

The impact of types of analogy on first language acquisition

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1. Introduction

The background of our contribution is recent and current work within Natural Morphology on the one hand (cf. Kilani-Schoch & Dressler 2005), on the other hand empirical work 1) on first language acquisition, aphasia and processing within our research group on comparative psycholinguistics within the Austrian Academy of Sciences (to be transferred to the University of Vienna), 2) the first author's work on neologisms, including poetic occasionalisms (cf. Dressler & Panagl 2007), 3) our corpus-linguistic work within the Institute of Corpus Linguistics and Text Technology of the Austrian Academy of Sciences. In this contribution only first language acquisition is investigated, with a multimodal methodology from spontaneous longitudinal data collection up to classical plural formation and grammatical judgment tests, which demand a high degree of language awareness. Nearly only German inflection data will be discussed. The goal is to show how our model and methodology accounts for the impact of different types of analogy on first language acquisition.

2. Very brief and very selective research history

The term and concept of analogy stems from the Ancient Greek grammarians Aristophanes of Byzantion and Aristarchos of Samothrake, who adapted its meaning from the mathematical term *analogía*, which signified a mathematical proportion, i.e. they intended to „build up a real mathematical proportion in order to find out morphological forms“ (Schironi 2007). The 19th century Neogrammarians took it up in this meaning. Interestingly the Roman grammarians rendered Greek *analogía* with several terms: (*similium*) *comparatio*, *proportio*, *secundum rationem*, *analogia*, but also stronger *regula* and weaker *similitudo*. This gives us already nearly the whole gamut of interpretations of analogy in our times. Just one other term of Greek origin is missing: *schema*.

In classical Standard Generative Grammar of the 1970es, major rules (computed, with possible lexical and morphological exceptions) vs. minor rules (exception rules, all target

words listed in the lexicon) vs. (idiosyncratic) analogy were distinguished. Later on, Motsch (1981) conceptualised the term *surface analogy* (Oberflächenanalogie) for a neologism formed in exact imitation of one specific existing term. But surface analogies are not devoid of relations to morphological rules. Thus, after G. *Stichwort* ‘key-word (in theatre)’, with a morphosemantically opaque first element, *Stichnote* was formed analogically for chamber music, but it was also formed according to the German rule of subordinate noun compounding, whereas after *welfare* a surface-analogically antonym was formed in the headline of an Indian newspaper: *Illfare in India*, with different rule patterns in the model and the analogy.

Still later on, against input-oriented rule models, elaboration of output-oriented schema models took place (e.g. Bybee & Eddington 2006). The most sophisticated schema model is Köpcke’s (1988, 1993, 1998) for inflectional morphology.

Our Viennese acquisition model (cf. Laaha et al. 2006, Korecky-Kröll et al. 2012) has also a tripartition, namely between productive vs. unproductive rules vs. schemas (understood in a very restricted sense, i.e. relevant for isolated paradigms and families of paradigms). We do not insist on the notion of rules, being quite content with the notion of morphological patterns, but with different, scalar degrees of abstraction.

This model includes a two-step model of productivity: In the first step we establish productivity of a pattern/rule according to whether it freely applies to new loan-words, abbreviations, and whether it is relevant for the direction of diachronic change. If we take the example of German plurals, French *général* was loaned as German *der General*, Pl. *die General-s*, which changed first to *General-e* and finally to *Generäl-e*: all three plural formation rules are productive, though to different degrees

In the second step we distinguish whether a productive rule competes with another productive rule in the same structural context or not: If it has no competitor, then it is fully productive in this context. If it has one or more competitor rules, then it is only partially productive, and to different degrees. e.g. German –s plurals are fully productive after word-final full vowel, only partially productive in other phonological contexts; thus *Generäl-e* is the actual plural, but *General-e*, *General-s* (out rather for pragmatic reasons).

Before continuing, very brief critical comments on two leading model types of morphology acquisition studies are in order:

- 1) Classical dual route models, which assume a complementary bipartition between a single productive default rule considered to be regular and global storage of inflectional word forms considered to be irregular neither work for the two overlapping productive rules of Dutch

plural formation nor for German plural formation (cf. Dressler 1999, Ravid et al. 2008, Laaha et al. 2006, Laaha 2011): for example, we found frequency effects for the putative default rule of –s plural formation. Finally, nobody has tried a dual route model for Slavic verb inflection systems, where up to six productive inflection classes compete with each other

Even more improbable is the assumption of some nativists that the principle of rules is innate and constitutive for the grammatical module, because the contrast between rules and weaker types of analogy is much debated also in developmental psychology at large (cf. Pothos 2005, Goswami 1992). Thus we see so far no good reason why there should be an innate grammar module, both for theoretical and empirical reasons, where we have contributed ourselves (Kilani-Schoch et al. 2009).

