

Derivation in Finnish child speech and child-directed speech

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This chapter examines the early phases of the acquisition of Finnish derivational morphology: what kind of derivational types are used in early child speech and child-directed speech? Which types emerge first and why these types? The analysis is based on recorded and transcribed material of two Finnish-speaking children and their caregivers. In addition, some diary data are used to illustrate the emergence of innovative derived words and the productivity of different derivational types. The study shows the importance of productivity and frequency to the emergence of Finnish derivational types can best be observed in verbs and adjectives: the derivational types which are most frequently used and productive in Finnish emerge early and are frequently used in child speech.

Keywords: morphology; child language; derivation; Finnish; neologism

1. Introduction

This study examines the early phases of the acquisition of Finnish derivational morphology. Both derivation and composition are productive word-formation processes in Finnish. Until now, derivation in Finnish child language has been studied mostly from the perspective of innovative word formation: Lieko (1998), Vänntilä (1998), Laalo (2011: 254–268), Nygrén (2019), Savonen (2019) and Silvennoinen (2014) have published material about the neologisms of their own children. Besides neologisms, word formation in Finnish child language has been studied from the perspective of nominal compounding (Laalo 2017) and diminutives (Laalo 2007).

Finnish is a Finno-Ugric language with a rich morphology, mainly suffixation. The language is synthetic rather than analytic; it is semi-agglutinative with morphophonological variation in many inflectional patterns and categories, both stem-types and suffixes, and it has a wide variety of derivational morphemes. Both derivation and compounding are very productive word-formation processes in spoken and written Finnish.

Finnish nouns have about 70 derivational suffix types including agents (jA-suffix,¹ e.g. *aja-ja* ‘driver’ ← *ajaa* ‘drive’, *heittä-jä* ‘thrower’ ← *heittää* ‘throw’), and instruments (deverbal suffix *-in* : *-ime-*, e.g. *ava-in* : *ava-ime-n*

¹ Capital letters in the derivational suffix indicate allomorphic variation: *-jA* represents the allomorphs *-ja* and *-jä*; *-U* the allomorphs *-u* and *-y*; *-ELE* the allomorphs *-ele*, *-ile*, *-el* and *-il*; *-TTA* the allomorphs *-tta*, *-ttä*, *-ta* and *-tä*; etc.

‘key, opener’ [nominative : genitive] ← *avata* ‘open’). Verbs have about 40 derivational suffix types, among them such very productive ones as the causative *-TTA*, frequentative *-ELE* and reflexive *-U*. Adjectives have more than 10 derivational suffix types, and some of them are complex. The most productive of them is *-inen*, which is also included in many adjective-noun complex derivational suffixes. Others are *-isA*, *-kAs*, *-kkA*, *-vA*, *-tOn*, and *-hkO*. Adverbs have about 10 derivational suffix types: the most productive is *-sti*, which expresses manner and can be added to all adjectives; others include *-lti*, *-itse*, *-(i)ttain*, etc. (ISK 2004). Finnish derivation is mostly additive or modificatory, but there is also some conversion between nouns and verbs.

The main research questions are:

1. Which derivational patterns emerge and are acquired first?
2. What does the early emergence depend on? Does it depend on the type or token frequency in the input? On productivity? On the transparency of the derivational patterns? On the simplicity or shortness of the forms?
3. What is the relation between derivation, compounding and inflection in terms of emergence and productivity?²

² The criterion of productivity used was as follows: at least three combinations of a derivational suffix and a base must occur in the corpora.

2. Data and method

The data for the quantitative analysis is based on the recorded and transcribed material of two Finnish-speaking children, a girl called Mari and a boy called Tomi, and their caregivers. The girl's transcripts are from age 1;7–3;4 and the boy's from age 1;7–3;1. In addition, some diary data from these two children are used to illustrate the emergence and use of innovative derived words; the neologisms are helpful in evaluating the onset of the productive use of derivatives and the productivity of different derivational patterns. Furthermore, both published (Lieko 1998; Vánttilä 1998; Laitsaari & Laitsaari 1996) and unpublished (Nygrén 2019; Savonen 2019; Silvennoinen 2014) comparative material from other Finnish-speaking children including mostly neologisms is taken into account for the sake of illustration.

The duration of Mari's monthly recordings varies from 30 minutes (recordings made at 1;10 and 2;3) to 120 minutes (1;8 and 2;1), and Tomi's from 30 minutes (1;6, 1;7 and 2;1) to 60 minutes (his other recordings). Mari's diary data consists of about 9500 utterances and Tomi's of about 6700 utterances.

It is difficult to give the exact number of derived words, because there are many borderline cases of several types both in the data of this study as well as in Finnish in general. First, there is a continuum from clear

participles to lexicalized adjectives – from these only the clearly lexicalized ones are presented as adjectives here. Second, there are several opaque derived words such as *eläin* ‘animal’ (cf. *elää* ‘live’) and *aukko* ‘opening’ (cf. *auki* ‘open [adverb]’, *avata* ‘open [verb]’); many derivation etymologies are not certain, especially in the case of opaque words. Third, for certain derivation types, such as *-eA*, there is no clear base word, for example *vihreä* ‘green’ and *korkea* ‘high’; these are not included as derivatives in the analysed data.

To evaluate the onset of the productive use of derivational suffixes and thus to compare derivation with the onset of inflection and compound use, it is interesting to consider the many neologisms in the diary material. There are only a few neologisms in the recordings (e.g. *kiehu-ttaa* ‘to make boil’ ← *kiehua* ‘boil’), and some of them are derived adjectives as compounds such as *heikko+jalka-inen* ‘weak-legged’ and *vahva+jalka-inen* ‘strong-legged’. The full repertoire of the child is not realized in recordings and thus the emergence and the productive use – the criterion for productivity: at least three combinations of a base and affix – can be attested only with the most frequent derivative suffixes.

3. The acquisition of derivational categories in Finnish

3.1. Derivational categories of nouns

There are about 30–40 noun derivative suffix types in the recordings; the exact number depends on the grouping criteria, for example whether the patterns in section 3.1.5. should be counted as one pattern ending in *-Vs* and having several subtypes (as has been done in this article) or as many separate derivative patterns.

3.1.1. Agent nouns

Finnish agent nouns are derived from verbs mostly with the *jA*-suffix. The agent nouns in the recordings are presented in Table 1 for Mari and in Table 2 for Tomi. The first occurrences in child speech (CS) and the first recorded occurrences in child-directed speech (CDS) are shown.

Table 1. Mari’s agent nouns in the recordings

Agent noun (← base verb)	First rec. occurrences	
	CS	CDS
<i>valmistaja</i> ‘producer’ (← <i>valmistaa</i> ‘produce’)	–	1;8
<i>pötköttäjä</i> ‘sprawler’ (← <i>pötköttää</i> ‘sprawl’)	–	2;3
<i>piirtäjä</i> ‘drawer’ (← <i>piirtää</i> ‘draw’)	–	2;4
<i>ratsastaja</i> ‘rider’ (← <i>ratsastaa</i> ‘ride’)	–	2;4
<i>ohjaaja</i> ‘driver’ (← <i>ohjata</i> ‘steer’)	3;0	3;0
<i>kasvis+syöjä</i> ‘vegetarian’ (← <i>kasvis</i> ‘vegetable’ + <i>syödä</i> (eat.INF) ‘to eat’)	3;2	–
<i>lihan+syöjä</i> ‘meat eater’ (← <i>liha-n</i> (meat-GEN) ‘meat’ + <i>syödä</i> (eat.INF) ‘to eat’)	3;2	–

In Mari's early recordings all derived agent nouns appear only in CDS. Mari's first derived agent noun, namely *ohjaa-ja* 'driver' (← *ohjata* 'steer') emerges at 3;0. In the recording at 3;2, Mari uses two agent nouns, namely compounds with the second part consisting of the agent noun *syö-jä* 'eat-er'.

Table 2. Tomi's agent nouns in the recordings

Agent noun (← base verb)	First rec. occurrences	
	CS	CDS
<i>ampuja</i> 'shooter' (← <i>ampua</i> 'shoot')	2;7	–
<i>ohjaaja</i> 'driver' (← <i>ohjata</i> 'steer')	2;9	2;11
<i>hoitaja</i> 'nurse' (← <i>hoitaa</i> 'take care of')	2;11	2;11

For Tomi, the first agent noun is an occasional innovative derived word which is used only in CDS in the recording at 2;1: *lauttaili-ja* 'somebody on the ferry' (*lautta* 'ferry' → *lautta-illa* 'to be on a ferry' → *lauttaili-ja*). Six months later, more agent nouns are used, and the first one (*ampuja* 'shooter') in CS is in the recording at 2;7. In CDS, there are some more such as *aja-ja* 'driver' (← *ajaa* 'drive') and *lähtijä* 'goer' (← *lähteä* 'go') at 2;7, *kuljettaja* 'driver' (← *kuljettaa* 'transport') at 3;0, and *metsästäjä* 'hunter' (← *metsästää* 'hunt') at 3;1.

