Processing cost associated with inflectional morphology in bilingual speakers*

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In this study the visual recognition of inflected, derived and monomorphemic Swedish nouns in monolingual Swedish and bilingual Finnish–Swedish speakers was investigated. While bilinguals were slower overall, the inflected items yielded disproportionately longer reaction times in the bilingual group. The derived items, on the other hand, elicited fastest reaction times in both groups. The observed processing cost associated with inflectional morphology indicates that bilingual language background can affect the recognition process for inflected words, possibly by leading to morpheme-based recognition which is slower than full-form recognition. Further studies are needed to examine whether this effect is specific to the language background of our bilinguals (including Finnish which is a morphologically very rich language) or whether it could be a more general processing feature in bilingual speakers faced with regular inflected forms.

Introduction

Psycholinguists have long been interested in the organisation of the mental lexicon in bilinguals. Central research issues have included the independence vs. dependence of language-specific lexicons, the relationships between conceptual and lexical representations in bilingualism, and language switching mechanisms (e.g., Schreuder and Weltens, 1993; Kroll and Stewart, 1994; Brysbaert, Van Dyck and Van de Poel, 1999; Meuter and Allport, 1999). In contrast, lexical–morphological processing in bilingualism has been a largely neglected area, even though languages differ greatly in their morphological complexity and there is evidence that morphological structure and related factors affect storage and access of lexical items (for reviews, see Frauenfelder and Schreuder, 1992; McQueen and Cutler, 1998). In their introduction to the book *The Bilingual Lexicon*, Schreuder and Weltens (1993) note the following:

> Will someone who speaks Finnish (with its very rich morphology) as a first language, employ the same morphological processes when speaking a morphologically much simpler language like English? . . . How multilingual speakers of languages that are not closely related acquire new morphological processing mechanisms is an interesting question that has not been answered so far. It is unclear at present how much of these processing mechanisms can be shared, even for languages that are closely related. (p. 6)

As pointed out by Schreuder and Weltens in the quotation above, a theoretically interesting situation is created in a bilingual speaker who has acquired both a morphologically limited and a morphologically complex language. Would the representation and storage of morphologically complex words in one language be affected by the other language? Transfer effects have been shown in syntactic aspects of second language processing which is closely related to morphology (see Kilborn, 1994, for a review). In the present study, we explored this possibility by examining visual word recognition in a morphologically limited language (Swedish) by monolingual speakers of that language vs. bilinguals who are also fluent speakers of a morphologically very rich language (Finnish–Swedish bilinguals).

The morphological richness of a language has been considered as a potentially important factor in the organisation of the mental lexicon (Hankamer, 1989). Finnish, for example, is a non-Indo-European language which uses morphology to a far greater extent than most of the other languages that have been explored in psycholinguistic research. Each Finnish noun has over two thousand possible forms (consider the form *talo+i+ssa+nne+kin* "house" + plural + inessive case + possessive suffix + enclitic particle = "even in your houses") and the number of possible

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verb forms exceeds ten thousand. These estimates exclude derivation and compounding which are also very productive. Therefore it is not surprising that experimental results obtained from both normals (Niemi, Laine and Tuominen, 1994; Hyönä, Laine and Niemi, 1995; Laine, 1996; Laine and Koivisto, 1998; Bertram, Laine and Karvinen, 1999; Laine, Vainio and Hyönä, 1999) and aphasic patients (Laine, Niemi, Koivuselkä-Sallinen, Ahlsén and Hyönä, 1994; Laine, Niemi, Koivuselkä-Sallinen and Hyönä, 1995; Laine and Niemi, 1997) have consistently shown a processing cost associated with most case-inflected Finnish nouns. Within current theorising, where polymorphemic word forms can be recognised either as full entities or via their constituent morphemes (''dual route'' morphological processing), results obtained with Finnish suggest morpheme-based processing. This form of word recognition is thought to entail a processing load as compared to full-form recognition because morpheme-based processing requires some computation (affix stripping at the access level plus recombination of stem and affix at the semantic–syntactic level for meaning calculation) (e.g., Frauenfelder and Schreuder, 1992).

