response to some stimulus, e.g., *ai!* in response to pain, whereas the imitative utterances attempting to describe something were classified as onomatopes. Often the result was not clear-cut, e.g., *ai* (and versions of it) was at times a straight-out response to something painful, and at other times it was used to indicate that someone was in pain. Table 2 presents an attempt to separate these types of expressions.

Sometimes a particular concept was expressed synonymously by several differing words even during the same observation, but a change in terms occurred mostly over a certain period of time.

Thus, exclamations, baby talk, and onomatopoetic expressions are discussed separately, to observe whether there was any difference between them.

3.1 *Number of Concepts Used*

Altogether 96 concepts were expressed as exclamations, baby talk and onomatopes, collectively by the three boys during their observations.

Table 2 - Boys' Use of Exclamations, Baby Talk and Onomatopes During Observations

Subject	Age at observation	No & % of semantic representations of concepts					
		Exclamations - Total 33		Baby talk - Total 6	Onomatopes - Total 57		Total 96
		Estonian - Total 29	English Total 13		Estonian - Total 57	English Total 9	
Karl-Oskar	1;11-3;0	14=22% (23)	-	5=8% (7)	44=70% (69)	-	63(99)
Lembit	1;7-3;0	15=44% (25)	5=15% [1]=3% (5)	2=6% (2)	13=38% (17)	3=9% [3]=9% (5)	34(54)*
Aksel	2;10-4;0	19=44% (41)	8=19% [3]=7% (11)	1=2% (2)	14=33% (18)	8=19% [6]=14% (12)	43(84)**

Notes on Table 2: Input to Karl-Oskar was only in Estonian, to Lembit mainly in Estonian and to Aksel both in Estonian and English. Numbers in [] are for concepts expressed only in English; numbers in () include the synonyms used. The last column of totals does not double-count the concepts expressed both in Estonian and English: *= 4 concepts, **= 7 concepts.

Out of the 33 concepts that were produced as exclamations by the three boys, 29 occurred during speech in Estonian and far fewer (13) when Lembit and Aksel used English. The lower number of English concepts was not unexpected, as the boys were usually recorded when they were speaking in Estonian, and it is not taken as an indication of fewer English concepts being used altogether.

The number of concepts uttered by the two English-speaking boys as exclamations was fairly equal, being 15 and 19 in Estonian and five and eight in English. To enable meaningful comparison, the numbers have been converted in Table 2 to percentages of the total number of concepts used by each boy. This indicates that the boy in Estonia, Karl-Oskar, used far fewer exclamations (22% of his total concepts) than the boys in Australia (Lembit 47% and Aksel 51%, together with the exclamations expressed only in English).

Of the 13 exclamation concepts provided during English conversation by the boys in Australia, only four were expressed only in English, “whoopee” by Lembit and “boo”, “ta da” and “wow”, by Aksel, while the rest of English exclamations (nine) were expressed in Estonian as well, when the conversation was in that language, providing evidence of a developing bilinguality.

The boys produced collectively six expressions that are commonly used by adults when talking to children, so called baby talk. Of these five were used by Karl-Oskar: *kalli-kalli* (hugging), *mammud* (berries), *tudub* (sleeps), *ata-ata* (spanking), and *tipa-tapa* (walking). Lembit used only two baby talk terms: *ata* and *karplauhti* (falling). The only such term mentioned by the bilingually raised Aksel was *tipa-tapa*. Karl-Oskar’s apparent superior usage of such terms may have been the result of his Estonian environment. Baby talk terms occurred in Estonian only.

Similar superiority was shown by Karl-Oskar in the expression of onomatopoe concepts, with his 44 onomatopoes forming 70% of his total concepts. Both the boys in Australia were left far behind with their 47% of total his production.