2) Inductive computational simulation studies, e.g. connectionist ones, are impressive in their successes, but not enough yet, because such models simulate how the lexicon and one single morphological or syntactic category is acquired at a given time. However, a child is acquiring very many morphological and syntactic categories at the same time. And so far we have not seen any simulation model which simulates the complexity of such acquisition processes.

3. Goal and background of this contribution

The main goal of this contribution is to show how our model and methodology account for the impact of different types of analogy on first language acquisition.

The data are inflectional and nearly only German ones, stemming on the one hand from different types of tests and on the other hand from longitudinal spontaneous data collected, transcribed, coded and analysed in parallel ways (following the CHILDES program and including child-directed speech) for eighteen languages within the international Crosslinguistic Project on Pre- and Protomorphology in Language Acquisition (Bittner et al. 2003, Savickiene & Dressler 2007, Xanthos et al. 2011). In this project we assume the following acquisition phases: Premorphology (before the detection of morphology by the child), protomorphology (when the child detects bound morphology and starts to make successively more and more abstract generalisations), morphology proper, which resembles qualitatively adult morphology and starts with the subphase of core morphology.

Protomorphology is the most important phase, because it involves a qualitative change with the detection of bound morphology by the child, which means for German simultaneously the emergence of contrastive plural formation, verb inflection, diminutive formation and compound formation (according to the miniparadigm criterion, Dressler et al. 2003, Bittner et al. 2003, Laaha 2004, Korecky-Kröll et al. 2009). The longitudinal child data

stem from two Viennese middle-class children: the boy Jan, an early talker, studied from 1;3 through 2;7, the girl Katharina, a late talker, studied from 1;6 through 3;0. The child production data comprise 1995 and 834 minutes, respectively.

Test data discussed in this contribution come only from two types: a reactive plural formation task (Laaha et al. 2006, Laaha 2011, Laaha & Dressler 2011) and an online plural grammatical judgment task (Korecky-Kröll et al. 2012). More in § 5.

4. Error analysis of spontaneous longitudinal data

4.1. Extragrammatical surface analogies in word formation

Extragrammatical surface analogies, such as an Austrian boy's production *papapia* formed after the Italian expression *mammamia*, literally 'my mother', or a German child's surface analogy *Mamagei* after G. *Papagei* 'parrot' are the only analogies that occur in the premorphological phase (cf. Dressler 1994).

The following examples of grammatical analogies stem all from the Crosslinguistic Project on Pre- and Protomorphology in Language Acquisition gathered in the protomorphological phases of children.

4.2. Overgeneralisation according to a fully productive rule

Jan's examples from verb morphology (Laaha 2004, Klampfer 2003) show an overgeneralisation of a productive rule (or still schema?): instead of unproductive rule/schema

Strong → weak past participles: runtergegeben-en → runterdep-t (2;0) 'given down'
 runtergesprung-en → runterpring-t (2;1) 'sprung down'
 geschmiss-en → gesmeiss-t (2;2) 'thrown'
 getrag-en → trag-t (2;5) 'carried'
 geschri-en → geschrei-t (2;5) 'cried'
 raufgegang-en → raufgegeh-t (2;5) 'gone up'
 geblas-en, aufgeblas-en → blas-t, aufgeblas-t (2;6) 'blown (up)'

Katharina gefress+en → gefress-t 'eaten (of an animal)'

German data from Bittner (2003):

| | |
|--------------------------------|--|
| gegeben-en | geb-t (1;9) 'given' |
| wegschmiss-en | wegschmeiss-t (2;0) 'thrown away' |
| aufgefress-en | auffress-t 'eaten up' |
| runtergefall-en, reingefall-en | runterfall-t, reinefall-t 'fallen down/in' |

| | |
|---------------|------------------------|
| reingekomm-en | reinakomm-t ,come in' |
| vorgeles-en | anales-t ,read aloud' |
| ausgegang-en | ausgeh-t ,gone out' |
| wehgetan | wehdetu-t ,hurt' |
| aufgebiss-en | aufbeiss-t ,bitten up' |

