

# Plural problems in the nominal morphology of Marathi<sup>1</sup>

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## Abstract

In this paper, we describe the two tests developed and designed for Marathi using non-words, a) plural formation for non-words b) intuition test for gender assignment in which subjects were asked to assign gender to non-words. We look at the distribution of nouns across noun classes and genders and discuss the congruence between the problematic classes as observed in the tests and the actual class distribution and frequency in the language.

**Keywords:** Marathi, plurals, gender, non-words, morphological rules

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## 1 Introduction

Marathi, an Indo Aryan language, makes a two-way number distinction, singular and plural. The number feature is synthetically marked on the noun itself. Two linguistic factors determine the plural formation of Marathi nouns: (a) grammatical gender, whether a noun is masculine, feminine or neuter and (b) the final segment of the noun. As a part of our ongoing research on the acquisition of Marathi morphology, we developed tests to see whether Marathi speaking children and adults apply tacitly known rules of inflectional morphology to new-coined words.

As a prerequisite, we undertake a study of nominal number morphology in Marathi based on Damle's comprehensive grammar of Marathi (1970) and the linguistic analyses provided by Kelkar (1958) and Pandharipande (1997). One of the tests we developed was designed for plural formation with non-words. In this test, subjects were required to choose the correct plural suffix for a given non-word. Ample agreement cues for gender were also provided. This test was adapted from Jean Berko's classic study on the acquisition of the

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<sup>1</sup>We are grateful to the three anonymous reviewers for their comments and suggestions and we have tried to address these in this version. Any errors are, of course, ours.

inflectional morphology of English (1958) and Bettina Spreng's work on the acquisition of plural morphology in German (2004). We also developed an intuition test for gender assignment in which subjects were asked to assign gender to non-words to measure the effect of the phonological shape of the token on the choice of gender. This test was inspired by A. Mill's (1986) work on the acquisition of gender in German.

The results of these two tests indicated that the performance of the subjects, both adults and children, is better for some noun classes compared to others. In other words, phonological cues were reliable for some of the noun classes and facilitated gender choice, but this was not a reliable or unique cue, and led us to study the distribution of nouns into gender classes in Marathi.

In this paper, we describe the two tests and analyze their results. We look at the distribution of nouns across the noun classes and genders and discuss the congruence between the problematic classes as observed in the tests and the actual distribution of the same in the language.

## 2 Acquisition Studies

Studies of acquisition of morphology show us that there are well-motivated, underlying rules of mental grammar and how they operate in language use. A classic example is Jean Berko's (1958) study which demonstrates that children and adults apply tacitly known rules of inflectional morphology to new-coined words. Berko structured a robust test, now famously known as the *wug* test. Preschool and first grade children (12 girls and 7 boys from the Harvard Preschool, aged 4-5 years and 25 boys and 35 girls from Driscoll school aged 5.5 to 7 years, in the first grade) were presented with a number of nonsense words and asked to supply the appropriate inflected forms such as plurals and possessives of nouns, present and past tense forms of verbs, present participle, comparative and superlative forms of adjectives etc. For example, a child is presented with a picture of a cartoon creature and told, "This is a wug." Another 'wug' is revealed, and the researcher says, "Now there are two of them. There are two...?" Children who have successfully acquired the rules should respond with the appropriately pluralized token 'wugs' /wəgz/ which is the suitably inflected form of the base noun. The results show that the children were able to form plurals requiring one of the plural allomorphs and likewise, for past tense. The epenthesized allomorphs of the plural (ɪz) and past tense (ɪd) inflection are produced a little later, showing the effect of maturation on language acquisition. Berko's study shows that young children have already internalized aspects of the linguistic system and are fully capable of applying the rules to novel words reliably. Her tests show us the underlying, finite system of rules that native speakers put to use in generating the potentially infinite novel forms. They also show us that acquisition of such rules does not follow directly from the input and that children are creative language users in their own right and not merely mimicking their environment. Specifically, the use of coined words rules out the possibility that the children had learnt the plurals independently and acquiring the rules enables them to produce forms of words that they have never heard before.

