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Parallels between language acquisition and language change: The Portuguese future subjunctive¹

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To what degree do the stages in language change parallel the steps in language acquisition? This question has long interested linguists and I will pursue it here by describing the case of the Brazilian Portuguese future subjunctive, which provides ideal circumstances for investigating the relation between morphological change and acquisition.

There is evidence that Brazilian children acquire the inflection of irregular verbs in the future subjunctive by first regularizing the paradigm and gradually using the irregular stems. At the same time, adult speakers reveal a tendency towards regularization of the irregular paradigm. The data indicate that the same factors operate both in acquisition and change. In particular, phonetic saliency appears to be an explanatory principle in both cases. In this case, phonetic saliency is defined by the degree of phonetic differences between the infinitive and the future subjunctive.

In the following sections I will present first a description of the structure of the future subjunctive in Portuguese and then a description of the methodology used for obtaining and analyzing the data (variation theory, Labov, 1972). I will present the results of the experiment with a discussion of the influence of the phonetic saliency in relation to the use of morphological inflections. Finally I will focus on some general aspects of the relations between language change and language acquisition, and will summarize my remarks.

The structure of the future subjunctive

Future subjunctive verb forms are employed in Portuguese in subordinate clauses introduced by conjunctions such as quando 'when', como 'as', se 'if', enquanto 'while', assim que 'as soon as', etc., when there is reference to future time in the main clause:

- (1) a) O professor não vai gostar se você não trouxer o dever.
'The teacher will not like it if you don't bring the assignment.'
- b) Vai ser bom quando você vender a casa.
'It will be nice when you sell the house.'

The future subjunctive can only be identified in the so called "strong" irregular verbs that have allomorphic stems in tenses derived from the Latin perfectum, like trazer-trouzer in (1a). For the great majority of verbs the future subjunctive is identical to the infinitive, like vender-vender in (1b). The phenomenon of regularization by both children and adults that is being referred to can be illustrated by the sentence in (2):

- (2) Os homens sã vão parar de fazer guerra se eles fazerem amizade com outros paízes. (ML,9 y/o).
 (Fazerem, with the infinitive stem was used instead of fizerem, the irregular stem).
 'Men will only stop making war when they establish friendly relations with other countries.'

Children begin to use the future subjunctive at around 4 years of age. Late acquisition can be attributed to the fact that the form occurs in complex subordinate structures, involving notions such as condition, cause, and temporal sequence, which are acquired later than independent or main clause constructions. Younger children prefer to express in successive clauses what adults express in main and subordinate clauses. I have been observing my own daughter, who at 4.6 of age increased the use of future subjunctive, but used only the regularized forms, like in (2). Gradually she began to use the irregular stems and now, at 9 years of age, she is in an advanced stage in the use of the morphological irregularity of the future subjunctive.

Psycholinguistic research on children's regularization of paradigms describe that in a first step, children tend to repeat the irregular form without analysis. In a second step, they overgeneralize the regular form and finally they learn the irregular cases (Karmiloff-Smith, 1981, Slobin, 1973). For the future subjunctive, the process seems to start with the second step, probably because at the age of 4 they are also making attempts at partial analysis for other structures (Marchman, 1983).

Methodology

I collected data by oral and written tests given to a cross-section sample of children between the ages of 5 and 10, and adults of different generations: young speakers, from 12 to 19 years old, and old speakers, more than 60 years old. A total of 18,209 items in the future subjunctive were obtained: 2,227 by children, 13,692 by young adults and 2,290 by old adults.

The oral test included sentences with regular and irregular verbs. The informants were required to say whether they would like or dislike the event described in each sentence. This provoked an obligatory transformation of sentences like (3a) into (3b):

- (3) a) O sapato não coube no pé.
'The shoe did not fit my foot.'
- b) Não vai ser bom se o sapato não couber no pé.
'It won't be good if the shoe doesn't fit my foot.'

The children as well as the adults carried out the exercise with no special difficulty. Only oral tests were given to children.

The written test had an equivalent design: A model sentence like (3a) was followed by a sentence like (3b) with a slot to be completed by using the verb in the future subjunctive.