As in English and Dutch, German weak verb inflection is the default inflection. In contrast, in German plural formation, logically, there can be no overgeneralisation of a fully productive pattern, i.e. a productive pattern without rivals in the same structural description of the context of the pattern, because each fully productive pattern is contextually restricted, therefore in the same context there can be no overgeneralisation in the strict sense. And this is necessarily true in Korecky-Kröll's (2011, cf. Korecky-Kröll & Dressler 2009) error analysis of German plural formation. This confirms that German has no default plural. For example, the –s plural is fully productive only after word-final full vowels, as in *Auto-s* 'cars', and in exceptional default cases such as in the nominalisation of conjunctions: *die wenn-s und aber-s* 'the if-s and but-s', etc.

4.3. Subcase: fully productive no change substitutes unproductive change

3.Sg.present umlaut of strong verbs → no umlaut of weak verbs, examples from Jan:

| |
|---|
| friss-t (Inf, fress-en) → fress-t (2;2: 2 tokens) 'eats (of an animal)' |
| wirf-t (Inf. werf-en) → werf-t (2;2; 2;5) ,throws' |

German data from Bittner (2003):

| | |
|--------------------------------|---------------------------------------|
| iss-t (Inf. ess-en) | ess-t (1;11) 'eats' |
| 2.Sg. Imp. iss! | ess! 'eat!' |
| gib-t (Inf. geb-en) | geb-t ,gives' |
| wäsch-t (Inf. wasch-en) | wasch-t ,washes' |
| weg/mitfahr-t (Inf. –fahr-en) | weg/mitfahr-t ,goes/drives away/with' |
| (runter)fällt-t (Inf. fall-en) | (runter)fall-t (2;0) ,falls (down)' |
| auffriss-t (Inf. –fress-en) | auffress-t ,eats up (of an animal)' |
| nimm-t (Inf. nehm-en) | nehm-t (2;1) ,takes' |
| stöss-t (Inf. stoss-en) | stoss-t ,pushes' |

base form vowel (Sg.) expands at cost of umlaut in marked plural form

3rd Pl. müss-en → muss-en 'they must'

Special case:

Base vowel of derivational base expanded to derived verb:

Adv. *Genug* ‚enough‘, derived verb 3.Sg.Pres. *genüg-t* → *g'nug-t* ‚is enough‘

4.4. Overgeneralisation according to a partially productive rule

Since no partially productive rules exist in German verb morphology, we can offer only noun plurals (after Korecky-Kröll 2011: the examples are plurals with contrasting singulars in the output; plurals without contrasting singulars are given in parenthesis):

Jan 1;4-1;11: *Jeep-en* ‚jeeps‘, *Zug-en* ‚trains‘; (*Bild-e* ‚images‘)

Jan 2;0-2;6: *Tubbytos-n*, *Tisch-n* ‚tables‘, *Vogel-n* ‚birds‘, *Fenster-s* ‚windows‘, *Hünd-e* ‚dogs‘, *Mistkübel-n* ‚trash buckets‘, *Gespent-e* ‚ghosts‘, *Buch-e* ‚books‘ and *Büch-e*, *Station-e* ‚(bus/tram) stops‘

Katharina: *Handschuh-en* ‚gloves‘; (*Hut-e* ‚hats‘, *Brösel-n* ‚crumbs‘, *Igel-n* ‚hedgehogs‘, *Hühn-e* ‚hens‘, *Pükt-e* ‚full stops‘, *Häus-e* ‚houses‘, *Schäf-e* ‚sheep‘, *Marienkäfer-s* ‚ladybirds‘, *Gift-en* ‚poisons‘)

2;7-3;0 (transition to morphology proper): Katharina: *Elefant-e* ‚elephants‘

4.5. Overgeneralisation according to an unproductive rule

strong umlaut (of 2nd & 3rd Sg.Pres.) expands to base form:

1.Sg. *ich schlaf ein* → *ich släf ein* (2;1) ‚I sleep in‘

strong umlaut expands to base infinitive:

fress-en → *friss-n* (2;2) ‚to eat (of an animal)‘

ess-en → *iss-n* (2;2) ‚to eat‘

strong PPP suffix expands to weak verb

Katharina *weggeräum-t* → *wegeräum-en* ‚removed‘,

Noun plurals (Korecky-Kröll 2011, in parenthesis when without contrasting singulars):

Jan 1;4-1;11: *Füss-er* ‚feet‘, *Zähn-er* ‚teeth‘; (*Rucksäck* ‚rucksacks‘)