A second study that informs our work on Marathi is Bettina Spreng's (2004) analysis of German plurals. Spreng (2004) attempts to show that some plural types in German are easier to acquire than others and those that are difficult, remain so for both adults and children. German nouns fall into one of three genders (masculine, feminine, and neuter) that is reflected in the choice of the definite article. The property of gender is not morphologically marked on the noun itself. There are five plural suffixes in German -e, -(e)n, -er, -s, -ø, and the selection of each is determined primarily, by the phonological shape

of the noun (features such as number of syllables, shape of the final syllable and the final segment of the stem) and secondarily, by the gender of the noun. Spreng outlines the conditions for each plural type. For example, 'e' plural type comprises monosyllabic, consonant final nouns of all genders whereas  $\emptyset$  (+umlaut) plural type comprises bisyllabic consonant ending nouns. Subjects were tested on tokens of real words as well as coined, 'nonsense' words. Spreng studies the error patterns in the responses carefully and her results indicate that, for children, gender does disambiguate plural types to an extent. For example, similar looking nouns *das Haus* (neuter) 'house' and *die Maus* (masculine) 'mouse' take two different plural affixes, '-er' and '-e' respectively. Gender as an abstract category also aids the child's acquisition of plural morphology where a single plural class consists of nouns of all three genders. For example *der Fisch* (m) 'fish', *die Maus* (f) 'mouse' and *das Schiff* (n) 'ship' of the -e plural type and *der Mast* (m) 'mast', *die Uhr* (f) 'clock' and *das Ohr* (n) 'ear' of the -en plural type. In no case did the children use a plural type for a noun that did not have at least one conditioning factor of that class. Phonological shape was the determining factor but recourse to gender was made whenever possible. The number of null affix responses is quite high, suggesting an avoidance strategy rather than a default plural rule, especially for unknown words. Where phonology and gender play quite a crucial disambiguating role in German plural morphology, their role as we shall see, is quite diminished in Marathi.

A. Mills' (1986) work on acquisition of gender in English and German is one of the fullest accounts of child acquisition of gender to date. In this, she has organized the data according to the types of gender rules investigated. In this study, two different types of gender systems are compared. The work attempts to show that the English gender assignment system is conditioned by semantics, whereas in German, the system of assigning gender to nouns appears to be more formal and gender assignment rules are conditioned by morphology and phonology. She claims that though in German, semantic associations are important in the selection of the gender given to a nonsense word, these semantic associations usually reflect the rules of gender assignment.

### 3 Testing Plural Morphology

In Marathi, Singular/bare forms of countable nouns in Marathi may end in a vowel or a consonant. The phonological ending of the noun is an important cue in plural formation and gender assignment, but not unambiguously so. The phonological ending of different nouns and their corresponding plural suffixes across all three genders in Marathi are given with examples in Table 1. It may be seen that there is significant overlap of both the phonological form and affixes across classes. Some nominal shapes are restricted to a single gender class. Thus, -ə or -u ending nouns are always masculine and -e/ə alternating nouns are always neuter, e.g., təLe/ə 'pond' (N). However such one-to-one map is not seen with other shapes. Consonant final nouns could potentially belong to any of the three gender classes, e.g., ghoT 'gulp' (M), moT 'machine' (F) and poT 'stomach' (N). Further, the final vowel -a could either mark the bare noun shape (feminine or masculine) or the plural form of certain classes (the C or ī ending feminine nouns). The cells in grey indicate null classes, for example, there are no feminine or neuter nouns that end in -ə or in -u. The determinants of the plural marker are (a) phonological ending of the noun, (b) its grammatical gender, (c) natural gender and (d) the inflection class.