Swedish, on the other hand, is a Germanic language with rather limited morphology. Swedish nouns can be affixally marked for definiteness and they are inflected for gender and number (e.g., *flicka* ''girl'' *flick+or+na* ''girl'' + plural marker + marker for definiteness ''the girls''). All in all, however, there are only eight to ten forms of nouns and verbs in Swedish when genitives and passives are included. With lexical decision tests similar to those employed in Finnish where polymorphemic words are pitted against otherwise comparable monomorphemic control words, Ahlsén (1994) failed to obtain significant processing delays which would be indicative of morpheme-based recognition of inflected Swedish word forms. She concluded that at least for simple lexical tasks, normal speakers of this morphologically limited language employ whole-word processing even when faced with regular inflected forms.

The drastic difference in morphological richness between Finnish and Swedish offers an intriguing testing ground for morphological processing in Finnish–Swedish bilinguals. Could morphological processing strategies in the Finnish language (i.e., the consistently observed morphological decomposition of inflected items) possibly be transferred to the Swedish language in bilingual individuals? We addressed this question by using a visual lexical decision paradigm where Swedish monomorphemic control words (by definition accessed via whole-word recognition) were pitted against polymorphemic words of the same language.

Two types of polymorphemic words were employed, inflected (e.g., car's) and derived (e.g., seeker). While the boundary between inflection and derivation is not as clear as one may first think, there are features nevertheless which clearly differentiate prototypical inflection and derivation (for a review, see Henderson, 1985). Inflectional morphology is closely related to syntax, it is typically fully productive (e.g., a genitive marker can be added to any English noun) and the meaning of the inflected form is predictable. At the cognitive level, full productivity and transparency of meaning create favourable circumstances for morpheme-based access and representation. Accordingly, if Finnish–Swedish bilinguals employ the computationally more demanding morpheme-based recognition route with inflected Swedish items, we should observe significantly longer decision latencies for those items than for monomorphemic control words (as compared to Swedish monolinguals). Adding a derivational affix to a word, on the other hand, changes the meaning and may change the part of speech as well (e.g., verb ''to seek'' → noun ''seek+er''). Moreover, transparency of meaning varies in derivational forms. On the basis of earlier results with derived items in Swedish (Ahlsén, 1994) and in Finnish (Hyönä et al., 1995; Laine et al., 1995), we expect that the derived target words have full-form representations, and thus yield lexical decision latencies comparable to those of monomorphemic control words both in monolinguals and in bilinguals (most recent results suggest that productive and unambiguous derivational forms could even yield faster RTs than monomorphemic words; see Bertram et al., 1999, for evidence in Finnish).

Materials and methods

Participants

Two groups of participants participated in the study. The 22 native monolingual speakers of Swedish (13 females and 9 males; age range 19–35 years) were undergraduate students from the University of Uppsala, Sweden, whereas the 20 Finnish–Swedish bilingual participants (17 females and 3 males; age range 20–30 years) were undergraduate students mostly from the Åbo Akademi University in Turku which is the only Swedish university in Finland (note that Finnish and Swedish are the official national languages of Finland). No participants reported a neurological illness or problems with visual acuity. All our bilingual participants were thoroughly interviewed on their language history (see Table 1). All of them had acquired the two languages simultaneously in early childhood such that one language had been

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Table 1. *Language-related data on the bilingual participants*

Language background			
Languages used at home during childhood	Mother: Swedish Father: Finnish 7/20	Mother: Finnish Father: Swedish 13/20	
	Swedish	Finnish	Both
Language at primary and secondary school	10/20	9/20	1/20
Language at high school	9/20	11/20	—
Language at university	15/20	4/20	1/20
	Only Finnish or Swedish	Both Finnish and Swedish	
Reading and writing at ages 7–12	0	20/20	
Reading and writing at ages 13–20	0	20/20	
	Swedish	Finnish	Both
Current languages used at home	6/20	5/20	9/20

Self-evaluation of the ability to speak and read Finnish and Swedish

Self-evaluation of ability to	Excellent	Good	Satisfactory	Deficient
• talk in Finnish in everyday context	17/20	3/20	—	—
• talk in Swedish in everyday context	11/20	8/20	1/20	—
• read ordinary writtenFinnish (e.g. newspapers)	19/20	1/20	—	—
• read ordinary written Swedish (e.g. newspapers)	15/20	5/20	—	—

used mostly with one parent and the other language mostly with the other one. Their school language had been either Finnish or Swedish and they continuously used both languages in their daily life. They reported a high level of proficiency in the two languages (as can be seen in Table 1) but Finnish was evaluated as the stronger language by the majority.