Jan 2;0-2;6: *Hüt* ‚hats‘

Jan 2;7-2;10: *Stern-en* ‚stars‘

Katharina 2;11: *Eisenbähn-e* ‚trains‘

Special case: 3.Sg.present umlaut of strong verbs → no umlaut of weak verbs, but without ending of weak verbs: *hält* → *halt* (2;2) (Inf. *halt-en*) ‚holds‘

4.6. Compromise forms which are illegal (in adult target language)

inflectional suffix according to weak past participle, but the root vowel with the modification of the strong verb form:

heruntergelauf-en → erunteläuf-t (2;5) with 3.Sg..present umlaut (an intraparadigmatic surface analogy??)

geschoss-en → gesoss-t (2;1) with strong PPP ablaut (Inf. schiess-en) ‚shot’

analogous German PPP data from Bittner (2003):

gebiss-en → biss-t (Inf. beiss-en) ‚bitten’

gestoch-en → stoch-t (Inf. stech-en) ‚stung’

Noun plurals (Korecky-Kröll 2011):

Jan 1;4-1;11: Fuss-er, Bäum-en

Jan 2;0-2;6: Füß-en ‚feet’, Vögel-n ‚birds’, Mäus-en ‚mice’; zero forms (= Sg.): Hund ‚dog’, Pyjama ‚pyjama’ (Vw ‚volkswagen’, Blume ‚flower’)

Jan 2;7-3;0: Pfirsich ‚peach’

Katharina: Eisenbahn-e ‚trains’

Note that, although illegal umlaut with suffix–n has greater signal strength (Köpcke 1993, Korecky-Kröll 2011), spontaneous examples do not occur after 2;6 (also not in later recordings of our Viennese children).

5. Comparison with test data

Children’s spontaneous production ‘errors’ occur at a low level of language awareness. As far as German plural formation is concerned, we can compare this with our results in formal plural formation tests (Laaha et al. 2006), where children produce plurals at a high level of language awareness. As a result, the types of analogies appearing in the production of wrong plurals differ in various respects from those in the previously discussed spontaneous productions of our longitudinal corpora. Main differences are:

In the test children produce types of errors that we have not found so far in spontaneous data.

1) Pure umlaut plural in an illegal place, i.e. not in the last stem syllable, but in the second-last stem syllable: *Pyjäma* instead of *Pyjama-s*, *Öma* ← *Oma-s* ‘grannie-s’, i.e. analogical extension by violating an obligatory condition. This error might be due to a misidentification of the word-final full vowel /a/ with an a-schwa, the normal pronunciation of the plural suffix *-er*, which triggers umlaut. This type of error is very rare.

2) analogies which are very exceptional in spontaneous corpora (e.g. not in our longitudinal corpora)

- 2a) –n plurals after /a/, as in *Pizza-n* instead of *Pizza-s*, *Pyjama-n* ← *Pyjama-s*, *Oma-n* ← *Oma-s*, maybe again due to a misidentification of the word-final full vowel /a/ with an a-schwa and overextension of the n-plural from e-schwa to a-schwa
- 2b) double plurals, as in *Katze-n-s* instead of *Katze-n* ‘cat-s’, *Oma-n-s* ← *Oma-s* ‘grannie-s’, *Hase-n-s* ← *Hase-n* ‘hare-s’, *Hammer-n-s* ← *Hämmer* ‘hammer-s’, *Apfel-n-s* ← *Äpfel* ‘apple-s’, cf. my three-year old daughter’s spontaneous *Erbs-i-ss-en* ‘peas-DIMINUTIVE’ instead of *Erbs-i-s* or, without the childish diminutive suffix –i: *Erbse-n*. Further note that in spontaneous double plurals the most productive suffix is always peripheral, and this is with children the –(e)n suffix. This constraint (Dressler 2004) is violated in the test production *Katze-n-s*.
- 3) Nearly error-free production occurs much later in formal tests than in spontaneous production. The most splashy example is that nine-year-old children still produced, in tests, the illegal compromise combinations of umlaut with –s and –(e)n plurals which in our longitudinal corpora ends at 2;6.
- 4) Zero forms are produced much more often in formal tests than in spontaneous production. But this is a test artefact, where it is usually simply repetition of the singular stimulus (cf. Laaha et al. 2006: 285f).
- 5) In error direction, change from less transparent to more transparent forms and from less productive to more productive plurals is very clear in the production tests (Laaha et al. 2006: 294f), which is much less the case in spontaneous productions of plurals (Korecky-Kröll 2012), in contrast to a clear trend to more transparent and productive analogies in verb inflection. This difference is explainable by the existence of default inflection in the verb, but by the absence of default inflection in the noun.