In the diary data, there are some neologisms showing that the agent nouns are in productive use relatively early, in Mari's diary data already at 2;1 when there are not yet any CS-tokens in the recordings: Mari uses

ilostu-ja ‘one who gets delighted’ (← *ilostua* ‘be delighted’ ← *ilo* ‘joy’) at 2;1, and Tomi uses *kuoletta-ja* ‘killer’ (← *kuolettaa* ‘kill’ (neologism) ← *kuolla* ‘die’) at 2;11 instead of the established agent noun *tappa-ja* ‘killer’ (← *tappaa* ‘kill’).

3.1.2. Instrument nouns

The most productive derivational suffix for instrument nouns is *-in* (the variant *-ime-* in most inflectional forms, also in the plural nominative *-ime-t*). It is attached to verb stems: *avata* ‘open’: *avaa* ‘opens’ → *ava-in* ‘key’. With other derivative suffixes, for example *-Uri* and *-ke*, instrument nouns can be derived from noun bases. The first occurrences of instrument nouns in the recordings are presented in Tables 3 and 4.

Table 3. Mari’s instrument nouns in the recordings

Instrument noun (← base verb)	First rec. occurrences	
	CS	CDS
<i>avain</i> ‘key’ (← <i>avata</i> ‘open’)	1;9	1;9
<i>nauhuri</i> ‘recorder’ (← <i>nauha</i> ‘tape’)	3;0	2;4
<i>puhelin</i> ‘telephone’ (← <i>puhella</i> ‘talk’)	3;2	3;2

In CDS, there are some additional instrument nouns: *istu-in* ‘seat’ (← *istua* ‘sit’) at 2;3, and *soit-in* ‘musical instrument’ (← *soittaa* ‘play’) and *puserr-in* ‘squeezer’ (← *pusertaa* ‘press, squeeze’) at 3;0.

Table 4. The instrument nouns in Tomi’s recordings

Instrument noun (← base verb)	First rec. occurrences	
	CS	CDS
<i>avain</i> ‘key’ (← <i>avata</i> ‘open’)	1;10	1;10
<i>helistin</i> ‘rattle’ (← <i>helistä</i> ‘jingle’)	2;4	2;4
<i>puhelin</i> ‘telephone’ (← <i>puhella</i> ‘talk’)	2;11	2;11
<i>ohjain</i> ‘control unit’ (← <i>ohjata</i> ‘steer’)	3;0	–
<i>mittari</i> ‘thermometer’ (← <i>mitata</i> ‘measure’)	2;4	2;4

Most of the instrument nouns in the recordings have been derived with the *in*-suffix but there are others also such as (*kuume*)*mittari* ‘thermometer’ derived from the verb *mitata* ‘measure’ using the *Ari*-scheme, occurring first in Tomi’s recording 2;4 once in CDS and three times in CS and once in CS at 3;0. The noun-based *haarukka* ‘fork’ (← *haara* ‘branch’) belongs to another types of instrument noun; it occurs in Tomi’s recording at 1;8 with seven tokens in CDS and two tokens in CS (and once in Mari’s recording at 1;8 but only in CDS). Also plausible is *teline* ‘rack’ (← *tela* ‘roller, cylinder’) in Tomi’s recording at 1;10 with four tokens in CDS and one token in CS.

In the diary data, there are innovative instrument nouns showing that the pattern is in productive use in Mari’s speech from the age of 2;4 on and in Tomi’s speech from the age of 2;8 on. Mari’s first attempted instrument noun was *leikka-mi-t* ‘scissors’ (derived from the verb *leikata* ‘cut; the correct formation would be *leikka-ime-t*) at 2;3. Her correctly derived

innovations were *jarrut-in* ‘an instrument for braking’ (← *jarruttaa* ‘brake’) at 2;4, *huitais-in* ‘an instrument for swiping’ (← *huitaista* ‘swipe’) at 2;8, *aja-in* ‘vehicle’ (← *ajaa* ‘drive’) and *pyörit-in* ‘an instrument for rotating’ (← *pyörittää* ‘rotate’) at 2;9, *silit-in* ‘an instrument for ironing’ (← *silittää* ‘iron’) at 3;0, and *perj-in* ‘an instrument for cleaning fish’ (← *perata* ‘clean fish’) at 3;9.

Tomi produced his first innovative instrument nouns a little later: *silit-in* ‘an instrument for ironing’ (← *silittää* ‘iron’) and *ampu-mus* ‘gun; cannonball’ (← *ampua* ‘shoot’) at 2;8, *kahva-ime-t* ‘handles of the mixer’ (= contamination: *kahva* ‘handle’ + *vatka-in* ‘mixer’) at 3;0, *kuulut-in* ‘loudspeaker’ (← *kuuluttaa* ‘announce’) at 3;5, *pöly-n+pyyh-in* ‘dust wiper’ (← *pöly* (dust.GEN) ‘dust’ + *pyyhkiä* ‘wipe’ + *in*) at 3;6, *kuul-ime-t* ‘headphones’ (Standard Finnish *kuulokkeet* ← *kuulla* ‘hear’) at 3;8, and *pyörit-in* ‘gyroscope’ (← *pyörittää* ‘make rotate’) and *auto+aja-mus* ‘car driving device’ at 3;9.

Tomi’s innovation *pysy-ke* ‘holder’ (← *pysyä* ‘hold fast’; cf. Standard Finnish *pidi-ke* ‘holder’) was in use for a long time, from the age of 3;3 to 3;10. His other innovation *paini-ke* ‘small weight’ (← *painaa* ‘weight; press; print’) at 3;10 belongs to the same derivational pattern. It is semantically innovative: the meaning ‘small weight’ is derived from the base *paino* ‘weight’, but there is also an established word *painike* which has the meaning ‘button’.

The derivational pattern *ava-in*, *helist-in* for instruments is used in the neologisms of many children, but they do not belong to the very early derivatives. Examples include Elina’s *lakas-in* ‘brush’ at 2;5, *hiiht-ime-t* ‘skis’ at 3;4, and *veiva-in* ‘shaft’ at 4;10 (Lieko 1998: 553); Alina’s *pyörit-in* ‘propeller’ at 3;0 and *punn-in* ‘scales’ at 3;11 (Riionheimo 2002: 433); Eevert’s *valost-ime-t* ‘lightening devices’ at 6;0 (Silvennoinen 2014: 33); Noora’s *ruuv-in* (← *ruuvimeisseli*) at 2;10 and Sonja’s *sout-ime-t* at 5;3 (Nygrén 2019: 54); Sallamari’s *lent-ime-t* ‘wings’ at 3, Matti’s *puhut-in* ‘microphone’ at 4 (Laitsaari & Laitsaari 1996).³

3.1.3. Derived nouns expressing the result or the action/process

The derivational suffixes *-O* and *-U* are used for nouns expressing the end result or the action or process. They are attached to verb stems. Table 5 presents Mari’s data and Table 6 Tomi’s data.

Table 5. The first *O*- and *U*-derivatives in Mari’s recordings

Derivative (← base)	First rec. occurrences	
	CS	CDS
<i>keitto</i> ‘soup’ (← <i>keittää</i> ‘cook’)	1;8	1;8
<i>pesu</i> ‘washing’ (← <i>pestä</i> ‘wash’: <i>pesee</i> ‘washes’)	1;9	2;4
<i>hoito</i> ‘care’ (← <i>hoitaa</i> ‘take care of’)	2;5	2;5
<i>meno</i> ‘going’ (← <i>mennä</i> ‘go’: <i>menee</i> ‘goes’)	3;0	2;11

³ In Laitsaari and Laitsaari (1996), age information is given only by year, not by month.

<i>peitto</i> ‘quilt’ (← <i>peittää</i> ‘cover’)	3;4	1;7
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These suffixes are used also in compounds: *lent-o+kone* ‘aeroplane’ (literally ‘flying+machine’) in CS and CDS at 1;9, *sout-u+vene* ‘rowing-boat’ in CS at 1;11, etc.

The type frequency of the derivational suffixes *-O* and *-U* in CDS is high – for example, *heitt-o* ‘throwing’ (← *heittää* ‘throw’), *jatk-o* ‘continuation’ (← *jatkaa* ‘continue’), *käsittel-y* ‘handling’ (← *käsitellä* ‘handle’), *laul-u* ‘song’ (← *laulaa* ‘sing’), *lep-o* ‘rest’ (← *levätä* ‘rest’), *tek-o* ‘action’ (← *tehdä* ‘do’) etc. The token frequency is low: many suffixes occur only once in the recordings.

