Abstract

In languages with a high number of inflectional paradigms, morphological forms may interact across paradigms irrespective of stringent paradigm-defining properties such as phonological shape. The present pseudo-verb inflection task of Finnish shows that in spite of transparent phonological constraints on paradigm membership, one morphological paradigm, viz., that of the so-called contracted verbs, shows an overwhelming effect among the verbs of this language. This override effect is not fortuitous, since it can be explained, e.g., with the relative lack of phonological alternation in affixation. In this respect, Finnish appears to favor agglutination, although in some other areas the language shows developmental traits towards increasing fusionality.

1. Introduction

The topic of the present study, i.e., Finnish verb inflection, involves a complex bundle of forms containing transparent morpho(phono)logy and competition of closely-related paradigms. Finnish verbs may be claimed to have as many as 45 (e.g. Nykysuomen sanakirja ['Dictionary of Present-day Finnish'], 1973, 2401 pages), or 25 (non-defective) inflectional classes (e.g. Suomen kielen perussanakirja ['Basic Dictionary of Finnish'], 1990, 2008 pages). Allowing for drastic morphophonological and phonological abstractions the number of these paradigms can be somewhat reduced (Karlsson 1983: 212 & passim). Whatever the number of paradigms in the descriptions of theoretical morphology, it is a pre-theoretical fact that in this language multi-member phonological strings (partially) determine the various surface inflectional patterns (for mathematical modelling of Finnish verb inflection, see the analogy model of Skousen 1989; for Optimality-
Theoretical accounts on the inter-paradigmatic competition, variation and diachronic tendencies in the complex (noun) inflection of Finnish, see, e.g., Anttila 1997a, 1997b, 1999, Anttila & Yu Cho 1998, Kiparsky 2003, Nikolaev & Niemi 2005). Another feature that makes the present language inflectionally a highly complex one is that speakers often have to choose among both stem and suffix allomorphs to arrive at the correct output (for the importance of bound stem allomorphs in processing in Finnish, see Niemi, Laine & Tuominen 1994, Järviikivi & Niemi 2002a, 2002b). In spite of the formal changes in affixation, the morphological segmentation of Finnish complex words is relatively straightforward (Sproat 1992). In other words, in the typical case, morphological boundaries are not phonologically blurred, although affixation often involves drastic formal changes—to use a metaphor—in the area flanking the boundary.

In addition to competing stem and affixal allomorphy, the assumed processing load in Finnish verb inflection is enhanced still as we observe that (i) in language production and reception the morphological operator(s) of Finnish speakers must be highly active since about half of the words (i.e., 48%) carry a non-zero inflectional marker in spoken language, and in written text, the proportion is higher still, as about 77 per cent of running words contain a non-zero inflectional marker (Pajunen & Palomäki 1984: 50–51, esp. Table 6). (ii) As specifically for verbs, they lack a morphologically simplex form. Thus, even the dictionary entry infinitive (the so-called $T$ infinitive) carries an affix (for psycholinguistic experiments on the base form status of the three competing inflectional forms, viz., between the bound $T$ infinitive stem, e.g., *haka-*, *men-*, of ‘beat’, and ‘go’, respectively, the $T$ infinitive, e.g., *haka-ta*, *men-nä* and the 3sg., e.g., *hakkaa*, *menee*, see Niemi, Laine & Koivuselkä-Sallinen 1994). (iii) The potential number of surface forms per lexeme is relatively high, since each non-defective Finnish verb may have up to 12,000 to 15,000 surface forms (Karlsson & Koskenniemi 1985).
2. Method