Comparing the proportion of concepts expressed as exclamations to that of onomatopoes, the results of the boy in Estonia, Karl-Oskar, are strikingly different from the two boys in Australia. While the proportions of Lembit and Aksel were very similar for both types of expressions (47%-51% of each boy’s total concepts), Karl-Oskar’s proportion of the exclamation concepts was less than half (22%) of that of the other two and his onomatopoe concepts exceeded the others’ by 23%.

Why was his usage so radically different? Probably it was actually normal, and we should be asking instead why the proportions of exclamations were so high and of onomatopoes so low in the speech of the boys in Australia.

The greater proportion of exclamation concepts of Lembit and Aksel may be partially explained by examining Table 3, which records the actual exclamations used by more than one boy, where especially Aksel’s comparatively high number of synonymic expressions is obvious. It also appears that quite often he used the same exclamation in response to different stimuli or for different purposes, e.g., *aah!* both in recognition and in surprise or *au/aaui* also in surprise and upon mishap, etc. This may have been the result of the observer having made too fine a distinction between the intended motives, or the child being unsure in his choice of expression. It may be also that the Australian boys’ actual exclamations as reactions to particular stimuli were issued more haphazardously, by whatever sound combination easily escaped, whereas Karl-Oskar kept more to the acquired terms.

Not only is the proportion of onomatopoe concepts considerably higher for the boy in Estonia than for the boys in Australia, but so are also his numbers of Estonian onomatopoe synonyms (Table 2). This could be taken as a clear indication of the benefit bestowed to Estonian vocabulary acquisition by growing up in an exclusively Estonian-using environment.

Looking at the total number of 96 concepts expressed by the three boys as exclamations, baby talk and onomatopes, Karl-Oskar is in forefront with 63 concepts, followed by Aksel with 43 and Lembit with 34 concepts. The 10% difference between Aksel and Lembit, both learning Estonian in Australia, is very interesting indeed. It seems to have come about mainly through the use of English, whereby Aksel's proportion of concepts expressed in English for both the exclamations and onomatopes was 19% of the total used, which was 4-10% more than Lembit's. Aksel's total advantage was not even upset by the proportion of his Estonian onomatopoe concepts being 5% lower than Lembit's.

It seems to be an input issue, as Lembit did not have much exposure to English while both parents spoke to him in Estonian, including his mother who had learnt Estonian only recently as an adult. The deliberately bilingually raised Aksel, however, had a substantial English input from his father.

3.2 Commonality of underlying concepts and their expressions

The next question is whether the boys express the same concepts and whether they use the same terms for expressing their concepts. Tables 3, 4 and 5 provide some indications of commonality.

Tables 3 and 5 show that out of the 33 exclamation concepts used, six Estonian exclamations were common to the three boys, two were common to Karl-Oskar and Lembit, three to Karl-Oskar and Aksel and two to Lembit and Aksel. Karl-Oskar produced three, Lembit five and Aksel eight individual Estonian exclamations.

There was a lot of variation in the exclamations used for particular intents (Table 3), both between the boys as well as for one boy. The high number of synonymous exclamations (52) of the deliberately bilingually raised Aksel was noted earlier, e.g., to express surprise he said during Estonian conversation *au, aah, ähää!, o-o-o-o, oi, oo, ooh, ohoo!* and *uuh*, and while speaking English he used "auu", "au", "uaah!" and "oh". The idea of haphazardous use of exclamations was reinforced by there being much less variation in expressing the same concept among onomatopoes than the exclamations, both between the boys and also among the expressions by individual boys (comparing Tables 3 and 4).