Table 6. The first *O*- and *U*-derivatives in Tomi’s recordings

Derivative (← base)	First rec. occurrences	
	CS	CDS
<i>hyppy</i> ‘jump’ (← <i>hypätä</i> : <i>hyppää</i> ‘jump’)	1;10	1;10
<i>alku</i> ‘beginning’ (← <i>alkaa</i> ‘begin’)	2;8	2;1
<i>lepäily</i> ‘rest’ (← <i>lepäillä</i> ‘rest’: <i>lepäilee</i> ‘rests’)	2;9	2;9
<i>ajelu</i> ‘driving’ (← <i>ajaa</i> ~ <i>ajella</i> ‘drive’)	2;11	–

Used also in compounds: *lent-o+kone* ‘aeroplane’ in CS and CDS at 1;10, *kein-u+tuoli* ‘rocking chair’ in CS and CDS at 2;1, and *syött-ö+tuoli* ‘high chair’ (lit. feeding+chair) in CS and CDS at 2;2.

In Tomi's recordings, the type frequency in CDS is also high, for example *alk-u* 'beginning' (← *alkaa* 'begin'), *heitt-o* 'throwing' (← *heittää* 'throw'), *jatk-o* 'continuation' (← *jatkaa* 'continue'), *kylp-y* 'bath' (← *kylpeä* 'take a bath'), *laul-u* 'song' (← *laulaa* 'sing'), *lep-o* 'rest' (← *levätä* 'rest'), *nous-u* 'rising' (← *nousta* 'rise'), *näyttel-y* 'exhibition' (← *näyttää* 'show'), *pallottel-u* 'catches' (← *pallotella* 'play ball'), *soitt-o* 'playing' (← *soittaa* 'play'), *vet-o* 'pulling' (← *vetää* 'pull') etc. The token frequency is mostly only one or two tokens cumulatively in all recordings.

These types of noun derivatives examined in subsection 3.1.3 are not very productive: there are no neologisms in the data.

3.1.4. Nouns derived with *-e* from verbs and adjectives

Mari's first *e*-derivative is the deadjectival *kuum-e* 'temperature' (← *kuuma* 'hot') in CS and CDS at 1;7. Her next *e*-derivatives are deverbal: *peit-e* 'cover(ing)' (← *peittää* 'cover'; synonym: *peitt-o*) is used in CS and in CDS at 1;9, and *sad-e* 'rain' (← *sataa* 'rain') at 2;6. There are some opaque *e*-derivatives as well: *kone* 'machine' at 3;0 and *esine* 'object' at 3;2.

There are only a few neologisms of this pattern in the diary data, such as Mari's *päivä+nokkareet* 'afternoon nap' (cf. the established word *päivä+nokoset* 'afternoon nap', literally 'day sleeping') at 1;9. Both *nokoset* and *nokkareet* are plural forms.

In Tomi's recordings *e*-derivatives emerge only later: *liik-e-nne* 'traffic' (← *liikkua* 'move') at 2;3, and *korist-e* 'decoration' (← *koristaa* 'decorate') and 2;8 *maust-e* 'spice' (← *maustaa* 'spice, season') at 2;8.

3.1.5. Deverbal nouns formed with *-s/-kse*⁴

A very productive morpheme for deriving nouns from verbs is *-s/-kse* (stem-final *-kse-* > *-s* at the end of the syllable, for example *ohja-us* 'steering', genitive *ohja-ukse-n*, partitive *ohja-us-ta*). There are several subtypes with different phonemes preceding the *-(k)s(e)*, for example *-Os* (*kierr-os* 'round'), *-Us* (*ohja-us* 'steering'), and *-mUs* (*sopi-mus* 'agreement'); the morpheme has several functions.

One function is to express the result or process expressed by the verb, for example, *uupu-a* 'get tired' → *uupu-mus* 'exhaustion, fatigue'. In CS the *mUs*-suffix is often used instead of the longer and more complex *minen*-suffix which is very productive in adult language. The *mUs*-suffix is used also in children's neologisms: Lieko (1998: 553, 562) mentions Elina's five neologisms, for example, *seiso-mukset* 'pedestals' at 3;7; Savonen (2019: 40) Nooa's *hyppi-mys* 'jumping' at 3;8, and Vänntilä (1998: 116) Erkkä's *töötty-mys* 'horn' and *ampumus* 'shooting' at 2;9, among others.

⁴ The dashes are used to indicate the distribution of the variants in the derivative suffix: *-s* is used in the final position in the nominative and *-kse-* is used in other case forms before the inflectional suffixes.

Because the *-s/-kse*-derivatives are three-syllabic, in Mari's recordings the first *-s/-kse*-derivatives emerge only after the trochaic stage (that is, the tendency to use only of mostly two-syllabic word-forms) was over: *muhenn-os* 'stew' (← *muhentaa* 'stew, mash') in CDS and CS at 1;11, *sukell-us* 'diving' (← *sukeltaa* 'dive') in CDS and CS at 2;4, and *rakenn-us* 'building' (← *rakentaa* 'build') in CDS at 2;4.

The first *-s/-kse*-derivatives in Tomi's recordings were *ohja-us* 'steering' (← *ohjata* 'steer') in CDS at 1;8, *kierr-os* 'circle, round' (← *kiertää* 'move around') at 1;9, and *sopi-mus* 'agreement' (← *sopia* 'agree') at 2;2. Tomi himself used this pattern only later: *kat-os* 'shelter' at 2;6, *ilotulit-us* 'fireworks' at 2;7, *ohja-kse-t* 'reins' at 2;9, and *hälyt-ys* 'alarm' and *kaver-ukse-t* 'companions' at 3;0.

The neologisms from the diary data show the productivity of this type: Mari's *tuuppa-ukse-t* 'pushings' at 2;5 and *kiltte-yks-i-ä* 'nice actions' at 2;8. Interestingly enough, the *mUs*-derivatives that are not very productive usually in present-day Finnish are productive in CS – for example, Mari's *etsi-mys+matka* 'seeking trip' at 3;0 and Tomi's *pelaa-mus+pallo* 'playing ball' and *paijaa-mus* 'cuddling' at 2;4, *ampu-mus* 'shooting' at 2;9, and *sylke-mys* 'spitting' and *piirtä-mys+paperi* 'drawing paper' at 3;3. It is also interesting that Tomi's first *mUs*-neologism is in the diary data already at the age of 2;4 but his first conventional *s*-derivative in the recordings, *katos* 'shelter', occurs only at 2;6.

3.1.6. *-la* attached typically to noun stems to express location

The word *mummi-la* ‘home of the grandmother’, derived from *mummi* ‘grandmother’, is found in the recordings of both children (Mari in CS and CDS at 1;11, Tomi in CDS at 2;9). Tomi uses the word *vanki-la* ‘prison’ (← *vanki* ‘prisoner’) in a play situation in the recording at 3;0. In the diary data Mari has such neologisms as *pimento-la-an* ‘to a dark place’ (← *pimeä* ‘dark’) at 2;3, *Olli-la* ‘Olli’s home’ and *Mörkö-lä* ‘the place where Mörkö lives’ at 2;6, and *Juuso-la* ‘Juuso’s place’, *Tuuti-la* ‘Tuuti’s place’, and *Tuuli-la* ‘Tuuli’s place’ at 2;8. Tomi uses two neologisms, namely *vaari-la* ‘home of the grandfather (← *vaari*, father’s father)’ at 2;9 and *ukki-la* ‘home of the grandfather (← *ukki*, mother’s father)’ at 2;10 to stress that grandfathers also live in a place as well as grandmothers.

3.1.7. *Deverbal -minen/-mis(e)-*

The most productive derivative suffix to form nouns from verbs is *-minen* (for example *rakentaa* ‘build’ → *rakenta-minen* ‘building process’). It can be attached to all verb stems to express the process expressed by the verb. But because the meaning is abstract, only two are used in the recordings, one in CS and one in CDS. They both are compounds in Tomi’s recording at 2;4, namely *aja-mis+homma* (*ajaa* ‘drive’-*minen+homma* ‘activity’) ‘driving activity’ in CS and *siirtä-mis+paikka* ‘moving place’ (*siirtää* ‘move’-*minen+paikka* ‘place’) in CDS.