2.1 Subjects and Data

48 monolingual Finnish-speaking 13–14-year-old schoolchildren were group-tested in the present experiment. 80 pseudoverbs were created by changing the consonant onset of real verbs (for a noun inflection study with this segmental manipulation procedure, see Niemi & Heikkinen 2000, Niemi & Niemi 2002). The pseudoverbs represented four paradigms (20 verbs in each): (i) *Oi-dA paradigm with multisyllabic stems*. Here the stem-final *Oi-* sequence is an unambiguous paradigm assigner (*/dA* is here the *T* infinitive marker). This paradigm was chosen as a distractor typically needed in these type of tasks to divert the subjects’ attention from the actual research issue. The *Oi-dA* paradigm is a good candidate for a distractor class, as it is inflectionally distant from any other paradigm and thus unlikely to cause a considerable number of inter-paradigmatic errors. The three remaining and crucial, potentially competing paradigms were the following: (ii) The so-called *contracted verb paradigm* carries, *inter alia*, suffixal agglutination with concomitant grade alternation of the stem-internal stop consonants in the present and past tenses (like *haka-ta*, INF, cf. *[hän]* *hakkaa* ‘[s/he] beats’, *hakka-si* ‘[s/he] beat’). This paradigm is highly productive, since, e.g., it attracts novel disyllabic items, e.g., computerese items like *seiva-ta* ‘save [a file]’, *meila-ta* ‘send e-mail’, or colloquial slang verbs like *roka-ta* ‘rock and roll’ and *skeita-ta* ‘roller-skate’. Moreover, in such language contact situations in which Finnish is the subordinate language, speakers tend to place loan verbs from the superordinate language in the contracted verb paradigm (see, e.g., Martin 1993 for American Finnish). Finally, forms resembling the contracted verbs are often incorrectly used in other paradigms at the early stages of language acquisition (Niemi & Niemi 1987). In the more complex, less agglutinative (iii) *antaa* and (iv) *ottaa paradigms* the stem final /a/ is either raised to an /o/ (*anta-* : *anto-i*) or deleted (*otta-* : *ott-i*), depending on the labiality of the first syllable vowel. The four paradigms with the relevant inflectional forms are presented in Table 1.
Table 1. Paradigms and inflectional forms used and lexical frequencies (Karlsson 1983) of verbs in the pseudoverb inflection task exemplified through real items.

<table>
<thead>
<tr>
<th>Paradigm</th>
<th>Oi-dA</th>
<th>Contr. vb.</th>
<th>Antaa</th>
<th>Ottaa</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st infinitive</td>
<td>Tupakoi-da</td>
<td>haka-ta</td>
<td>anta-a</td>
<td>otta-a</td>
</tr>
<tr>
<td>mA infinitive</td>
<td>tupakoi-ma- massa</td>
<td>hakkaa-massa</td>
<td>anta-massa</td>
<td>otta-massa</td>
</tr>
<tr>
<td>Past</td>
<td>tupakoi</td>
<td>hakk-si</td>
<td>anto-i</td>
<td>ott-i</td>
</tr>
<tr>
<td>negation¹</td>
<td>tupakoi</td>
<td>hakkaa</td>
<td>anna</td>
<td>ota</td>
</tr>
</tbody>
</table>

Gloss: ‘smoke’ ‘beat’ ‘give’ ‘take’

Lexical frequency: 961 1,688 81 4,904

(Karlsson 1983, Table on p. 210; total no. of verbs: 15,623)

The purpose of the present study is, for the first time, to test the relative productivity of Finnish verbs in a controlled off-line production task with stimuli whose output should unambiguously produce—in the eyes of a theoretical morphologist—representatives of their target paradigms only.

2.2 Procedures

The written-form experiment carried 80 (4 x 20) multi-sentence test-items constructed in the following manner (below with approximate English translations). The subjects’ task was to fill in the cloze slots, in writing, with the appropriate morphosyntactic form of the pseudoverb given in the mA infinitive form of the first sentence, e.g.:

(1) Anneli on sauhamassa.
    ‘Anneli is wugging-Inf-in [‘wugging’].

(2) Eilenkin hän [expected: sauhoi].
    Yesterday-too she _____.

(3) Tainankin pitäisi [exp.: sauhaa],
    Taina-too should _____ ,
    mutta silti hän ei [exp.: sauha].
    but still she does not _____.’

3. Results

In spite of the unambiguous transparency of paradigm membership of the pseudoverbs the overall error rate is as high as 47.0%. Table 2 shows the

¹ The negation marker is a verb, with the main verb in an unaltered NEG form in the present tense (e.g., e-n tupakoi ‘I-do-not smoke’, e-t tupakoi, ‘you-do-not smoke’).
stimulus—output relations between the four inflectional paradigms studied here. The response pattern shows that the Oi-dA paradigm is—as expected—extremely robust to any inter-paradigmatic effects, since practically all these instances remain within their own paradigm. Similarly, the majority of the contracted verb items are correctly produced. However, the antaa and oTTaa paradigms obtain the lowest scores, with about 12–14% correctness rates. The most significant attractor is the contracted verb paradigm, since the shifts away from the antaa and oTTaa types heavily concentrate on this paradigm with circa 85% attraction rates. It is to be noted that these observations pertain to paradigms, not to types of morphological operations (in the grammatical sense of the term) or to morphological categories, since the three inflectional categories behave similarly within the same paradigm (Figure 1).