Table 3 - Exclamations used by more than one boy

Intent	Karl-Oskar	Lembit	Aksel
ballast expression	<i>mmh</i>	<i>aa! ää, aam-m, ääm, m-m</i>	<i>aa,m-m; aa (in English)</i>
in recognition	<i>aah! ah! äh, ääh</i>	<i>ah!</i>	<i>aah! äh-äh! ääh! ai; aah (in English)</i>
experiencing pain	<i>ai! aia, aih! ai-ai-ai-ai-ai, ai-ai</i>	<i>aaü, ääu</i>	<i>ai-ai, ai, aai</i>
in surprise	<i>oih!</i>	<i>oh, ah, uh, uuh</i>	<i>au,aah,ähää! o-o-o-o, oi, oo, ooh, ohoo! uuh; auu,au, uaah! oh (in English)</i>
sighing	<i>oeää, õõhh</i>	<i>äh</i>	<i>õh</i>
affirmation (in addition to <i>jah/jaa</i>)	<i>mh-mh</i>	<i>m-m, mh-mh; sure (in English)</i>	<i>m-m, mh-mh</i>
answering telephone/phone	<i>ollo-ollo, allo</i>	<i>allo; hellou (in English)</i>	
grunt	<i>mh!</i>	<i>mh!</i>	
help!	<i>appi!</i>		<i>appi!</i>
laughing	<i>äh-äh!</i>		<i>äh-äh-äh-äh! ääääh! hii, hi-hi-hi! hi-hi-hii! ha-ha-ha!</i>
singing	<i>taa-baa</i>		<i>tüttüdü-tiüü, lal-lala-laa</i>
thanks!		<i>aitäh!</i>	<i>täh*! (aitäh)</i>
upon mishap		<i>auu!</i>	<i>aauu!; auu (in English)</i>
Total number of shared exclamations	11 (20)	10 (21)	11 (39)

(Total numbers in brackets include synonyms)

Table 4 provides the actual onomatopoeic expressions used by more than one boy, and Table 5 indicates their numerical data related to commonality.

Table 4 - Onomatopes used by more than one boy

Concept	Karl-Oskar	Lembit	Aksel
barking	<i>auh</i>	vuff-vuff-vuff (Eng)	woof (Eng)
doorbell chiming	<i>till-till, till-tõll</i>	ding-dong, dingong, dingon (Eng)	ding-dong (Eng)
banging	<i>põmm-pimm</i>	<i>bõm, bam</i>	
alarm clock ringing	<i>kill-kõll</i>	<i>kõll</i>	
taking on lap	<i>opa, anna opa</i>	<i>up-pa, upaa</i>	
swishing sound	<i>p-p phh-hh</i>	<i>phh</i>	
motor sound	<i>pu-u-u, põlpõl*(põrr-põrr)</i>	<i>uu</i>	
ticking/clock	<i>tik-tak, tak-tak</i>	tic-toc (Eng)	
train /train sound	<i>tuh-tuh</i>	<i>tsuhh</i>	
pain/painful/hurts	<i>ai-ai-ai, ai, ai-aia, ai-ai</i>		<i>aaii</i>
blowing	<i>puhh, puh</i>		f-f-f-f (Eng)
knocking	<i>kop-kop, kop-kop-kop</i>		<i>kop-kop</i> (Est), <i>täp-täp</i> (Eng)
tickle	<i>tik-tok</i>		<i>kõdi-kõdi</i> (Est), <i>ta-ta-taa, ta-tiko-tiko, tiki-tiki</i> (Eng)
eating/food/tasty	<i>mäm-mämm, näämi-näämi</i>		<i>m-m, amm</i>
landing sound	<i>opsi*(popsti), potsti, opsti</i>		paaau! (Eng)
beeping	<i>piip-piip</i>		<i>piip</i>
drilling	<i>prrr</i>		<i>prrr, purr</i>
drum/drum sound	<i>trumm-trumm</i>		rat-tat-taa, lat-tat-taa (Eng)
baby sounds	<i>te-pe-pe-pea-pe-pe-pe, pä-pä-pä-pä</i>		<i>ö-ö-ö-ö</i>
tooting	<i>tuut-tuut</i>		toot, toot-too (Eng)
clap		<i>plaks</i>	<i>plaks</i>
Total No shared	20 (30)	10 (14)	14 (18)

(Total numbers in brackets include synonyms)