Gender	Masculine	Feminine	Neuter
Sg.	Pl.		
ə	Ø mitrə 'friend'		
C	Ø hat 'hand'	C → a /ī (i) vaT → vaTa 'path' (ii) vihir → vihirī 'well'	C → e/ə ghər → ghəre/ə 'house'
ī	Ø mənī 'bead'	ī → a nədī → nədyā 'river'	
ū	Ø laDū 'a sweet'	Ø or a (i) vəstū 'thing' (ii) pisū → piswā 'a mosquito'	ū → e/ə limbū → limbe/ə 'lemon'
a	a → e vaDa → vaDe 'mansion'	Ø šāLa 'school'	
e/ə			e/ə → ī təLe/ə → təLī 'pond'
u	Ø šətru 'enemy'		

**Table 1:** Noun classes in Marathi<sup>2</sup>

Based on this classification of nouns, we developed the tests for plural formation. The test groups consisted of ten Marathi speaking (invariably bilingual) adults (5 male, 5 female) and ten (monolingual or marginally bilingual) Marathi-speaking children (5 male, 5 female).<sup>3</sup>

Subjects were asked to provide appropriate plurals of the given tokens, all of which were non-words. Testing with non-words show us how subjects treat words for which they have no prior knowledge and permits inferences about the default assumptions that are made about words in the language and how morphological rules are applied. The picture material and procedures for the study were adapted from Berko's wug test (1958)<sup>4</sup>. Each picture is accompanied by a written description, where the key word, indicated by the picture, agrees with co-occurring words in the description. Agreement cues were given to facilitate the choice of gender and the selection of the corresponding plural form. For example, along with the picture of sakvī (a non-word of the feminine gender), the written description given in (1) was read to the subject:

1. a. hī pəha ek **sakvī** alī. (Introduce the token)  
dem-f-dg see-imp one sakvī come-sg-past  
Here comes one sakvī

<sup>2</sup> The capital letters indicate retroflex consonants and grey cells indicate absence of lexical items in that class.

<sup>3</sup> While the sample group appears small, it is usually sufficient to determine how rules are used by speakers. We do plan to test with a larger test group to address concerns of sample size quirks, once we have a general understanding of the kinds of difficulties that Marathi morphology poses for its speakers.

<sup>4</sup> Sample pictures are given in Appendix 1.

- b. *hī sakvī hirvī ahe.* (Adjective agreement)  
dem-f-sg green-f-sg be-sg-pres  
This sakvī is green
- c. *hi ajun ek sakvī aī.* (Plural context)  
dem-f-sg another one sakvī come-sg-past  
Here comes another sakvī
- d. *ata ahet don \_\_\_\_\_* (Test sentence)  
now be-pl-pres two (expect **sakvya**)  
Now there are two...

The subjects are expected to complete the sentence with an appropriate plural form of the noun (here *sakvya*). Sentence b provides additional gender cues (through adjective agreement) to enable the appropriate output. So given gender cues, the task should reduce to the choice of the appropriate plural suffix given class. Table 2 contains the results of the tests for both groups of subjects per gender class. A sample of the tokens used is also provided per class.

Gender/ Class	Number		Token	Results (%)	
	Sg	Pl		Children (sg to pl)	Adults (sg to pl)
M1	ə	no	pūmbə	100	100
M2	C	change	tʃag	100	100
M3	ī		pəNī	100	100
M4	ū		maTū	100	100
M5	a	e	tuDa	80	80
F1	a	no	gaTa	100	100
F2	ū	change	bhakū	100	100
F3	ī	a	sakvī	60	100
F4	C	a	raT	10	30
F5	C	ī	Dhak	0	20
N1	C	ə/e	khaD	20	80
N2	ū	ə/e	jambū	0	20
N3	ə/e	ī	bhəLə	0	30