A still higher degree of language awareness was requested in our online judgment test (Korecky-Kröll et al. 2012), where children of various ages and adults were asked to evaluate actual plurals vs. grammatical potential but non-existing vs. grammatically illegal plurals. Although accuracy and velocity of responses increased with age, even ten-year old children accepted some illegal plurals of the type *Büss-en* from Sg. *Bus* ‘bus’, instead of Pl. *Buss-e*.

Another difference to spontaneous production and even to formal test production of plurals was the greater preference for actual and potential plurals combining the –e suffix with a preceding umlaut in masculine nouns, a partially productive pattern, as in potential *Büss-e* instead of actual *Buss-e*. That is, they preferred plurals which had two plural signals as better plurals to plurals which had just one signal (cf. also Köpcke 1993 who assigns such plurals greater signal strength, cf. already Dressler 1985).

5.1. No surface analogies to isolated irregular patterns, where rule status is excluded

Nowhere in our corpora or test results nor in the literature we know, surface analogies to isolated patterns, which exclude rule status, have been observed. Thus many English-learning children have been observed to replace irregular *brought* with the subregular preterit *brang* or participle *brung*, in analogy to the unproductive subregular rule or schema of *sing, sang, sung*. However never the inverse change occurred: no analogical change of *wrang/wrung* to **wrought* after *brought* has ever been observed. The same is true for the corresponding German participle *gebrach-t* vs. *gesung-en* → *gebrung-en* vs. never observed **gesach-t* (Inf. *bring-en, sing-en*). And the same is true for French Inf. *prendre* ‘take’, *rendre* ‘render’, participle *pris, rend-u* → *prend-u* vs. never observed **ris*. This means that even such unproductive analogies require some abstraction of surface forms at least to schemata or unproductive subregular rules. This is evidence against reducing analogy to surface analogies between stored inflected forms.

7. Learning of correct forms via different types of analogy

(“correct” is meant in the sense of adult targets and their morphologically accurate rendering)

7.1. Formation of new forms non-existing in the target language

Our Viennese children formed plurals from three mass nouns (Korecky-Kröll 2011), two of them according to a fully productive rule:

Jan 2;3: *Erde-n* ‘earth-s’ instead of *Erdklumpen* ‘earth clods’ (homophonous with the plural of the sort noun, never heard by him)

Jan 2;7: *Lego-s* instead of *Legosteine* ‘lego stones’.

Another mass noun plural occurred according to a partially productive rule:

Katharina 2;8: *Geld-e* ‘money-s’, corresponding to the adult unproductive sort-noun plural *Geld-er* which has very little chance to occur in child-directed speech.

7.2. Acquisition of correct actual forms of the target language

Basis for this partial analysis are our studies on suffix predictability in Ravid et al. (2008), Laaha (2011), Laaha & Dressler (2011). The first study is based on longitudinal data (up to 2;6), the second and third on our production test data (from 3 to 9 years). Since only part of our analysis of suffix predictability can be translated into the types of analogy format of our presentation, we have to limit our presentation to the following:

1. The fully productive rule of –s plural formation after word-final full vowel had the correct scores of 81,03% for masculine and 84,85% for neuter longitudinal tokens, vs. 67,74% and 80,13% in the tests.

2. The fully productive rule of –n plural formation of feminines after e-schwa had the correct scores of 100% in longitudinal tokens and 99,7% in tests.

The difference in scores between the two rules is presumably based on the much higher frequency of –n plurals than of –s plurals.

3. The partially productive rule of –n plural formation of feminines after word-final consonants had the correct scores of 93,75% after sonorants (no example after obstruents) longitudinally, in tests: 96% after sonorants, 30,56% after obstruents.