Table 5 - Commonality - Number of Concepts Used by the Boys

Type of expression Total number	No of concepts							
	Exclamations 33		Baby talk 6		Onomatopes 57		Total 96	
Language	Est	Eng	Est	Eng	Est A/L	Eng KO	Est	Eng
Karl-Oskar, Lembit & Aksel	6	3A[0] 1L[0]			0 2	2A+2L [2]	8	6[2]
Karl-Oskar & Lembit	2	1L[0]	1		6 7	1L[1]	10	2[1]
Karl-Oskar & Aksel	3		1		7 11	6A[4]	15	6[4]
Lembit & Aksel	2	1A[0]			1		3	1[0]
Karl-Oskar only	3		3		24		30	
Lembit only	5	3[1]	1		6		12	3[1]
Aksel only	8	4[3]			6		14	4[3]
Total Nos	29	13[4]	6	0	50 57	9[7]	92	22[11]

A=Aksel, L= Lembit, Concepts expressed only in English are in brackets []

The largest number of concepts expressed in common as onomatopes were produced by Karl-Oskar and Aksel. For these eleven Estonian concepts of Karl-Oskar, Aksel used seven Estonian and six English onomatopes (two concepts (knocking and tickling) were expressed in both languages - see Table 4). Karl-Oskar and Lembit had seven concepts in common (for one of which Lembit used just the English term “tic-toc” without the Estonian equivalent), whereas Lembit and Aksel shared only one concept (clapping, expressed with the same term *plaks*), and the three boys had only two concepts in common (for barking and the doorbell). The latter two concepts were expressed by both boys in Australia in English.

Leaving aside baby talk and Karl-Oskar’s expressions, as none of these were in English, it is interesting to note that out of the total 63 concepts expressed as exclamations and onomatopes by the two boys in Australia, 22 were in English, of which half were just in English alone, while the remaining half had also Estonian equivalents. Thus the proportion of concepts expressed in English was 35% of total and those used in both languages was 17%. This provides evidence of a reasonable degree of bilinguality in the Australian boys’ use of exclamations and onomatopes.

The proportion of a boy’s words used in common with the other boys during their observation periods out of the total used by the three boys has been named

earlier as his commonality index (Salasoo 2005). This measure, applied to different word types, provides a useful means of comparison, shown in Table 6.

Table 6 - Commonality indices - % of Concepts Used in Common with Another Boy (including English concepts)

Total No concepts	Exclamations 33		Baby talk 6		Onomatopes 57		Total 96
Commonality of	own total	3 boys' total	own total	3 boys' total	own total	3 boys' total	
Karl-Oskar	79%	33%	40%	33%	45%	35%	33%
Lembit	63%	30%	50%	17%	63%	18%	20%
Aksel	50%	33%	100%	17%	70%	25%	27%

It seems that commonality of the concepts used for the exclamations was very similar among the boys (30-33% of the total 33 concepts used), whereas for the 57 onomatopoeic concepts used by the boys, commonality varied greatly, being most for Karl-Oskar (35%), 25% for Aksel, and only 18% for Lembit. Although the small number of baby talk concepts used renders their percentages almost meaningless, they have been included in the total of 96, for which the commonality indexes of the boys still greatly differ, influenced by the disparity among the onomatopoes.

Karl-Oskar in Estonia had the highest fairly consistent commonality index with the other boys for all the types of expressions examined, ranging from 33% to 35%. While Lembit, in Australia, had a very similar commonality index with the other boys for the exclamations (30%), his commonality with the other boys for the onomatopoes and baby talk was half of that of Karl-Oskar (18% and 17%, respectively). The contrast between the onomatopoeic commonality of the bilingual Aksel in Australia and Karl-Oskar in Estonia was not so pronounced (25% and 35%, respectively).

Table 6 reveals a further curious difference between the use of exclamations and onomatopoes. Whereas 79% of Karl-Oskar's exclamations were used also by the other boys, only 45% of his onomatopoes were. Yet for Lembit the percentage used by others was the same (63%) for both types of concepts and for Aksel it was opposite to Karl-Oskar (50% of exclamations and 70% of onomatopoes). This seems to have been influenced by the large number of onomatopoeic concepts (44) used by Karl-Oskar during the observations, reflecting again his obviously richer input.