**Table 2:** Results for test of non-words

Both children and adults appear to have no difficulty with the non-changing classes (M1-4, F1&2). The results are also encouraging for F3 and M5 classes. However, consonant final feminine classes (F4& F5) and the three neuter classes prove less tractable. Spreng's (2004) conclusions that some plural types are easier than others and those that are difficult remain so for both adults and children appears to also hold true for Marathi. Children's performance is worse than the adults' performance for the difficult classes and, is particularly poor for the tokens simulating the neuter classes. These classes appear difficult for both groups. When in doubt, all subjects typically leave the nouns unmarked, substituting a zero suffix, though this is less frequent with adults than with children who opt

for this strategy in providing answers. This avoidance strategy was also pointed out by A. Mills in her discussion. Other errors are restricted to the potential suffixes available for a particular gender class. For example, choosing ə/e where ī is, in fact, required. This error is restricted to this specific gender class; in other words, gender drives affix selection but the target affix selected is incorrect though appropriate to the gender class. Though gender cues were provided, children as well as adults sometimes chose an affix that may apply to multiple genders though still relevant to the gender under consideration.

We can conclude that since the match between the phonological shape and the gender of the words is not unique, this makes the task of choosing the affixes for non-words complicated. The task reveals the high degree of ambiguity that is built into the system and is suggestive of the degree of difficulty in acquiring this system. Additionally, neuter nouns as a class appear more problematic for both children and adults, over and above the difficulties faced elsewhere.

#### 4 Intuiting Gender

Gender<sup>5</sup> in Marathi is morphologically unmarked and is reflected primarily through agreement of the noun with phrasal elements such as adjectives, demonstratives and verbs. Grammatical gender is congruent with natural sex distinctions (male versus female) for animate nouns but is otherwise arbitrarily selected and not associated with readily identifiable phonological or semantic features.

The test group consisted of ten Marathi speaking adults (5 M and 5 F) from Mumbai. The pictures used for the *wug* test (Berko 1958) were modified for our purposes. These simple, coloured pictures of some unfamiliar objects were associated with non-words which adhered to the phonotactic rules of Marathi. We created multiple tokens to rule out possible form-specific problems as given in Table 3.

Ending of Singular	Tokens
C	bhaTh, vap, Dhar
a	vatha, khaLa
ī	ləNī, bhakNī
ū	baDu, šemrū
ə	jəktə, raTkə

**Table 3:** Tokens for gender assignment test

In this test, the subjects were asked to ‘guess’ the gender of non-words to measure the effect of the phonological shape of the noun on gender assignment. This test was inspired by A. Mill’s (1986) work on the acquisition of gender in German where she developed a test using non-words for German speaking adults in order to study the psychological status of morphological and phonetic rules in German. The results of gender assignment test are summarized in Table 4.

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<sup>5</sup>Marathi along with Gujarati and Konkani are the only Indo-Aryan languages to have retained the three-gender system of Sanskrit where gender is arbitrarily assigned. Most languages have either shifted to the two-gender system or map grammatical gender with natural gender straightforwardly. Even loanwords in Marathi are reassigned arbitrarily to gender classes. In this Marathi resembles German more than its sister languages.

Singular Ending	Potential Gender Preference (in %)	
	a	M
F		25
ī	M	5
	F	90
	*N	5
ū	M	35
	F	0
	N	65
ə	M	20
	N	75
	*F	5
Consonant	M	50
	F	30
	N	20

**Table 4:** Gender assignment and its frequency

The first column provides possible singular endings for nouns in Marathi. The second column describes the potential gender/s possible for each ending of the singular form. For example, consonant ending tokens can be masculine, feminine or neuter. The third column shows the preference of the subjects (in %) while assigning gender to these non-words.

The cells in grey show the preferred gender for the choices possible per class – the winning gender as it were. Most subjects assigned masculine gender to ‘-a’ ending tokens, feminine gender to ‘-ī’ ending tokens and neuter gender to ‘-ə’ ending tokens. No one assigned feminine gender to ‘-ū’ ending tokens. For the -ī and the -ə classes, one subject also chose a gender that should have been ruled out by its shape; this is indicated in the table above with an asterisk (\*).