In the diary data, Mari has some derivatives of this pattern, all of them in compounds: *soutu-mis+käsi* ‘the hand for rowing’ (*soutaa* ‘row’), *tukotta-mis+lelu* ‘a toy for blocking’ (*tukkia* ‘block’), and *syö-mis+kepit* ‘eating+sticks’ (for *syö-mä+puikot* ‘chopsticks’; *syö-dä* (eat-INF) ‘to eat’) at 2;4.

Children often use *-mUs* instead of *-minen*; see the examples in 3.1.5.

3.2. Derivational categories of verbs

3.2.1. Verbs derived with the derivative morpheme *-TTA*

One of the most productive suffixes for deriving verbs is *-TTA*, generally used also in such new words as *konmari-ttaa* ‘arrange things using the konmari method’ (← Marie Kondo), *whatsapi-ttaa* ‘use WhatsApp’ etc. The *TTA*-suffix has many functions (points a-e below) and it is so productive that some polysemy has emerged, for example the causative *nuku-ttaa* (derived from *nukkua* ‘sleep’) has such different meanings as ‘lull (the baby) to sleep’ and ‘anaesthetize (the patient)’; moreover, there is the emotional *TTA*-verb *nuku-ttaa* ‘feel sleepy’ which is homonymous with the causative *nuku-ttaa*. The *TTA*-suffix can be attached to stems of different parts of speech:

a. very productive deverbal patterns: *-TTA* as a transitivizer

a1. causatives

(1) *lennättää* ‘make to fly’ (← *lentää* ‘fly’)

(2) *sammuttaa* ‘put out, turn out’ (← *sammua* ‘go out (fire, lights)’)

(3) *sytyttää* ‘light a fire, light a lamp’ (← *syttyä* ‘catch fire, light up’)

a2. factitives

(4) *pesettää* ‘have washed’ (← *pestä* : *pesee* ‘wash : washes’)

b. *TTA*-derivatives expressing emotion, both denominal and deverbal

(5) *harmittaa* ‘annoy’ (← *harmi* ‘annoyance’)

(6) *väsyttää* ‘feel tired’ (← *väsyä* ‘get tired’)

c. descriptive *TTA*-derivatives (expressing sounds, etc.); the base is often an interjection

(7) *höpöttää* ‘speak nonsense’ (← *höpö höpö*, descriptive expression for nonsense)

(8) *kaakattaa* ‘cackle, cluck, make a *kaak*-sound (like a hen)’ (← *kaak*)

(9) *koputtaa* ‘knock’ (← *kop*, interjection for knocking)

(10) *pötköttää* ‘sprawl’ (← no clear base)

d. factitive *TTA*-verbs based mainly on adjective stems

(11) *kuivattaa* ‘let dry, get dry, dry up’ (← *kuiva* ‘dry’)

(12) *lämmittää* ‘warm up’ (← *lämmin* ‘warm’)

(13) *sulattaa* ‘melt’ (← *sula* ‘unfrozen, melted’)

e. denominal; very productive in neologisms

(14) *auttaa* ‘to help’ (← *apu* ‘the help’)

neologisms in CS:

(15) *viuluttaa* ‘play violin’ (← *viulu* ‘violin’)

Tables 7 and 8 present the first *TTA*-verbs in the recordings.

Table 7. Mari's first *TTA*-verbs in the recordings

<i>TTA-verb</i> (← base)	Age of first occurrence		All occurrences (types/tokens)	
	CS	CDS	CS	CDS
<i>auttaa</i> 'help' (← <i>apu</i> 'help' [noun])	1;7	1;7	4/4	3/5
<i>kopu[ttaa]</i> 'knock' (← <i>kop</i> , interjection for knocking)	1;7	1;7	2/2	3/5
<i>näyttää</i> 'show' (← <i>näkyä</i> 'be visible')	1;8	1;8	2/8	4/6
<i>harmi[ttaa]</i> 'annoy' (← <i>harmi</i> 'annoyance')	1;9	1;9	2/3	2/5
<i>pyörittää</i> 'roll, whirl' (TR) (← <i>pyöriä</i> 'go round, rotate' (INTR))	1;11	1;7	1/1	1/2
<i>herättää</i> 'wake up' (TR) (← <i>herätä</i> 'wake up' (INTR))	–	1;8	–	1/1
<i>kiehuttaa</i> 'boil, cook' (TR) (← <i>kiehua</i> 'boil' (INTR))	2;1	–	1/1	–
<i>pelottaa</i> 'be afraid' (← <i>pelko</i> 'fear' [noun])	2;1	3;2	2/9	1/1
<i>syöttää</i> 'feed' (← <i>syödä</i> (eat.INF) 'to eat')	2;1	1;11	3/5	3/6

Because developmentally Mari was in a strong trochaic stage, that is she used only or mostly two-syllabic word-forms, she shortened the first trisyllabic *TTA*-derivatives so that, for example *harmi-ttaa* was realized phonetically as *hammi* and *kopu-ttaa* as *kopu*. More trisyllabic verbs were used only after the trochaic stage was over, such as *pyöri-ttää* 'rotate'; in a recording at 1;11, Mari uses both the base *pyörii* 'rotates' and the causative *pyöri-ttää* 'to make rotate'. Mari used the base verb *pyöriä* 'rotate' already at the age of 1;6.

In Mari's recordings there are altogether 43 verbs derived with *-TTA*. 30 of them in CS and 41 in CDS.

The productivity of this derivation pattern is manifested in Mari's neologism, *kiehu-ttaa* 'boil, cook' (← *kiehua* 'boil' (INTR)) at 2;1, which she used when asking whether the fish had been cooked (instead of the established transitive verb *keittää* 'boil, cook'):

- (16) Mari 2;1 *on-ko nii-tä kiehu-te-ttu ?*
 be-Q they.PL-PARTIT boil-CAUS-PTCP ?
 Have they been cooked?

Table 8. Tomi's first *TTA*-verbs in the recordings

<i>TTA-verb</i> (← base)	Age of first occurrence		All occurrences (types/tokens)	
	CS	CDS	CS	CDS
<i>auttaa</i> 'help' (← <i>apu</i> 'help' [noun])	1;8	1;8	3/4	5/14
<i>lennättää</i> 'fly' (TR) (← <i>lentää</i> 'fly' (INTR))	1;9	1;9	2/2	1/2
<i>sammuttaa</i> 'turn out' (← <i>sammua</i> 'go out' (about lights))	1;9	1;9	2/10	2/5
<i>ylttää</i> 'reach' (← <i>yli</i> 'over')	1;9	1;9	2/3	2/4

There is one *TTA*-verb in Tomi's first recording at 1;8 (*auttaa* 'to help').

The suffix is in productive use already in his next recording at 1;9 with four verbs if the criterion for productivity is that there are at least three base+affix combinations. With three verbs *-TTA* is in principle (if attempted verbs are counted) productive already in Mari's first recording but she

shortened the three-syllabic verbs to trochaic forms: *kopu(tta-)*, *pötkö(ttä-)* [pökkö].

There are plenty of *TTA*-neologisms in the diary data: Mari uses *nouse-ttaa* ‘raise’ (← *nousta* ‘rise’) and *kiive-ttää* ‘help to climb’ (← *kiivetä* ‘climb’) at 1;11, *valo-ttaa* ‘put the lights on’ (← *valo* ‘light’) at 2;0, *iso-ttaa* ‘make bigger’ (← *iso* ‘big’) at 2;2, *viulu-ttaa* ‘play the violin’ (← *viulu* ‘violin’) at 2;7, etc. Tomi uses *pinko-ttaa* ‘make a ping-sound’ at 1;10, *hypä-ttää* ‘to make jump’ (← *hypätä* ‘jump’) at 2;1, etc.

3.2.2. Reflexive-passive verbs derived with *-U*, *-UTU* etc.

There are many derivative suffixes for reflexive verbs. These suffixes are intransitivizers and the products are reflexive and passive verbs. The shortest one is *-U* (e.g. *kuul-u-u* ‘is heard’ ← *kuule-e* ‘hears’; *paist-u-u* ‘is roasted’ ← *paista-a* ‘fry, roast’; lengthening of the final vowel is the suffix of 3rd person singular). The reflexives produced with *-U* fit the trochaic pattern when added to bisyllabic stems, and they are used already in the first recordings in both CS and CDS. A longer derivative suffix used for morphophonemic reasons in certain stem types is *-UTU* (e.g. *laske-utu-a* ‘descend’ ← *laske-a* ‘lower’; the final *a* is the suffix of the infinitive). The *U*-reflexives are presented in Tables 9 and 10.