Materials

The test materials consisted of 20 monomorphemic, 20 derived and 20 inflected Swedish words (see the Appendix). The derived target words were bimorphemic, carrying the deverbal agentive marker *-are* which corresponds to the English derivational ending *-er* (e.g., *dans+are* "dancer"). The inflected target words were trimorphemic, carrying two suffixes: *-en* or *-et* (depending on grammatical gender) signalling definiteness and *-s* which is a genitive marker (e.g., *bil+en+s* "the car's"). As Ahlsén (1994) did not find any evidence for morphological decomposition of bimorphemic inflected Swedish nouns (plural forms such as *kanin+er* "rabbits"), we employed trimorphemic forms instead in order to maximize the possibilities of observing a processing cost with inflected words.

The three target word lists were matched for average surface frequency[1] (mean 7.30 for monomorphemic items, 7.30 for derived items, 7.15 for inflected items; source Allén, 1971–80) and for average length (6–8 letters). Monomorphemic and derived words were also matched for average lemma frequency[2] (mean 10.85 for monomorphemic items; 10.80 for derived items). Lemma frequency was significantly higher for inflected words (mean 45.35) as it was impossible to find suitable items that would be comparable also on this measure. In addition, 220 fillers (80 real words and 140 pseudowords) were included in the experiment, yielding altogether 280 stimuli. The pseudowords were either "monomorphemic" or contained similar suffixes to the real words, and they were created by changing two letters in existing Swedish words. The pseudowords followed the phonotactic rules of the Swedish language.

Procedure

The experiment was run on a PC using a specially designed computer program for word recognition experiments. Our task was a standard visual lexical decision test where the participants were instructed to decide as fast and as accurately as possible whether a letter string shown at the center of a computer screen was a real Swedish word or not. A centrally presented fixation point (asterisk) preceded each stimulus. It was displayed for 500 milliseconds, after which the stimulus word appeared at the centre of the screen. It was visible for a maximum of two seconds or until the participant pressed the reaction time key. The participant used two fingers of his/her dominant hand to press either "right", if the stimulus was an existing Swedish word, or "wrong", if it was a non-

[1] Surface frequency refers to the frequency of the presented word form.

[2] Lemma frequency refers to the summative frequency of all the inflectional variants of a word, including the word stem itself if it is a free-standing lexical item (e.g., boy, boy's, boys, boys').

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word. The participants were tested individually in a separate room.

The participants were first presented with a practice session including 30 representative items. The actual experiment was divided in two parts of equal length (in both parts, 50% of the stimuli were real words, with 140 items in total), and there was a short pause in between. The presentation order was counterbalanced so that half of the participants got part A first and the other half part B first. The presentation order of the individual items within the two parts was randomised across the participants. It took about 30 minutes to complete the whole experiment.

Results

All incorrect responses and reaction times that differed more than three standard deviations from the individual mean latency were removed from the data set. The removed reaction times were replaced by the corresponding condition averages for the participant. Two participants from the monolingual group and two from the bilingual group were discarded because of their high overall error rates (>15%). The bilinguals were treated as a single group because preliminary analyses revealed that those with a background of Finnish vs. Swedish school language performed in the same fashion.

Statistical analyses focused on RTs and error rates in the three real word-target conditions (monomorphemic, derived and inflected; see Table 2). As regards RTs, two-way ANOVAs (language group x morphological structure) yielded significant main effects for language group and morphological structure both in the by-participant and in the by-item analysis (language group $F1(1,36)=6.94$, $p<.05$; $F2(1,57)=101.41$, $p<.0001$; morphological structure $F1(2,72)=36.63$, $p<.0001$; $F2(2,57)=14.74$, $p<.0001$). The main effect for language group stems from the fact that the bilinguals were slower overall. As regards morphological structure, inflected items yielded longest RTs whereas latencies for derived words were shortest. There was also a significant interaction between language group and morphological structure ($F1(2,72)=7.98$, $p<.001$; $F2(2,57)=6.15$, $p<.01$), confirming that inflected items elicited disproportionately slow RTs in the bilingual group. As regards errors, language group did not yield a consistent main effect ($F1(1,36)=2.13$, n.s.; $F2(2,57)=4.34$, $p<.05$) whereas the main effect for morphological structure was statistically significant ($F1(2,72)=17.04$, $p<.0001$; $F2(2,57)=5.76$, $p<.01$), showing that error rates were by far highest for the inflected targets. The interaction term was statistically significant in the by-participant analysis ($F1(2,72)=4.08$, $p<.05$) but just missed significance in the by-item analysis ($F2(2,57)=3.05$, $p=.055$), suggesting that the bilingual group tended to have a disproportionately high error rate on the inflected targets.