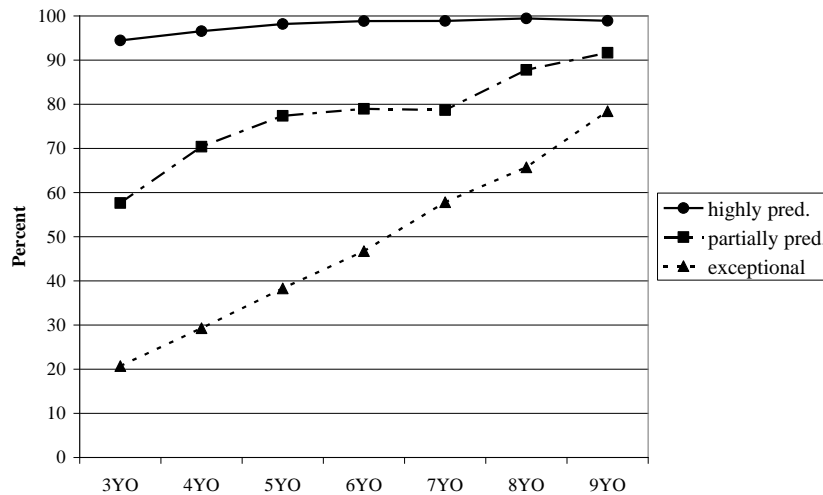
This great difference between the application after sonorants and after obstruents (paralleled in child-directed speech: 90,91% vs. 33,33%) has never been observed so far in studies of German plural formation. These new results are confirmed by the complementary distribution of the following partially productive rule:

4. The partially productive rule of –e plural formation (with and without umlaut) of masculines after word-final consonants had the correct scores of 78,79% after obstruents and 48,28% after sonorants longitudinally, 72,22% after obstruents and 40,36% after sonorants in tests.

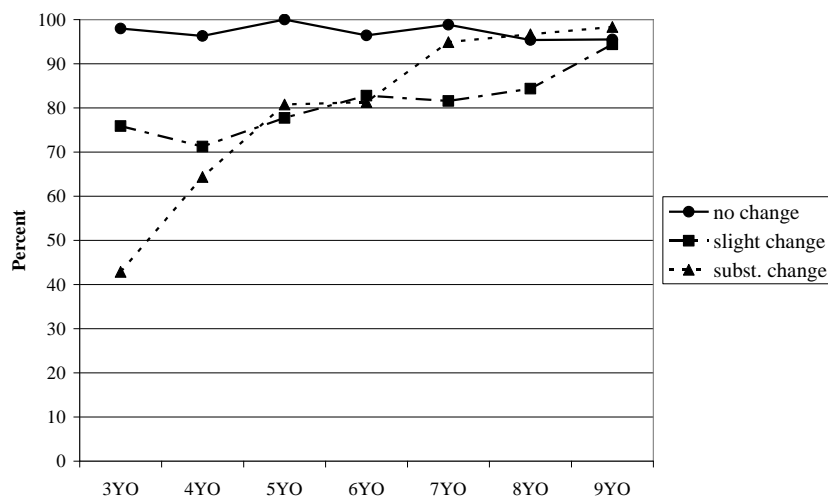
This complementary distribution was paralleled, but more pronounced in child-directed speech (77,05% vs. 22,03%).

Already these partial results are rather incompatible with models which claim that children acquire global, homogeneous rules of –s plural formation, –en plural formation, –e plural formation, and so on.

Our still unpublished study (Laaha & Dressler 2011) on suffix predictability and stem transparency in the acquisition of German noun plurals investigated, within our test results, the increase of correct scores separately for suffixes and for stem transparency. The scores for highly predictable vs. partially predictable vs. exceptional suffixes developed in the following way:



The scores for fully transparent stems (i.e. no stem change in plural suffixation) vs. less transparent (slight change by undoing word-final devoicing of obstruents) vs. opaque (substantial change by umlauting in plural formation) developed in a very different way:



This diversity of development is compatible with the assumption of morphological rules of suffixation which trigger (or do not trigger) a morphophonemic rule of umlauting, but it is problematic for models which assume that the acquisition of suffixation with vs. without umlaut occurs in terms of surface analogies to stored plural forms, as is assumed in all connectionist and related accounts.

The model of morphological rules of suffixation triggering morphophonemic rules of umlauting is also compatible with the results of van Bree's (1994) account of the decay of Dutch dialectal diminutive formation, as reanalysed in Dressler (1996).