Table 9. Mari’s first reflexive-passive *U*-verbs in the recordings

<i>U-verb</i>	Age of first	All occurrences
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(← base)	occurrence		(types/tokens)	
	CS	CDS	CS	CDS
<i>kaatua</i> ‘fall down’ (← <i>kaataa</i> ‘turn over, tilt, pour’)	1;7	1;7	3/4	2/2
<i>kääntyä</i> ‘turn’ (INTR) (← <i>käntää</i> ‘turn’ (TR))	1;7	1;7	1/1	1/1
<i>kuulua</i> ‘is heard’ (← <i>kuulla</i> ‘hear’)	1;9	1;9	4/16	3/20
<i>kallistua</i> ‘lean’ (INTR) (← <i>kallistaa</i> ‘lean’ (TR))	1;11	1;11	1/1	1/1
<i>näkyä</i> ‘be visible’ (← <i>nähdä</i> ‘see’)	2;2	2;2	1/2	1/1
<i>ylettyä</i> ‘reach’ (← <i>yli</i> ‘over’)	2;6	–	1/1	–
<i>innostua</i> ‘get inspired’ (← <i>innostaa</i> ‘inspire’)	2;11	–	1/1	–
<i>päätyä</i> ‘end up’ (← <i>päittää</i> ‘end’)	2;11	–	1/1	–
<i>rauhoittua</i> ‘calm down’ (← <i>rauhoittaa</i> ‘calm’ (TR))	3;0	3;0	1/1	1/1

Mari used the base verb *kaataa* ‘turn over’ already at 1;6; this demonstrates the derivational character of the reflexive *kaatua* at 1;7.

Table 10. Tomi’s first reflexive-passive *U*-verbs in the recordings

<i>U</i> -verb (← base)	Age of first occurrence		All occurrences (types/tokens)	
	CS	CDS	CS	CDS
<i>kaatua</i> ‘fall down’ (← <i>kaataa</i> ‘turn over, tilt, pour’)	1;8	1;8	7/41	5/25
<i>laskeutua</i> ‘descend’ (← <i>laskea</i> ‘lower’)	1;9	1;8	1/1	2/6
<i>pelästyä</i> ‘be frightened’ (← <i>pelätä</i> ‘be afraid of’)	1;10	1;10	1/3	2/8
<i>kääntyä</i> ‘turn’ (INTR) (← <i>käntää</i> ‘turn’ (TR))	2;2	2;4	2/4	1/1
<i>löytyä</i> ‘be found’ (← <i>löytää</i> ‘find’)	2;2	1;8	2/5	2/8
<i>maistua</i> ‘taste’ (INTR) (← <i>maistaa</i> ‘taste’ (TR))	2;6	2;6	1/1	1/1
<i>siirtyä</i> ‘move’ (INTR) (← <i>siirtää</i> ‘move’ (TR))	2;6	2;6	2/2	2/2

<i>unohtua</i> ‘be forgotten’ (← <i>unohtaa</i> ‘forget’)	2;7	–	1/1	–
<i>sulkeutua</i> ‘get closed’ (← <i>sulkea</i> ‘close’)	2;11	–	1/1	–

There are some early reflexive verb neologisms in the diary data: Tomi uses *ilma-stu-a* ‘float’ (← *ilma* ‘air’) at 1;11 and Mari uses *poltt-u-a* ‘get burned’ (← *polttaa* ‘burn’) at 2;9.

3.2.3. Verbs derived with the derivative morpheme *-ELE*

-ELE is a productive derivative suffix for frequentative-continuative verbs (e.g. *hyp-el-lä* ‘keep jumping’ ← *hypätä* ‘jump’); the base can belong to different parts of speech, but most common are verb bases. The typical meaning of deverbal *ELE*-derivatives is frequentative – for example *puh-el-la* ‘chat, converse’ (← *puhua* ‘speak’) – but this is not always the case; there can be other kinds of semantic change; for example *kuunn-el-la* ‘listen’ (← *kuulla* ‘hear’) and *pelot-el-la* ‘scare’ (← *pelottaa* ‘be afraid’). When *-ELE* is used to derive verbs from nouns, adjectives or root stems, there is often no clear frequentative meaning – for example, *pyörä-il-lä* ‘ride a bicycle’ (← *pyörä* ‘wheel’), *ilke-il-lä* ‘be malicious’ (← *ilkeä* ‘malicious’), and *ulko-il-la* ‘take outdoor exercise’ (← *ulko-* ‘out’). Whereas *TTA*-verbs typically express the active actions of an agent, *ELE*-verbs often express a more passive state such as *hygge-il-lä* ‘to relax’ (← Danish *hygge* ‘cosy’). The first *ELE*-derivatives emerge later than the first *TTA*- and *U*-derivatives. The

first *-ELE*-verbs in the corpora of the two children are presented in Table 11 (Mari) and Table 12 (Tomi).

Table 11. Mari's first *ELE*-verbs in the recordings

<i>ELE-verb</i> (← base)	Age of first occurrence		All occurrences (types/tokens)	
	CS	CDS	CS	CDS
<i>jutella</i> 'talk' (← <i>juttu</i> 'story')	1;11	1;9	1/1	3/4
<i>heitellä</i> 'keep throwing' (← <i>heittää</i> 'throw')	2;3	2;3	2/10	2/4
<i>kävellä</i> 'walk' (← <i>käydä</i> 'walk; visit'(verb))	2;3	2;4	3/8	2/8
<i>hyppellä</i> 'keep jumping' (← <i>hyppiä</i> 'jump')	2;4	2;4	1/1	1/1
<i>katsella</i> 'look, watch' (← <i>katsoa</i> 'look')	2;6	1;11	3/3	5/5
<i>sukseilla</i> 'ski' (neologism) (← from the noun <i>suksi</i> 'ski')	2;11	2;11	1/1	1/1

In the recording at 2;11, Mari uses the denominal neologism *sukse-ilee* (← *suksi* 'the ski') instead of the established verb *hiihtää* 'to ski'. The neologisms in the diary data show the productiveness of the type: Mari uses *istu-ilee* 'keeps sitting' (← *istua* 'sit') at 1;11, *ilo-ilee* 'is happy' (← *ilo* 'joy') at 2;2, and *nurkka-ilee* 'is standing in the corner' (← *nurkka* 'corner') at 2;5.

Table 12. Tomi's first *ELE*-verbs in the recordings

<i>ELE-verb</i> (← base)	Age of first occurrence		All occurrences (types/tokens)	
	CS	CDS	CS	CDS
<i>kävellä</i> 'walk' (← <i>käydä</i> 'walk, visit')	1;9	1;9	3/10	3/5

<i>hypellä</i> ‘keep jumping’ (← <i>hypätä</i> ‘jump’)	1;10	1;10	1/1	2/2
<i>katsella</i> ‘watch’ (← <i>katsoa</i> ‘look’)	2;2	1;10	1/1	5/12
<i>piileskellä</i> ‘hide’ (← <i>piillä</i> ‘be hidden’)	2;2	2;2	1/5	1/1
<i>heräillä</i> ‘wake up slowly’ (← <i>herätä</i> ‘wake up’)	2;4	–	1/1	–
<i>huudella</i> ‘keep shouting’ (← <i>huutaa</i> ‘shout’)	2;4	–	1/1	–
<i>purjehdella</i> ‘keep sailing’ (neologism) (← <i>purjehtia</i> ‘sail’)	2;4	2;4	1/1	1/1
<i>vilkutella</i> ‘keep waving’ (← <i>vilkuttaa</i> ‘wave’)	2;4	–	1/1	–
<i>käännellä</i> ‘keep turning’ (TR ← <i>kääntää</i> ‘turn’)	3;0	3;0	1/2	1/1
<i>kääntyillä</i> ‘be tossing’ (INTR ← <i>kääntyä</i> ‘turn’)	3;0	3;0	1/3	1/1

There are two neologisms in Table 12: at 2;4 Tomi produced both *vilkut-ella* ‘keep waving’ (← *vilkuttaa* ‘wave’) and *purjehd-ella* ‘sail’ using *purjehtia*, the conventional verb for sailing, as a base. The productivity of the type is reflected in the fact that there are more neologisms in the diary data: Tomi uses *loikk-elee* ‘keep jumping’ (← *loikkia* ‘jump’) at 2;8 and *jätski-ttelee* ‘eat ice cream’ (← *jätski* ‘ice cream’) at 4;10.

3.2.4. Momentaneous verbs formed with -AhtA and -Aise

Since the semantic range of momentaneous verb derivatives is not as broad as that of the *ELE*-derivatives, the former are less frequently used and less productive. There are two productive patterns of momentaneous verbs: -*AhtA* (e.g. *nuk-ahtaa* ‘fall asleep’ ← *nukkua* ‘sleep’, *horj-ahtaa* ‘sway’ ← *horjua* ‘stagger’) and -*Aise* (e.g. *potk-aisee* ‘gives a kick’ ← *potkia* ‘kick’).