In the absence of any other information (semantic or real-world), phonological shape biases the choice of gender and subjects attempt to distinguish classes given that cue. So we see that (a) subjects preferentially associate particular phonological shape(s) with particular genders and (b) that their responses allow other for other/alternate possibilities that we expect.

## 5 Frequency and Class Size

From the results above, we conclude that the match between the phonological shape and the gender of the words is not unique in Marathi and that this makes the task of choosing the affixes complicated. Further, of the three gender classes, neuter nouns appear more problematic in all tests for both children and adults. It thus becomes important to consider the frequency of these nominal classes in Marathi and consider whether the difficulties associated with both plurals in general and neuter nouns in particular shows class frequency effects. Since such frequency lists are not readily available for Marathi, we chose a contemporary dictionary compiled for students, the Navneet Marathi-English Dictionary, from which to cull the tokens for our analysis. This dictionary contains approximately 40,000 words. It represents a standard vocabulary of Marathi speakers. We collected all the nouns from this dictionary, approximately 18,000 tokens. The data needed some cleaning in order to address issues such as gender mismatch, compound words removal, manual

inspection/verification of gender assignment by native Marathi speakers etc. At a final count, we had 17,840 nouns marked for gender. We further classify these nouns into 5 classes based on the phonological endings viz, a, ī, ə, ū and C (consonant). Table 5 shows the basic distribution of nouns across the three genders.

Gender	Number of nouns	%
Masculine	7594	42.6
Feminine	6368	35.7
Neuter	3878	21.7
<b>Total</b>	<b>17840</b>	<b>100.0</b>

**Table 5:** Distribution of nouns across genders

Nouns in Marathi are not distributed equally among the three genders. Masculine nouns occur most frequently (42.47%) in the data. Neuter nouns are least frequent and the difference between the frequency of neuter nouns and masculine or feminine nouns is significant.

In Table 6, we show the distribution of nouns across each nominal class and for all three genders. The first column describes the phonological ending of the nouns. Columns 2, 3 and 4 describe masculine, feminine and neuter nouns respectively. These columns are further divided to show the number of nouns allotted to each sub-class (phonological shape matched to one of the three genders) and their relative frequency (in %).

Singular	Masculine nouns		Feminine nouns		Neuter Nouns	
	No.	%	No.	%	No.	%
C	3983	52.4	1887	29.6	3434	88.5
a	2029	26.7	1254	19.7	0	0
ī	623	8.2	3168	49.8	0	0
ū	226	3.0	56	0.9	63	1.6
ə/e	0	0	0	0	381	9.9
ə	733	9.7	0	0	0	0
<b>Total</b>	<b>7594</b>	<b>100</b>	<b>6365</b>	<b>100</b>	<b>3878</b>	<b>100</b>

**Table 6:** Distribution of nouns within classes

There are six classes of masculine nouns. The consonant final one is the most frequent, followed by the 'a' class. Classes ending in 'ī', 'ū' and 'ə' are marginal classes of the masculine gender and it is observed that most of the nouns of these classes are borrowed from Sanskrit. The most frequent feminine class is the 'ī' class, followed by consonant and 'a' final nouns. The feminine class ending in 'ū' is marginal, constituting less than 1% of the total number of nouns. Of the three neuter gender classes, the consonant final class is the most frequent (88% of all neuter nouns). The other two classes are much less frequent.

Table 7 (read horizontally) is derived from the data shown in Tables 4 and 5. It shows the categorization of nouns into different classes based on their phonological endings. The first column gives the phonological ending of the nouns. Columns 2, 3 and 4 describe masculine, feminine and neuter nouns respectively. These columns are further divided to show the number of nouns allotted to each class within each gender and their relative



frequencies. For example, in row 2, for the ‘a’ ending noun class, 61.8% of the words are masculine, 38.2% of the nouns are feminine and none belong to the neuter gender. Further, as seen in the last column, this class constitutes 18.4 % of the total number of nouns.