Table 2. *Average lexical decision latencies and error rates for targets in the monolingual vs. the bilingual group*

Monolinguals		
Word type	RT in msec (SD)	Mean error rate (SD)
Monomorphemic	697 (185)	1.000 (1.076)
Derived	657 (159)	0.450 (0.605)
Inflected	718 (165)	1.350 (1.268)
Bilinguals		
Word type	RT in msec (SD)	Mean error rate (SD)
Monomorphemic	785 (72)	0.833 (1.465)
Derived	746 (107)	0.833 (1.043)
Inflected	891 (130)	2.500 (1.855)

In subsequent statistical analyses with one-way ANOVAs, the two groups were treated separately. In the monolingual group, analysis of RTs revealed a significant main effect for morphological structure ($F1(2,38)=9.18$, $p<.001$; $F2(2,57)=6.49$, $p<.01$). Pairwise comparisons were performed by F-tests in the by-participant analyses and by Student-Newman-Keuls multiple range tests (.05 level) in the by-item analyses. These comparisons showed that derived words were recognized significantly faster than monomorphemic words ($F(1,19)=9.43$, $p<.01$; Student-Newman-Keuls, $p<.05$) and inflected words ($F(1,19)=31.44$, $p<.0001$; Student-Newman-Keuls, $p<.05$). There was no significant difference between monomorphemic and inflected words ($F(1,19)=1.34$, n.s.; Student-Newman-Keuls, n.s.). Analysis of errors revealed a significant main effect for morphological structure ($F1(2,38)=6.58$, $p<.01$; $F2(2,57)=3.70$, $p<.05$), indicating that error rate was lowest for the derived targets and highest for the inflected targets. Pairwise comparisons indicated that derived targets elicited fewer errors than inflected targets ($F(1,19)=11.93$, $p<.01$; Student-Newman-Keuls, $p<.05$) or monomorphemic targets, although here the comparison was significant in the by-participant analysis only ($F(1,19)=4.61$, $p<.05$; Student-Newman-Keuls, n.s.). The difference between monomorphemic and inflected targets was non-significant ($F(1,19)=2.27$, n.s.; Student-Newman-Keuls, n.s.).

The RT analysis in the bilingual group showed a significant main effect for morphological structure ($F1(2,34)=28.30$, $p<.0001$; $F2(2,57)=13.79$; $p<.0001$), with fastest latencies for the derived targets and

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slowest RTs for the inflected targets. Pairwise comparisons indicated significantly faster reaction times for derived words than for inflected words ($F(1,17)=46.69$; $p<.0001$; Student-Newman-Keuls, $p<.05$) or for monomorphemic words, although here statistical significance was reached in the by-participant analysis only ($F(1,17)=6.57$; $p<.05$; Student-Newman-Keuls, n.s.). Moreover, monomorphemic words were recognized significantly faster than inflected words ($F(1,17)=21.99$; $p<.001$; Student-Newman-Keuls, $p<.05$). Analysis of errors showed a significant main effect for morphological structure ($F1(2,34)=11.49$, $p<.001$; $F2(2,57)=5.30$, $p<.01$): average error rates were equal for the monomorphemic and derived targets whereas the inflected targets elicited a higher error rate. Pairwise comparisons confirmed the significant differences in the error rates between inflected vs. monomorphemic targets ($F(1,17)=12.88$, $p<.01$; Student-Newman-Keuls, $p<.05$) and inflected vs. derived targets ($F(1,17)=18.48$, $p<.001$; Student-Newman-Keuls, $p<.05$).

Discussion

The most intriguing finding in the present study was the rather dramatic processing cost (shown by long decision latencies and high error rates) the bilinguals exhibited with inflected Swedish words. To our knowledge, this is the first time this phenomenon has been reported. Given that neither decision latencies nor errors indicated a significant processing difference between inflected targets and monomorphemic control words in the monolingual group, the processing cost exhibited by bilinguals may indeed indicate a different word recognition strategy. In other words, the bilinguals may have recognized the inflected words via the slower and more error-prone morpheme-based recognition route, whereas the monolinguals would have utilized corresponding full-form representations in their mental lexicon. The surface frequency values indicate that most of our inflected targets were probably quite familiar to the participants, which could facilitate the development of full-form representations (see also Alegre and Gordon, 1999, for relevant evidence concerning English inflectional morphology).