In Mari's early recordings there are momentaneous verb derivatives only in CDS, all three in the same recording at 2;5: *napp-aista* 'snatch quickly' (cf. *napata* 'snatch'), *nuuhk-aista* 'sniff quickly' (← *nuuhkia* 'sniff') and *potk-aista* 'give a kick' (← *potkia* 'kick'). In the later recordings there are some also in CS, namely *lös-ähtää* 'flop' (descriptive verb, CS and CDS) at 3;0, and *nuk-ahtaa* 'fall asleep' (cf. *nukkua* 'sleep') and *säik-ähtää* 'be scared' (both only in CS) at 3;4.

In Tomi's recordings there are 10 momentaneous verb derivatives in CDS and only one in CS, namely *liik-ahtaa* 'stir' (← *liikkua* 'move'); this verb is not used in CDS in the recordings. In Tomi's diary data there are a few neologisms, for example, *auk-ahta-a* 'open quickly' (← *aueta* 'to open' : *aukeaa* 'opens') at 2;9.

3.2.5. Conversion

There are a few stems in Finnish that can be used both as nouns and verbs, for example *sylki* 'spit', *usko* 'belief', *tahto* 'will', and *toivo* 'hope'. One of them is used many times in the recordings, namely the verb *tahto-a* (want-INF) : *tahdo-n* (want-1SG), cf. the noun *tahto* 'will' (NOM) : *tahto-a* (will-PARTIT) : *tahdo-n* (will-GEN). This verb is frequently used in modal expressions (Laalo 2021).

3.3. Derivational categories of adjectives

The suffix types of the derived adjectives in the recordings are *-inen*, *-vA*, *-kAs* and *-isA*. It is possible to derive from the same base adjectives using different derivative suffixes, and thus produce slightly different meanings, such as *paino* ‘weight’ → *paina-va* ‘heavy’, *paino-kas* ‘emphatic’ and (GEN +) *paino-inen* ‘weighting as much as’. Examples include *kilon paino-inen* (kilo-GEN *paino-inen*) ‘weighting one kilo’; *terä* ‘blade’ → *terä-vä* ‘sharp’, *kaksi terää* ‘two blades’ → *kaksi+terä-inen* ‘with two blades’, *käyrä terä* ‘curved blade’ → *käyrä+terä-inen* ‘with a curved blade’.

Adjectives derived with the very productive suffix *-inen* emerge already in Tomi’s recording at 1;9 and are productive with three lemmas cumulatively in the recording at 1;10. In Mari’s recordings they are at first truncated to fit the trochaic pattern; full forms are used from the recording at 1;11 onwards. Adjectives derived with *-vA* emerge a little later, others clearly later.

3.3.1. *-inen/-is(e)-*

The most productive morpheme for deriving adjectives is *-inen*, meaning ‘such as expressed by the base’; this suffix type has also longer variants such as *-llinen*, etc.; the base can be

- a. a noun: *ilo* ‘joy’ → *iloinen* ‘joyful’, *suru* ‘sorrow’ → *surullinen* ‘sad’, *veri* ‘blood’ → *verinen* ‘bloody’, *villa* ‘wool’ → *villainen* ‘made of wool’
- b. a compound: *mielen+kiinto* ‘interest’ → *mielen+kiintoinen* ‘interesting’

c. a NP: *iso koko* ‘big size’ → *iso+kokoinen* ‘having a big size’, *kaksi osaa* ‘two parts’ → *kaksi+osainen* ‘bipartite’, *vanha aika* ‘old times’ → *vanhan+aikainen* ‘old-fashioned’

The first *inen*-adjectives are presented in Tables 13 and 14.

Table 13. Mari’s first *inen*-adjectives in the recordings

<i>Adjective</i>	Age of first occurrence		All occurrences (types/tokens)	
	CS	CDS	CS	CDS
<i>puna[inen]</i> ‘red’	1;7	1;7	11/29	14/26
<i>suru[llinen]</i> ‘sad’	1;7	1;7	2/4	4/4
<i>kelta[inen]</i> ‘yellow’	1;8	1;8	12/30	11/32
<i>pikkuinen</i> ‘little’	1;11	1;8	6/14	8/24
<i>sininen</i> ‘blue’	1;11	1;8	7/20	11/26
<i>valkoinen</i> ‘white’	1;11	1;11	6/10	8/17
<i>tavallinen</i> ‘usual’	2;1	–	2/2	–
<i>pitkä+kaulainen</i> ‘long-necked’ (← <i>pitkä</i> ‘long’ + <i>kaula</i> ‘neck’+ <i>inen</i>)	2;2	–	1/1	–
<i>heikko+jalkainen</i> ‘weak-legged’ (← <i>heikko</i> ‘weak’ + <i>jalka</i> ‘foot’+ <i>inen</i>)	2;3	2;3	1/3	1/6
<i>vahva+jalkainen</i> ‘strong-legged’ (← <i>vahva</i> ‘strong’ + <i>jalka</i> ‘foot’+ <i>inen</i>)	2;3	2;3	1/1	1/2

Some of these adjectives have transparent bases, such as *surullinen* ‘sad’ (← *suru* ‘sadness’) and *tavallinen* ‘usual’ (← *tapa* ‘manner’). For some others, the base is not in frequent use but is used in certain expressions, such as *puna poskilla* ‘redness, glow on the cheeks’, or in compounds, such as *valko+peippi* ‘white dead-nettle’ and *valko+pyykki* ‘white laundry’.

Because developmentally Mari was in a strong trochaic stage, she shortened three-syllabic adjectives to two syllables at first. Her compound

adjectives at the age of 2;2 and 2;3 are neologisms used to characterize some of her toy animals.

Table 14. Tomi’s first *inen*-adjectives in the recordings

<i>Adjective</i>	Age of first occurrence		All occurrences (types/tokens)	
	CS	CDS	CS	CDS
<i>punainen</i> ‘red’	1;9	1;8	8/53	10/45
<i>pikkuinen</i> ‘little’	1;10	1;8	5/43	9/26
<i>väsynen</i> ‘tired’ (neologism, standard expression for ‘tired’ is the participle <i>väsinyt</i> ← <i>väsyä</i> ‘get tired’)	1;10	1;10	1/2	1/2
<i>keltainen</i> ‘yellow’	1;11	1;11	3/9	3/9
<i>sininen</i> ‘blue’	1;11	1;11	6/23	6/17
<i>valkoinen</i> ‘white’	1;11	1;8	2/2	3/8
<i>iloinen</i> ‘happy’	2;2	1;9	1/1	3/4
<i>vihainen</i> ‘angry’	2;3	2;3	2/6	2/5
<i>viimeinen</i> ‘the last one’	2;7	2;6	1/3	1/1
<i>vaaleanpunainen</i> ‘pink’	2;8	3;1	1/1	1/1

The productivity of these adjectives is demonstrated by the neologisms in the diary data: Mari uses *reikä-inen* (← *reikä* ‘hole’) ‘full of holes’ at 3;9, *piraija-inen vesi* (← *piraija* ‘piranha’) ‘water with piranhas’ at 4;4, and *krokotiil-inen vesi* (← *krokotiili* ‘crocodile’) ‘water with crocodiles’ at 4;10.

3.3.2. -vA

The *vA*-suffix expresses that something has qualities expressed by the base, for example, *ete-* ‘front-’ → *ete-vä* ‘talented’ and *mahti* ‘power’ → *mahta-va* ‘powerful, mighty’. Furthermore, there are *vA*-adjectives that are

lexicalized present participles: *paina-va* ‘heavy’ (cf. *painaa* ‘weight’), *seuraa-va* ‘next’ (cf. *seurata* ‘follow’) and *taita-va* ‘skillful’ (cf. *taitaa* ‘master’).

Mari has four *vA*-adjectives in the recordings, etymologically participles, namely *sopi-va* ‘suitable’ (← *sopia* ‘fit, suit’) at 1;7, *paina-va* ‘heavy’ (← *painaa* ‘weight’) at 1;11, *syötä-vä* ‘edible’ (← *syödä* ‘to eat’) at 2;6, and *elä-vä* ‘living’ at 3;0. In CDS, there are eight other *vA*-adjectives.

Tomi has two *vA*-adjectives in the recordings: *sopi-va* ‘suitable’ at 1;11 and *paina-va* ‘heavy’ at 2;8. In CDS there are eight other *vA*-adjectives, for example *ete-vä* ‘eminent’, *jännittä-vä* ‘exciting’, *kaare-va* ‘arched’, and *taita-va* ‘skillful’.