Table 2. Confusion matrix of errors (in %) within the four paradigms (outliers excluded, N’s of the outliers as low as 4.2%, or 482 instances).

<table>
<thead>
<tr>
<th></th>
<th>Produced</th>
<th>Expected</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Oi-dA</td>
<td>Contr. vb.</td>
</tr>
<tr>
<td>Oi-dA</td>
<td>99.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Contr. vb.</td>
<td>1.1</td>
<td>97.3</td>
</tr>
<tr>
<td>antaa</td>
<td>1.8</td>
<td>86.0</td>
</tr>
<tr>
<td>oTTaa</td>
<td>1.3</td>
<td>84.8</td>
</tr>
</tbody>
</table>

<sup>2</sup> The 45 errors are partly ambiguous as to the distinction antaa – oTTaa. However, the errors in the past form showed that antaa was the most attractive error category of the two (i.e. vowel alternation a : o is preferred over the vowel loss a > ϕ). Thus these items were analysed as antaa output.
4. Conclusions

It may be concluded that the present metalinguistic, off-line data show that contracted verbs (a) are resistant to error, and (b) that this paradigm attracts items from the neighboring antaa and ottaa paradigms. One of the reasons for this state of affairs is—it is here claimed—due to their semiotically relatively expedient affixation (Karlsson 1983, for a semiotic view of morphology, see Dressler 1985). Somewhat elaborately we may claim the following: as regards the stems, the forms studied here do not involve any stem final vowel change, while the other competing paradigms do (antaa : anto-i, ottaa : ott-i). The only morphophonological operation—to use a metaphor (see the importance of allomorph in this language, Järvikivi & Niemi, 2002a, 2002b)—that is applicable to the contracted verbs in these environments is the weakening (grade alternation) of the (possible) internal stops only. And this process (or stem to stem relation) is applicable throughout Finnish morphology irrespective of syntactic category (cf. hattu : hatu-n, and aate : aattee-n, nom.sg. and accusative-genitive sg. of ‘hat’ and ‘idea’, respectively, and sata ‘hundred’ : sada-s ‘hundredth’). Thus, in affixation the contracted verbs require relatively straightforward agglutination (with concomitant consonant gradation changes, if applicable, and with phonological adjustment like vowel harmony). As for the suffixes, the T infinitive marker and the -si past tense marker represent the prototypical CV syllable, and thus they exhibit ideal candidates for a high degree of
isomorphy between meaning and (affixal) form (one morpheme – one syllable, see Dressler 1985). It should be stressed in this connection that also in the case of nouns the more agglutinative paradigms are the invading ones in Finnish (see Niemi & Heikkinen 2000, Niemi & Niemi 2002). Finally, the negation form in this paradigm (like *hakkaa*) is homophonic with the 3sg., which has been claimed to be one of the cognitive “base forms” of the Finnish verb, the two others being the stem (like *haka*) and the T infinitive (*haka-ta*) (see Karlsson 1983, Niemi, Laine & Koivuselkä-Sallinen 1994).3

References


3 Interestingly enough, but somewhat beyond the research interest of the present article, in the colloquial speech of young speakers the “3rd p. paradigmatic levelling” effect seems to affect (a) even the T infinitives of the contracted verbs (e.g., *En viiitsi skeittaa* (for *skeita-ta*) ‘I do not bother/like to skate’), and (b) the mA infinitives in structures like *En pysty skeittaa* (for *skeittaa-ma-an*) ‘I am unable to skate’. There may also be phonological factors involved, since, e.g., the /eA/ verbs (and adjectives) tend to carry a long monophthong instead of the vowel combination, i.e., owing to a phonological change these type of verb forms tend to be homophonous with the 3rd p. forms (*En viiitsi hakea* → coll. *En viiitsi hakee* ‘I do not bother to fetch/get [X]’, see Anttila 1999, for a detailed OT account of the phenomenon and its variation). The diachronically relevant question is now whether spoken Finnish at large will eventually adopt the new, mixed “Helsinki-slang-type” paradigm for what once basically was (and still for most of the speakers is—at least in writing (see present results)) the contracted verb paradigm (for the contracted verb T infinitive in Helsinki slang, see, e.g., Paunonen 2000: 20–21).
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