As regards monolingual Swedish speakers, our results are thus in line with the findings of Ahlsén (1994) even though our inflected targets were structurally different. Sereno and Jongman (1997) recently reported similar results with inflected words in another morphologically limited language, namely English. At the same time, one should note that it turned out to be impossible to match the inflected targets with the other two item types on lemma frequency. If our monolinguals indeed employed whole-word recognition, only the surface frequency match would have been critical (Sereno and Jongman, 1997). On the other hand, a more subtle processing difference where, for example, only part of the inflected items would have undergone morpheme-based recognition might have become invisible due to the higher lemma frequency of our inflected items. However, one should note that the difference in lemma frequency cannot explain the processing cost we observed in the bilinguals – if anything, the difference in lemma frequency should have worked against such a result.

Why did our fluent bilinguals exhibit a processing cost with inflected Swedish nouns? The first possibility is that they adopted a typical strategy in Finnish word recognition, morpheme-based access of inflected forms, when processing Swedish. This would mean that in a bilingual, the two languages would tend to share morphological processing mechanisms even when the languages are structurally very different, as is the case with Swedish and Finnish. As our participants represent early and simultaneous bilinguals, further studies are needed to examine whether this would hold for later and successive second language learners as well. The second possibility is that we are observing a general feature of bilingualism which is not dependent on the specific language pair we studied (Finnish–Swedish). Note that our bilinguals were slower overall and this is in line with findings that bilinguals seem to have a disadvantage in speeded verbal tasks (Ransdell and Fischler, 1987). In such a situation, the most demanding stimulus type, regular inflection, might prompt a bilingual with relatively less experience with such items to perform a time-consuming check of the legality of the specific stem–suffix combination prior to decision. This would then surface as a particularly pronounced processing cost. The third possibility would be a combined effect of the two factors just discussed. Relatively less exposure to regular inflected forms in the morphologically limited language, together with an influential model for morpheme-based recognition in the morphologically rich language, would prevent the bilingual speaker from developing full-form access representations for familiar regular inflected forms in the same way as monolingual speakers would. In future studies, it will be important to test these hypotheses by examining recognition of regular, productive inflected forms in bilinguals who possess two languages that are morphologically limited. For example, if the processing cost associated with inflected items were to surface even in such indivi-

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duals, the second hypothesis would gain support. Other experimental paradigms will be needed as well to verify the present interpretation that the performance difference between monolinguals vs. bilinguals on inflected items reflects the use of different lexical access routes (full-form vs. morpheme-based). Specifically, an examination of the effects of lemma and surface frequency manipulation on lexical decision latencies (see Taft, 1979) could shed further light on the use of the lexical access routes in mono- vs. bilingual participants. For example, a surface frequency effect together with the lack of a lemma frequency effect would indicate the use of full-form access.

Finally, we should discuss the seemingly counterintuitive finding that one type of morphologically complex items (derived forms) was recognised significantly faster than monomorphemic items. This was consistently observed in both groups. In fact, a look at Ahlsén's (1994) results obtained with the same Swedish derivational suffix (*-are*) points in the same direction (mean RT for monomorphemic targets 786 msec; 753 msec for derived targets), albeit Ahlsén's statistical analyses failed to show an equally consistent effect. We recently reported a similar result for a derivational Finnish suffix in monolingual Finnish speakers (Bertram et al., 1999). In that paper, the argumentation was based on a morphological race model of word recognition (Frauenfelder and Schreuder, 1992): at least certain derivational forms are assumed to have double representations (both whole-word and morpheme-based), being activated simultaneously via two temporally overlapping and independent access routes. Under such conditions, an item with double representations would tend to have a faster recognition time than an item for which only a single recognition route is available (see Raab, 1962, and Bertram et al., 1999, for an extensive explanation of this phenomenon labeled as statistical facilitation).