At 3;0, Mari produced one neologism belonging to *vA*-adjectives, namely *kelta-va* (following with the established adjective *kellertä-vä*) ‘yellow-like’ based on the same stem as the adjective *kelta-inen* ‘yellow’ when speaking about trees in the autumn:

(17) Mari 3;0:

ne on kelta-v-i-a, ne on kelle-rtä-v-i-ä
they be.3PL yellow-DERIV-PL-PARTIT, they be.3PL yellow-DERIV-
PL-PARTIT (-v- = participle or derivative element)

‘They are yellowish, they are yellow like’

3.3.3. *-kAs and -isA*

The suffixes *-kAs* and *-isA* express an abundance of qualities expressed by the base, for example

(18) *nero* ‘genius’ → *nero-kas* ‘ingenious’

(19) *touhu* ‘bustle’ → *touhu-kas* ‘busy, energetic’

(20) *vitsi* ‘joke’ → *vitsi-käs* ‘funny’

(21) *valo* ‘light’ → *valo-isa* ‘well-lighted, sunny’

There are only a few adjectives in the recordings that have these suffixes, and only one in CS: Mari uses *valo-isa* ‘well-lit’ at 2;1 (also in CDS). In Mari’s recording there is one in CDS, namely *nero-kas* ‘ingenious’ at 2;6. In Tomi’s recordings, there are four *kAs*-adjectives in CDS.

The productivity of these suffixes is demonstrated by neologisms in the diary data, for example Mari’s *raivo-kas* ‘furious’ (the corresponding established adjective is *raivo-isa*) at 2;10.

4. Derivational morphology acquired at later stages

The very productive *-minen*: *-mis(e)-* can be attached to all verb stems, and it has the same meaning as the English *-ing* suffix. Because of the abstract meaning, it is more used in written than in spoken Finnish to derive action nouns from verbs – it is sometimes even overused in writing to replace verbs, which is called “paper-tasting noun sickness”. In CS it is used often as a non-head in compounds such as Tomi’s *aja-mis+homma* ‘driving

activity’ (*ajaa* ‘drive’-*mis* + *homma* ‘activity’) and *siirtä-mis+paikka* ‘moving place’ (*siirtää* ‘move’-*mis* + *paikka* ‘place’) at 2;4, and Mari’s *katso-mis+nälkä* ‘watching hunger’ (*katso* ‘watch’-*mis* + *nälkä* ‘hunger’) at 3;6, when she wanted to watch the television. Sometimes this kind of compound is used when the child does not know or remember the established word: for example, Mari’s *syö-mis+keppi* ‘eating stick’ (*syö* ‘eat’-*mis* + *keppi* ‘stick’) instead of the established compound *syö-mä+puikko* ‘chop stick’ (*syö* ‘eat’-*mä* + *puikko* ‘stick’) at 2;10 and *siirtä-mis+vehje* ‘moving device’ (*siirtää* ‘move’-*mis* + *vehje* ‘device’) instead of *atulat* ‘tweezers’ at 3;4. Instead of *-minen*, children often use *mUs-*derivatives, some of which are presented in 3.1.e.

The adjectives derived with *-(mA)tOn* express a lack of qualities expressed by the base; these are found first in later recordings. The very first recorded token is in Mari’s recording at 3;0 but this is only an attempt, targeting the compound adjective *asiaan+kuulu-maton* ‘irrelevant, inappropriate’ (matter+belong-NEG) but changed to *asia-ttomaan kuuluva* (matter-NEG belonging). In the same recording there is another adjective with this suffix in CDS: *käsittä-mätön* ‘incomprehensible’ (← *käsittää* ‘comprehend’). The first correct token is Mari’s *levo-ton* ‘restless’ (← *lepo* ‘rest’) at 4;1. In the diary data, there are some neologisms with this suffix.

5. Word class changing vs. maintaining derivations

Nouns are derived from verbs with such suffixes as *-jA* for agents, *-in* for instruments, etc. The first deverbal suffixes for noun derivation in the data are *-O*, *-U* and *-s/-kse-*. In adult Finnish, the most productive suffix to derive nouns from verbs is *-minen*, but it has an abstract meaning and is used in CDS only infrequently and very seldom in CS; instead, children use one subtype of the derivational type *-s/-kse-*, namely *-mUs*. One reason might be that the inflection of *-minen* is quite complicated (*-minen/-mise/-mis-*). With the *e*-suffix nouns are derived from both verbs (*sataa* ‘rain’ → *sad-e* ‘rain’) and adjectives (*kuuma* ‘hot’ → *kuum-e* ‘fever’).

Verbs are derived from both nouns and adjectives with *-TTA* (*apu* ‘the to help’ → *auttaa* ‘help’, *lämmin* ‘warm’ → *lämmittää* ‘warm up’), and this productive suffix is used also in children’s neologisms, such as *viulu* ‘violin’ → *viuluttaa* ‘play the violin’. A few verbs are also derived from nouns with *-ELE*, for example *sukseilee* ‘is skiing’ from *sukset* ‘skis’.

Adjectives are derived from nouns above all with the suffix *-inen*, but a few are also derived with the suffixes *-vA*, *-kAs*, and *-isA*.

The most important word class-maintaining derivational suffixes for verbs are the causative suffix *-TTA*, the reflexive-passive suffixes *-U* and *-UTU*, and the frequentative suffix *-ELE*; all are productive in CS. The momentaneous verb suffixes *-Ahta* and *-Aise* are used only a few times and mostly in CDS.

For nouns, the word class-maintaining derivational suffixes are few, but for example *-la* is used for locations (e.g. *mummi* ‘grandmother’ → *mummi-la* ‘grandmother’s home’). For adjectives, there are a few word class-maintaining derivational suffixes, such as the moderative suffix *-hko* (e.g. *vanha* ‘old’ → *vanha-hko* ‘rather old’), but these are not found in the data.

To sum up, nouns are derived from verbs with several suffixes, both productive and less productive ones. Verbs are derived from both nouns and adjectives with a few productive suffixes. Adjectives are derived from nouns with a few suffixes, only one of them being very productive. The word class-maintaining derivations are productive in verbs and to a certain extent also in nouns.

6. Conclusion

6.1. Research question 1: Which derivational patterns emerge and are acquired first?

The first derivational patterns to emerge are *U-* and *TTA-*verbs (Mari at 1;7, Tomi at 1;8), adjectives derived with the *inen-*suffix (Tomi at 1;9, Mari at 1;7 in truncated forms, full forms at 1;11), and such bisyllabic nouns as *kuume* (Mari at 1;7), *keitto* (Mari 1;8), and *hyppy* (Tomi at 1;10) derived with *-e*, *-o*, and *-u*, respectively. Many diminutives emerge early as well,

and they are used both in CS and CDS; unlike many other noun types, the diminutives have a simple and transparent inflection (Laalo 2007). The first noun and verb derivations emerge about the same time.

The first verb derivatives to emerge are transparent bisyllabic reflexive verbs derived with the *U*-suffix: *kaatuu* ‘falls down’ is used by Mari at 1;7 and Tomi at 1;8, and Mari uses *kääntyy* ‘turns’ at 1;7. Tomi uses trisyllabic reflexive verbs *laskeutuu* ‘descends’ already at 1;9 and *pelästyy* ‘is frightened’ at 1;10; Mari only after the disyllabic phase: *kallistuu* ‘leans’ at 1;11, *innostuu* ‘gets excited’ at 2;11, and *rauhoittuu* ‘calms down’ at 3;0. In the recordings Mari has three base-affix combinations at 1;9 (in the diary data already at 1;7), and Tomi at 1;10 (in the diary data at 1;8).

The first *TTA*-derivative to emerge is the disyllabic *auttaa* ‘to help’ (Mari at 1;7, Tomi at 1;8); still, this derivative is only semantically transparent but morphologically opaque because the phoneme *p* of the short stem is deleted in the derivation: *apu* ‘the help’ + *TTA* → *auttaa* ‘to help’. Most *TTA*-derivatives have at least three syllables and emerge somewhat later, such as Tomi’s causative verbs *lennättää* ‘make to fly’ and *sammuttaa* ‘put out a lamp’ at 1;9. Because Mari had a strong trochaic stage, her first trisyllabic *TTA*-derivative emerged first at 1;11 *pyörittää* ‘make rotate’; this is a very clear causative verb derivative because Mari also uses the intransitive base *pyöriä* ‘rotate’ in the same recording. In the recordings, Tomi has four *TTA*-derivatives at 1;9; Mari has two disyllabic *TTA*-derivatives at 1;8 (and two

shortened forms) but three full forms first at 1;11 due to her strong trochaic stage.