Assuming that Karl-Oskar's speech represented a typical Estonian boy's vocabulary, the onomatopoeic concepts of the boys in Australia were compared with his. Calculating from Table 5 reveals that 18 (29%) of Karl-Oskar's 63 Estonian concepts for exclamations, onomatopoes and baby talk, collectively, were also used

by Lembit and 23 (37%) were used by Aksel. Such a dissimilarity between the two boys' concept numbers, however, disappears if one considers their proportion of each boy's total concepts: altogether Aksel expressed 43 against Lembit's 34 concepts (Table 2), for which their commonality with Karl-Oskar was almost the same ($18/34=52.9\%$ and $23/43=53.4\%$). This indicates that over half of the concepts of each of the boys in Australia was also expressed by the boy in Estonia, i.e., they were learning the same language, at least as far as the examined expressions were concerned.

3.3 Classification of the boys' onomatopoetic expressions

The onomatopes used by the observed children may be classified either according to the source of inspiration for forming a word that indicates a meaning associated with the source, e.g., a car being indicated by the sound it makes, "pr-r-r", or by the onomatopoetic sounds themselves. Veldi (1987, 2013) has grouped Estonian onomatopes according to phonological principles, applying Voronin's classification, based on the typology of extralinguistic sounds, to the onomatopoetic expressions in the Estonian language. In Figure 1, however, the initially mentioned, semantic approach is taken, i.e., ending with what the child is trying to express with the uttered sounds imitating the inspiring source.

The sources have been initially divided broadly into sounds made by inanimate and animate subjects, and the inanimate subjects into sounds made by mechanical objects. These in turn were divided into sounds coming from vehicular objects, e.g., *tsuhh-tsuuh* coming from a train, and other mechanical sounds, e.g., "ding-dong" from a doorbell.

Animate sounds were divided into animal sounds and sounds indicating some action. It was often hard to distinguish whether animal sounds meant the sound made by the animal, e.g., *teeb ki-ki-lii-lii* (crows) or the rooster itself *ki-ki-lii-lii*. Karl-Oskar's sounds imitating galloping meant both the horse and its actions. Some onomatopes, however, meant unmistakably just the animal, e.g., the call issued to chickens *tibi-tibi* was used to indicate the chick itself.

Many sounds were used to express some animate action, e.g., *näm-näm* and its numerous synonyms for eating, *krõmps-krõmps* for crunching, etc.

Whereas out of the total concepts of the boys expressed by onomatopoetic means about a quarter to a third were in common, Tables 3 and 4, and also Figure 1 demonstrate that the expressions of particular concepts were not always uniform, but varied between the boys, as well as varying over time within the vocabulary of a particular boy -- e.g., Karl-Oskar exclaimed upon surprise *oih!*