Even though theoretically plausible, there are some problems with the explanation provided by Bertram et al. (1999). First, they argued that only unambiguous and productive derivational suffixes would develop double representations and exhibit statistical facilitation (they failed to observe this effect with a low-productive derivational Finnish suffix and with a derivational suffix that is homonymic with an inflectional ending). This is in contrast with the present results as, like the English deverbal agentive marker *-er*, our derivational suffix *-are* is in fact homonymous with the commonly used comparative marker (e.g., *fort+are* "faster"). Yet we observe a "facilitatory" effect. Second, by employing inflected Finnish noun forms, Laine et al. (1999) provided evidence that the whole-word and morpheme-based recognition routes have an inhibitory relationship which would wipe out a facilitatory effect. If these routes do have an inhibitory relationship when dealing with inflected words, it is not easy to see why their relationship would change when a derived form is encountered. There is currently no satisfactory solution to this dilemma. However, at least a potential orthographic confound should be controlled for in future studies: derivational targets always end up with the same letter sequence which may speed up their recognition in lexical decision, whereas word-final trigrams or bigrams of monomorphemic items vary (with inflected items, a morphological decomposition effect may be so robust that it would override any orthographic redundancies). Moreover, a post hoc analysis of our stimuli indicated a relatively higher rate of abstract items in our monomorphemic targets than in the other two target word groups (As can be seen in the Appendix, some of our monomorphemic items were rather abstract loan words like *relevans* "relevance" and *monument* "monument" which are more or less unavoidable as matching for word length calls for relatively long monomorphemic words). In principle, the higher rate of abstract items might have slowed down the recognition of monomorphemic targets, leading to faster responses for derived targets. Note that this would not explain the processing difficulties with inflected items we obtained with bilinguals: if anything, this difference in the rate of abstract items should have worked against that effect.[3]

To summarize, by employing a visual lexical decision paradigm, we observed a significant processing cost for inflected Swedish nouns in Finnish–Swedish bilinguals. This is a new finding in an important area of lexical processing that has hardly been explored in bilingualism. Further studies should be conducted to extend these results and to examine whether this processing cost depends on the specific language pair in question, or whether it represents a more universal feature of bilingual word recognition.

[3] One reviewer raised the issue of whether the different morphological structure of our polymorphemic items (bimorphemic derived forms vs. trimorphemic inflected forms) could have affected the pattern of results. As far as monolinguals are concerned, the similarity of our findings to those of Ahlsén (1994) who employed bimorphemic derived and inflected Swedish nouns suggests that the difference in the number of morphemes is not a likely confound. However, with bilinguals, it is quite possible that the trimorphemic nature of our inflected forms served to augment their processing difficulties.

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Appendix Materials used in the experiments

Monomorphemic target words

1.	potatis	"potato"
2.	garanti	"guarantee"
3.	elegans	"elegance"
4.	fiktion	"fiction"
5.	polemik	"controversy"
6.	kurator	"counsellor"
7.	hygien	"hygiene"
8.	metafor	"metaphor"
9.	mytologi	"mythology"
10.	juridik	"law"
11.	majestät	"majesty"
12.	matador	"matador"
13.	relevans	"relevance"
14.	retorik	"rhetoric"
15.	fylleri	"drunkenness"
16.	romantik	"romanticism"
17.	frekvens	"frequence"
18.	parentes	"parenthesis"
19.	monument	"monument"
20.	revolver	"revolver"

Derived target words: stem + deverbal agentive marker

21.	drömm + are	"dreamer"
22.	hjälp + are	"helper"
23.	jag + are	"hunter"
24.	känn + are	"expert"
25.	rytt + are	"rider"
26.	skap + are	"creator"
27.	borg + are	"citizen"
28.	spel + are	"player"
29.	nämn + are	"denominator"
30.	älsk + are	"lover"
31.	sång + are	"singer"
32.	saml + are	"collector"
33.	tal + are	"speaker"
34.	köp + are	"buyer"
35.	segr + are	"winner"
36.	skriv + are	"writer"
37.	teckn + are	"drawer"
38.	dans + are	"dancer"
39.	härsk + are	"ruler"
40.	vandr + are	"wanderer"

Inflected target words: stem + definite singular marker + genitive marker

41.	opera + n + s	"the opera's"
42.	antik + en + s	"the antiquity's"
43.	regim + en + s	"the regime's"
44.	natur + en + s	"the nature's"
45.	radio + n + s	"the radio's"
46.	logik + en +s	"the logic's"
47.	major + en +s	"the major's"
48.	final + en + s	"the finale's"
49.	atom + en + s	"the atom's"
50.	fiende + n + s	"the enemy's"
51.	dal + en + s	"the valley's"
52.	flagga + n + s	"the flag's"
53.	skald + en + s	"the poet's"
54.	åsna + n + s	"the donkey's"
55.	adel + n + s	"the nobility's"
56.	tsar + en + s	"the tsar's"
57.	natt + en + s	"the night's"
58.	klubb + en +s	"the club's"
59.	flotta + n +s	"the fleet's"
60.	rike + t + s	"the state's"

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