The third type of derived verbs to emerge consists of *ELE*-verbs. Tomi's first were *kävelee* 'is walking' at 1;9, *hyppelee* 'is jumping' and *juttelee* 'is talking' at 1;10, and *katselee* 'is watching' and *piileskelee* 'is hiding' at 2;2. Mari's first *ELE*-verbs were *juttelee* at 1;11 and *katselee* at 2;1; in CDS *katselee* is the most frequently used *ELE*-verb.

Conversion appears only in one verb, namely *tahto-* 'want to', which is frequently used in CS in modal utterances already at an early stage (Laalo to appear). There are no neologisms created by conversion in the data. This is in contrast to Clark's (1993) observation that English-speaking children create very early neologisms using conversion.

The most productive derivational suffix for adjectives is *-inen*. In Tomi's data it emerges first in CDS at 1;8 with nine *inen*-adjectives having 18 tokens, and in CS soon after that: *puna(i)nen* 'red' at 1;9, *pikku(i)nen* 'small' at 1;10, and three more colour adjectives at 1;11. Mari attempts to use them already at 1;7 and produces two adjectives occurring also in CDS but shortened in CS to fit the trochaic pattern. Mari produces trisyllabic full forms of *inen*-adjectives only at 1;11, but then these adjectives develop into a fast-growing lexical group.

Of the other adjective suffix types, *vA*-adjectives (e.g. *sopiva* 'suitable') are used both by Mari and Tomi. There is only one *isA*-adjective in the recordings, namely Mari's *valoisa* 'well-lit' at 2;1.

One early derivational group of nouns consists of diminutives which emerge at the age of 1;7 in both Mari's and Tomi's speech (Laalo 2007: 269). The diminutives are morphologically more transparent than their simplex counterparts and thus facilitate inflection. Their use in Finnish CDS and CS is discussed in detail in Laalo (2007).

Other derivative suffix types of nouns to emerge early are *-e* (Mari's *kuume* 'fever' at 1;7) and *-O/-U*: Mari's *keitto* 'soup' at 1;8 and Tomi's *hyppy* 'jump' at 1;10. Other productive derivative suffix types are used later in CS:

-in (instrument nouns) Mari's *avain* 'key' at 1;9, Tomi's *avain* at 1;10; later many neologisms;

-jA (agent nouns) Mari's *kasvis+syöjä* 'vegetarian' and *lihan+syöjä* 'carnivore' at 3;2, Tomi's *ampuja* 'shooter' at 2;7;

-s Mari's *muhennos* 'stew' at 1;11 and Tomi's *katos* 'shelter' at 2;6.

The first derivative types of verbs, adjectives and nouns are presented in Table 15.

Table 15. Emergence and productive use of certain important early derivative suffixes/types (cumulatively productive)

Derivational type	Mari		Tomi	
	Emergence	Prod. use	Emergence	Prod. use
<i>TTA</i> -verbs	1;7	1;8/1;11*	1;8	1;9
<i>U</i> -verbs	1;7	1;11	1;8	1;10
<i>ELE</i> -verbs	1;11	2;3	1;9	2;2

<i>inen</i> -adjectives	1;7/1;11*	1;8/1;11*	1;9	1;10
<i>O</i> - and <i>U</i> -nouns	1;8	1;9**/2;5	1;10	2;1**/2;8
<i>e</i> -nouns	1;7	2;6	2;3	2;8

*Mari's trochaic stage: at first the *inen*-adjectives and *TTA*-verbs are truncated; these word types are used with different stems at 1;8, but they are realized as shortened trochaic forms; full forms emerge first at 1;11.

** Productive use first in compounds (at 1;9 and 2;1), and as independent words only later.

6.2. Research question 2: What does the early emergence depend on?

Frequency, especially type frequency in CDS, is important for early emergence: from the first derivative types both *TTA*-verbs and *inen*-adjectives have a high type and token frequency in CDS; *U*- and *ELE*-verbs as well as *O/U*-nouns have a high type (but not token) frequency in CDS.

Derivative suffixes that are not frequent in CDS emerge only late if ever in CS, for example, momentaneous verbs derived with *AhtA* and *Aise*, as well as adjectives derived with *-kAs* and *-isA*.

Productivity also plays a role for early emergence: verbs derived with the productive suffixes *-TTA*, *-U*, and *-ELE* emerge early, in the same way nouns derived with *-O/-U* and adjectives derived with *-inen*, whereas less frequent and less productive adjectives with *-vA* emerge only later, and *-kAs* and *-isA* are used mostly in CDS; these suffix types are not as productive,

which is reflected in their low frequency. There are some productive but not very frequently used suffix types:

-jA-agent nouns: in the recordings of Mari at 3;0 and Tomi at 2;7, but the first neologisms in Mari's diary data are already at 2;1; Tomi's first are at 2;11;

-in-instrument nouns: in the recordings both Mari (at 1;9) and Tomi (at 1;10) have as their first instrument noun the word *avain* 'key'; the first neologisms in the diary data appear at 2;4 for Mari and at 2;8 for Tomi.

Productivity alone is not very important for early emergence. For example, the suffix for moderative adjectives *-hkO* is in principle very productive (it can be attached to all adjectives) but was not in use in the recordings, either in CS or in CDS; in general, moderativeness is usually expressed in spoken Finnish with the construction *melko* + ADJ 'rather + ADJ'.

Transparency also has some influence on early emergence: the derivative suffixes *-TTA*, *-U*, *-ELE*, *-inen*, and *-O/-U* are all transparent. Still, transparency alone does not lead to derivative types being used early or frequently, because both *-jA* and *-in* are transparent but used only later in CS; later their productivity is also obvious in the diary data. Frequency seems to be more important for early emergence: the verb *auttaa* 'help' emerges very early, as the first *TTA*-derivative verb; it is frequent but not transparent because of the exceptional loss of the *p*-sound in the derivation process (*apu* + *TTA* → *auttaa*).

Because Mari had a strong trochaic stage, it was important for her that the word had a simple and short form especially when the production of full forms is concerned, because Mari used forms which either fit or – if they were longer – were truncated by her to fit the trochaic pattern.

6.3. *Research question 3: What is the relation between derivation, compounding and inflection in terms of emergence and productivity?*

It is interesting to note that when at the age of 1;8 Mari's grammatical development proceeded to protomorphology with several mini-paradigms and analogical inflectional forms in both verb inflection (Laalo 2003: 337–338, 342–344) and nominal inflection (Laalo 2009: 81–82) she also had a spurt in the use of compounds (Laalo 2017: 195). Thus, the onset of her compound production was simultaneous with the new active phase in grammatical development, and it is essential in both to combine linguistic elements with each other and produce new combinations of elements.

Because of her strong trochaic stage Mari had only a few early derivatives, namely the bisyllabic verbs *auttaa*, *kääntyy*, and *kaatuu* already at 1;7 (also many shortened derivative forms) and *näyttää*, *keitto* 'soup', and *keitti* (← *keittiö* 'kitchen') at 1;8. In the recordings, Mari uses the causative verb *syö-ttä-ä* (eat-CAUS-INF) 'feed' first at 2;1, but in the diary data she uses *syöttää* in both the present and past already at 1;8 (*syö-ttä-ä* (eat-CAUS-PRS.3SG) 'feeds' : *syö-tt-i* (eat-CAUS-PST) 'fed'), along with the mini-

paradigm of the base verb *syö* ‘eat’. In the diary data, Mari has several *U*-verbs already at the age of 1;7, namely *kuivuu* ‘gets dry’, *kuuluu* ‘is heard’, and *maistuu* ‘tastes’.

In the recordings, Tomi has only one compound at 1;8 but already three compounds at 1;9 (Laalo 2017: 198). Tomi uses the first mini-paradigms of verbs at 1;8 (Laalo 2011: 90) and of nouns also at 1;8 (Laalo 2017: 164). In the recordings, Tomi uses the first derivative (*kaatuu*) at 1;8 and several *TTA*-verbs and *inen*-adjectives at 1;9. In the diary data, he already has several *U*-verbs at 1;7: two normal (*kaatu* ‘fell down’, *mahtuu* ‘fits’) and one fossilized (*tippu* ‘fell down’), and he has four further *U*-verbs at 1;8.

6.4. *Summing up*

The first derivational patterns to emerge in CS belong to types that are frequently used in CDS and fit the trochaic pattern of two syllables. The early emergence thus depends first of all on frequency, especially type frequency in CDS. Productivity also plays a role, because derived verbs, nouns, and adjectives that emerge early belong to productive derivational types. On the other hand, some very productive types (for example agent and instrument nouns) are used only later in CS. Many of the first derivation types are also transparent.

The relation between derivation, compounding, and inflection is close: both children investigated use their first derived words at the same time

when they start to inflect words and use compounds. Thus, morphology seems to emerge simultaneously in all its major components.

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