Singular	Masculine		Feminine		Neuter		Total Nouns	% Total Nouns
	No.	%	No.	%	No.	%		
C	3983	42.8	1887	20.3	3434	36.9	9304	52.0
a	2029	61.8	1254	38.2			3283	18.4
ī	623	16.4	3168	83.6			3791	21.4
ū	226	65.5	56	16.2	63	18.3	345	2.0
ə	733	65.8			381	34.2	1114	6.2
	Total						17837	100

**Table 7:** Distribution of nouns based on phonological ending

We see that the consonant final nouns are the most frequent (52% of total nouns) and the nouns ending ‘a’ and ‘ī’ are much less so. Consonant final nouns are distributed among all three genders, but this distribution is not equal, masculine nouns being more frequent (42.8%) than either the feminine (20.28%) or the neuter (36.92%). Nouns ending in ‘a’ are distributed among masculine and feminine classes in a ratio of almost 2:1. The low frequency ‘ə’ and ‘ū’ classes contribute a fair number of neuter nouns. Thus neuter nouns are both less frequent in absolute numbers and also not uniquely identifiable. The insights we gain from a study of the lexical distribution of the classes now explains some of the difficulties faced by subjects in the previous tasks. We discuss this in the next section.

### 5.1 Comparison of tests

A comparison of the results of the previous tests and the class distribution that we just saw yields several generalizations. In Table 8, we present a comparison of class distribution with the intuition test:

Sg	Potential gender and frequency - intuition test (%)		Frequency of gender given a noun class (%)	Frequency of a noun class in total nouns (%)
a	M	75	61.8	18.4
	F	25	38.2	
ī	M	5	16.4	21.4
	F	90	83.6	
ū	M	35	65.5	2.0
	F	0	16.2	
	N	65	18.3	
ə	M	20	65.8	6.2
	N	75	34.2	
C	M	50	42.5	52.0
	F	30	20.3	
	N	20	36.9	

**Table 8:** Comparison of results of intuition test with distribution of nouns.

In Table 8, column 1 gives the potential phonological endings of the nouns in Marathi, column 2, the results of the intuition test (the potential gender given a particular phonological ending, column 3, the frequency of nouns allotted to a particular gender based on the phonological ending and column 4, the frequency of a noun class based on phonological ending given the total number of nouns.

It is noteworthy that the results for the ‘-a’ ending tokens in the intuition test correlates with the distribution of the nouns ending in ‘a’ (cells marked in grey). Masculine gender is preferred by the subjects (potential genders being M&F) and ‘a’ ending masculine nouns are indeed more frequent (61.80%) than ‘a’ ending feminine nouns (38.2%).

A similar correlation is observed for the nouns ending in ‘ī’ (cells marked in grey). Feminine nouns ending in ‘ī’ are more frequent than masculine nouns and subjects preferred the feminine to masculine gender when intuiting gender for such tokens. Thus, nouns ending in ‘ī’ are intuited to be feminine and ‘ī’ ending nouns are predominantly feminine. For consonant ending nouns, a similar pattern is observed to some extent. All three classes occur equally frequently in the overall distribution of nouns.

The ‘ə’ and ‘ū’ ending nouns are judged to be neuter though their distribution indicates that they are more frequently masculine rather than neuter. It is observed that these two classes are marginal in the overall distribution of nouns and therefore preclude or limit more successful correlation between phonology and gender.<sup>6</sup>

In Table 9 we provide a comparison of class distribution with the test for plural marking. This table, which is very similar to Table 2, contains an additional column which describes the frequency of nouns for a particular class, given the total number of nouns in Marathi. We compare the results of the plural marking test with class distribution.