Figure 1 - Sources of Estonian Onomatopoeic Expressions of Three Small Boys

S O U R C E o f I N S P I R A T I O N	In- ani- ma- te	Mechanical	Vehicles	Car	KO: <i>prrr</i> L: <i>brõõm</i> A: <i>prrr, purrr</i>
				Train	KO: <i>tuh-tuh</i> L: <i>tsuhh</i> A: <i>tsuhh</i>
				Bicycle	KO: <i>tun-tun</i>
				Boat	KO: <i>puu-u-u</i>
			Other	Alarm clock ringing	KO: <i>kill-kõll, till-till, till-tõll</i>
				Machine sound	KO: <i>põrr-põrr</i>
		Mecha- nical	Noise	L: <i>kill-kool</i>	
			Phone/telephoning	KO: <i>ollo-ollo,allo,allo-allo</i> L: <i>allo</i>	
		Objects	Doorbell ringing	L: <i>ding-dong, din-gong,dingon</i> A: <i>ding-dong</i>	
			Clock ticking	KO: <i>tik-tak, tak-tak</i> L: <i>tik-tok</i>	
		Objects	Scissors clicking	KO: <i>klõps-klõps</i>	
			Vehicular Warnings	Car/motorcycle/ tractor beeping	KO: <i>piip-piip, piip</i> A: <i>piip</i>
	Car tooting	KO: <i>tuut-tuut</i> A: <i>tuut,tuut-too</i>			
	Ani- ma- te	Animals	Rooster calling	KO: <i>ki-pi-ri-pii, ki-ki-lii-lii, kill-kill, kill</i>	
			Dog barking	KO: <i>auh</i> L: <i>vuff-vuff-vuff</i>	
			Horse galloping	KO: <i>topa-lõpa, lõpp, kõpa-lõpp, kapa,kapi-kapi, kop-kop, kops-ops, kopli-kopli, kopi-kopi</i>	
		Actions	Eating	KO: <i>näm-näm, nämm-mämm, mäm-mämm, nämmi-nämmi, nämmud</i>	
			Biting	KO: <i>ampsti, amps, amps-amps</i>	
			Clapping	L: <i>ping, plaks</i> A: <i>plaks</i>	
			Banging	KO: <i>põmm-pimm</i> L: <i>bõm, bam</i>	
			Swinging	KO: <i>kiiga-kaaga, kiib-kiiga-kiika</i>	
			Taking on lap	KO: <i>opa, anna opa</i> L: <i>up-pa, upaa</i>	
			Falling over	KO: <i>kuku</i> L: <i>upaa</i>	
			Feeling pain	KO: <i>ai, aia!, aih!</i> L: <i>auu!</i> A: <i>aaau!</i>	
Spanking			KO: <i>ata-ata</i> L: <i>ata</i>		

Lembit called out *oh, ah, uh and uuh!* and Aksel used in Estonian conversation *au, aah, ähää!, o-o-o-o, oi, oo, ooh, ohoo! uuh* and when speaking English “auu”, “au”, “uaah!” and “oh”. Karl-Oskar, in the most favourable learning situation, used for years numerous onomatopoeic synonyms interchangeably to indicate a horse and galloping, before eventually arriving via mispronunciation at the standard term for horse *hobune* when he was over four years of age. Most standard language terms for the onomatopes used appeared earlier than that in the boys’ vocabulary, and gradually began to be used more and more.

4. Conclusions

The current study of occurrence of onomatopoeia in the initial speech of three small children acquiring Estonian in different environments has revealed that all the studied children were using onomatopoeic terms in Estonian, while the boys living in Australia were also using some English terms. For half of the onomatopoeic expressions in English, their Estonian counterparts were used as well, thereby providing evidence of a certain bilinguality.

There were two main differences in the use of onomatopoeic expressions between the boys acquiring Estonian in Australia and the boy in Estonia. As parents usually tend to use baby talk and onomatopoeic terms with young children, it is expected that the children’s input would be rich in such terms, but in this investigation the Estonian input of the two boys in Australia was probably limited in this respect. This is reflected, when compared to the boy in Estonia, in their much lower percentage of concepts expressed in baby talk and onomatopes.

In contrast, the proportion of exclamations of their total onomatopoeically expressed concepts was twice as high and much more varied for the boys in Australia than for the boy in Estonia. This seems to indicate a haphazard, rather than acquired production of some exclamations.

However, as over half of the onomatopoeically expressed concepts of each of the boys in Australia were also used by the boy in Estonia, it seems all the boys were learning the same language, at least as far as the examined expressions were concerned. Moreover, the early appearance of audibly identifiable onomatopoeic terms and their prevalence in the young children’s Estonian speech seems to point to a relatively easy acquisition of onomatopes at the early stage of language development.

The onomatopes used by the boys have been classified according to the inspiring source for forming a word that indicates a meaning associated with the source.

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