7. Conclusion

Tentative conclusions of our study are: The more productive a rule is, the more analogies occur during the acquisition process. Even rare types of analogies do not occur as pure surface analogies to stored inflectional forms but require at least some abstraction to a schema or unproductive, subregular rule. This is fully compatible with Karmiloff-Smith's (1992) Neo-Piagetian model of increasing abstraction via representational redescription during the course of language acquisition. The only, but only apparent exception are extragrammatical surface analogies which are the only analogies which occur already in the premorphological period of acquisition, i.e. before the child detects morphology (Dressler et al. 2003). An intervening factor for the probability of analogies which we did not elaborate on here is the role of token frequency of forms, which is very important both for the strength of storage combined with ease of access to storage and for the relation between a child's output and its input in child-directed speech, where the output corresponds often, but not always, closely to the input.

We've seen different results for the development of plural formation according to different methods of data collection: does this mean that some results and even some methods have to be discarded as test artefacts? Or, quite to the contrary, should we presume that different forms or at least different plural strategies are co-present in the mental lexicon and in the respective transitional grammar of children and that different methods of data collection are tapping or at least favouring different forms and strategies. This is our current interpretation, which is supported by the following anecdotal evidence about the acquisition of Hungarian noun plural formation, which can be interpreted as the co-presence of stored forms and abstract rule-like patterns:

Hungarian noun plural formation has a default rule of adding the suffix *-k* to a word-final vowel, and inserting, before this suffix *-k*, a vowel-harmonic vowel after a word-final consonant. There are, however, a dozen exceptional paradigms which form a schema-like family of paradigms, where the stem-final long vowel is suppleted by the sequence vowel + /v/, e.g. *ló* [lo:] 'horse', Pl. *lov-ak*.

Our research partner, the Hungarian psycholinguist Csaba Pléh (pers. comm.) once overheard his three-year old daughter produce, instead of the Pl. *lov-ak*, the typical child overregularisation *ló-k*, according to the fully productive default rule. He reacted by asking his daughter: "But what would a very intelligent girl say?" After some hesitation, the girl answered: "(she would say) *lov-ak*, but I say *ló-k*".

References

- Bittner, Dagmar. (2003). The emergence of verb inflection in two German-speaking children. In D. Bittner et al., 53-88.
- Bittner, Dagmar, W.U.Dressler & Marianne Kilani-Schoch eds. (2003). *Development of Verb Inflection in First Language Acquisition: A Cross-Linguistic Perspective*. Berlin: de Gruyter.
- Bybee, Joan & David Eddington. (2006). A usage-based approach to Spanish verbs of 'becoming'. *Language* 82. 323-355
- Dressler, Wolfgang U. (1985). *Morphonology*. Ann Arbor: Karoma Press.
- Dressler, Wolfgang U. (1994). Evidence of the first stages of morphology acquisition for linguistic theory: extragrammatic morphology and diminutives. *Acta Linguistica Hafniensia* 27,1. 91-108.
- Dressler, Wolfgang U. (1996). A Functionalist Semiotic Model of Morphonology. in: R. Singh ed. *Trubetzkoy's Orphan*. Amsterdam: Benjamins. 67-83; 102-105.
- Dressler, Wolfgang U. (1999). Why collapse morphological concepts? *Behavioral and Brain Sciences* 22,6,1021.
- Dressler, Wolfgang U. (2004). Hypercharacterisation and productivity in inflectional morphology. In: T. Krisch et al. eds. *Analecta Homini Universali Dicata, Fs. O. Panagl*. Stuttgart: Verlag Hans-Dieter Heinz. 515-524.
- Dressler, Wolfgang U., Marianne Kilani-Schoch & Sabine Klampfer (2003). How does a child detect morphology? Evidence from production. In: R.H.Baayen & R.Schreuder eds. *Morphological Structure in Language Processing*. Berlin: Mouton de Gruyter. 391-425.
- Dressler, Wolfgang.U. & Oswald Panagl eds. (2007). *Poetische Lizenzen*. Wien: Praesens Verlag
- Goswami, Usha. (1992). *Analogical Reasoning in Children*. Hove: Lawrence Erlbaum.
- Karmiloff-Smith, Anette. (1992). *Beyond Modularity: a developmental perspective on cognitive science*. Cambridge/Mass: MIT Press
- Kilani-Schoch, Marianne, Ingrida Balčiuniene, Katharina Korecky-Kröll, Sabine Laaha & Wolfgang U. Dressler (2009). On the role of pragmatics in child-directed speech for the acquisition of verb morphology. *Journal of Pragmatics* 41, 219-239.
- Kilani-Schoch, Marianne & Wolfgang U.Dressler. (2005). *Morphologie naturelle et flexion du verbe français*. Tübingen: Narr