Gender	Sg	Pl	Non- words			% frequency of noun class
			Token	Results (%)		
				Children sg to pl	Adults sg to pl	
M1	ə	no	pūmbə	100	100	4.1
M2	C	change	tʃag	100	100	22.3
M3	ī		pəNī	100	100	3.5
M4	ū		māTū	100	100	1.3
M5	a	e	tuDa	80	80	11.4
F1	a	no	gaTa	100	100	7.0
F2	ū	change	bhakū	100	100	0.3
F3	ī	a	sakvī	60	100	17.8
F4	C	a	raT	10	30	10.6
F5	C	ī	Dhak	0	20	
N1	C	ə/e	khaD	20	80	19.2
N2	ū	ə/e	jambū	0	20	3.5
N3	ə/e	ī	bhəLə	0	30	2.1

**Table 9:** Comparison of results of plural marking test with distribution of nouns

<sup>6</sup> As indicated by one reviewer, we cannot rule out that something other than class marginality may be going on. We are increasing the number of tokens in all these tests and expect to reevaluate our results per class with this larger sample.

It may be observed that for non-changing classes the results of the test is 100%. The results do not reflect the pattern of distribution of nouns in the lexicon. For changing classes, the results of '-a' ending masculine and '-ī' ending feminine tokens correlate with the distribution of nouns. The higher frequency of nouns leads to better performance for both adults and children. It is interesting to observe that though the incidence of consonant final neuter nouns in the overall distribution of nouns is considerable (19.24 %), children are not able to select the correct plural affix (20%). However, the performance of adults for the same class of nouns is encouraging (80%). This suggests that there is some effect of maturation in the acquisition of the rules of plural morphology. Children may defer inducing or applying the rules till such time as they have ample evidence for the same.

The frequency of the other two subclasses of neuter gender (N2 and N3) is significantly low ('ū' ending nouns 3.53% and 'ə' ending nouns 2.13%) and both children and adult are unable to mark the plural suffix correctly. The less frequent classes of masculine and feminine gender do not inflect overtly for number. Only the less frequent classes corresponding to neuter gender inflect overtly for number. Hence, low frequency probably accounts for the poor performance of the subjects for these classes. Class F4 and F5 (consonant ending feminine nouns) also show poor performance in the selection of plural affixes. These noun classes are distributionally frequent but the ambiguity of affix selection accounts for the poor performance for this class. The comparison shows not a straightforward correlation between noun distribution/frequency of nouns but a nuanced one where frequency, uniqueness of affix assignment and zero-suffixation all play a role in the performance of children and adults.

## 6 Conclusion

We have shown through a series of studies that the plural morphology of neuter gender nouns is difficult for subjects, both children and adults. When we relate the performance data to the distribution of nouns we gain several insights into this problem. While speakers do have an internalized system of rules and apply it appropriately, the performance and rule application is limited by other factors. It can be seen that nouns marked for neuter gender are the least frequent in the overall distribution of nouns. Hence, it is possible that the low overall frequency of neuter nouns triggers the poor performance in selecting plural suffixes. It can also be concluded that while assigning gender, the gender classes which are distributionally most frequent in the lexicon are preferred over others. This effect is restricted to the classes which are larger in the overall distribution of nouns. When the overall frequency of a class is low, that class also demonstrates problems with plural morphology assignment if, in addition, it also changes in the plural and its shape is class ambiguous. In addition, we can infer that the rules for noun classes with high frequency are easy to acquire than those classes which have fewer nouns in it. Since Marathi is one of the few Indo-Aryan languages with the three gender system, there may be additional pressure on the language to move towards a two-gender or an attenuated gender system as may be seen in other languages of this family.

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### Appendix 1

Sample picture for test based on non-words (as given in 1) with associated text used in the task.



हा पहा एक तुडा आला. हा तुडा हिरवा आहे.



हा अजून एक तुडा आला. आता आहेत दोन \_\_\_\_\_