- Klumpfer (= Laaha), Sabine. (2003). Emergence of verb paradigms in one Austrian child. In D. Bittner et al., 297-323.
- Köpcke, Klaus-Michael. (1988). Schemas in German plural formation. *Lingua*, 74, 303-335.
- Köpcke, Klaus-Michael. (1993). *Schemata bei der Pluralbildung im Deutschen: Versuch einer kognitiven Morphologie*. Tübingen: Narr.
- Köpcke, Klaus-Michael. (1998). The acquisition of plural marking in English and German revisited: schemata versus rules. *Journal of Child Language*, 25, 293-319.
- Korecky-Kröll, Katharina (2011). *Der Erwerb der Nominalmorphologie bei zwei Wiener Kindern: Eine Untersuchung im Rahmen der Natürlichkeitstheorie*. PhD thesis, University of Vienna.
- Korecky-Kröll, Katharina & Wolfgang U. Dressler (2009) The acquisition of number and case in Austrian German nouns. In: U. Stephany & M. Voeikova eds. *Development of Nominal Inflection in First Language Acquisition: a cross-linguistic perspective*. Berlin: Mouton de Gruyter, 265-302.
- Korecky-Kröll, Katharina, Gary Libben, Nicole Stempfer, Julia Wiesinger, Eva Reinisch, Johannes Bertl & Wolfgang U. Dressler (2012). Helping a crocodile to learn German plurals: children's online judgment of actual, potential and illegal forms. *Morphology*, to appear.
- Laaha, Sabine (2004). *Développement précoce de la morphologie verbale: une étude comparative sur l'acquisition de l'allemand autrichien et du français*. Thèse de doctorat. Vienna University & Sorbonne.
- Laaha, Sabine (2011). Sonority, gender and the impact of suffix predictability on the acquisition of German noun plurals. *Langage, Interaction et Acquisition* 2, 82-100.
- Laaha, Sabine & Wolfgang U. Dressler. (2011). Suffix predictability and stem transparency in the acquisition of German noun plurals. Proceedings of the 14th International Morphology Meeting (Budapest 2010), to appear.
- Laaha, Sabine, Dorit Ravid, Katharina Korecky-Kröll, Gregor Laaha & Wolfgang U. Dressler. (2006). Early noun plurals in German: regularity, productivity or default? *Journal of Child Language* 33. 271-302.
- Motsch, Wolfgang. (1981). Der kreative Aspekt in der Wortbildung. In L. Lipka ed. *Wortbildung*. Darmstadt: Wissenschaftliche Buchgesellschaft. 94-118.
- Pothos, Emmanuel M. (2005). The rules versus similarity distinction. *Behavioral and Brain Sciences* 28, 2-40 (with commentaries)

- Ravid, Dorit, Wolfgang U. Dressler, Bracha Nir-Sagiv, Katharina Korecky-Kröll, Agnita Souman, Katja Rehfeldt, Sabine Laaha, Johannes Bertl, Hans Basbøll & Steven Gillis 2008 Core morphology in child directed speech: Crosslinguistic corpus analyses of noun plurals. In: Heike Behrens ed. *Corpora in Language Acquisition Research*. Amsterdam:Benjamins. 25-60.
- Savickiene, Ineta & Wolfgang U.Dressler eds. (2007). *The Acquisition of Diminutives: a cross-linguistic perspective*. Amsterdam: Benjamins.
- Schironi, Francesca (2007) *Analogía*, analogia, proportio, ratio: loanwords, calques, and reinterpretations of a Greek technical word. in L. Basset, F. Biville, B. Colombat, P. Swiggers & A. Wouters eds. *Bilinguisme et terminologie grammaticale gréco-latine*. Leuven: Peters. 321-338.
- van Bree, Cor. (1994). Changes in Diminutive Formation in the Eastern Dutch Dialect of Twente. ms. Dept. of Dutch Language, University of Leiden.
- Xanthos, Aris, Sabine Laaha, Steven Gillis, Ursula Stephany, Ayhan Aksu-Koç, Anastasia Christofidou, Natalia Gagarina, Gordana Hrzica, F. Nihan Ketrez, Marianne Kilani-Schoch, Katharina Korecky-Kröll, Melita Kovačević, Klaus Laalo, Marijan Palmović, Barbara Pfeiler, Maria D. Voeikova & Wolfgang U. Dressler (2011). On the role of morphological richness in the early development of noun and verb inflection. *First Language* 31, 461-479.

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