The quantitative approach to variation theory was used to describe the variable use of the morphological irregularity (Labov, 1972). The programs SWAMINC 4 (Naro, 1978) and VARBRUL 2 (Sankoff, 1975) were used to measure the influence of social and linguistic factors, in the inflection of the irregular future subjunctive.³ I will focus on the effect of age and the effect of the inherent nature of the verb. A list of the irregular verbs analyzed is shown in table 1, with the infinitive and future subjunctive inflections (1st and 3rd persons singular).

I define as phonetic saliency the degree of phonetic alteration between a neutral or uninflected form, represented in this case by the stem of the infinitive, and the irregular stem of the future subjunctive (see Naro & Lemle, 1977).

Results

Tables 1 and 2 show the use of each verb by children and adults⁴ respectively, with a sharp difference between the highest and the lowest values.

Some items, like dar 'to give', estar 'to be', ir 'to go' and fazer 'to make' show high indices of irregular inflections, while dizer 'to say', poder 'can', caber 'to fit' and haver 'there be' have lower values. Even lower are ver 'to see' and the compound verbs with ter and pôr (conter 'contain', obter 'obtain', compor 'compose', dispor 'dispose') which are mainly regularized.

Comparisons between different age groups⁵ are indicated in table 3. On the left side is the frequency of use of irregular stems by children, divided into

three age groups. On the right side are the results for the adults, divided into young speakers (from 12 to 19 years old) and old speakers (more than 60 years old).

Older children have displayed a more frequent use of the irregular forms than younger ones. On the other hand, old speakers use the irregular forms twice as often as young speakers.

The process of acquisition has been discussed in previous pages. Among adults, I am assuming that the results in table 3 indicate a tendency to change, according to the notion of apparent time (Labov, 1972), towards the regularization of the paradigm. This means that even accepting that the acquisition of linguistic skills continues throughout life, I assume that the young speakers, in the future, will still display a less frequent use of irregular forms than the old ones do now. For further evidence, see Macedo(1981).

Phonetic saliency in the acquisition and change in morphophonology

I claim that the ranking in tables 1 and 2 can be explained by the degree of phonetic saliency of the irregular stem, the verbs with the salient stems having a higher probability of occurrence in the irregular inflection than the less salient ones, which tend to be regularized.

Some verbs with very low values, like por, ver and the compound verbs, are regularized for other reasons:

The verb ver 'to see', a very common verb in the language, has the inflectional form vir, which is identical to another verb vir 'to come' in the infinitive. As vir also tends to be regularized, merging with the infinitive, this form becomes ambiguous. Adult speakers, even those with a high level of formal education, largely use the regularized form ver as the future subjunctive of the verb ver to solve this problem.

Compound verbs like conter (con-ter)'contain' are no longer perceived as compound by adults, who have practically restructured the items in all the other tenses derived from the perfectum. Children frequently substituted other verbs for them during the test.

The verb por 'to put', being very irregular in the whole paradigm, tends to be replaced by other semantically equivalent regular verbs (like botar and colocar). Votre (1979) and Rivas (1980) found a low frequency for por in the region of Rio de Janeiro. In addition, the homonymous unstressed preposition por 'by' may influence the low frequency of this verb and the preference for semantic approximants.

In ranking the phonetic saliency of each item in tables 1 and 2, I compared the irregular future subjunctive stem with its infinitive counterpart and considered four features: Alterations in the number of syllables (more syllables or no change in syllables), monosyllabicity (monosyllabic or non-monosyllabic), changes in vowel (anteriorization and/or height of the tongue in 1, 2, 3 or more degrees) and changes in consonant (same consonant, homorganic consonant or different consonant). I gave 1 point for each feature of phonetic alteration between the two forms of the verb, as shown in table 4.

Tables 1 and 2 have a significant correlation with table 4, indicating that table 4 may be used as a reliable predictor of the use of the irregular forms.⁶

After listing the verbs according to their features, I have measured separately the influence of each of these features in the use of the future subjunctive.

Changes in the vowel (table 5), in the number of syllables (table 6) and monosyllabicity of verbs (table 7) lead to the more frequent use of irregular stems. Changes in the consonant have the same effect to a lesser degree: Table 8 reveals a prevalent influence of homorganic consonants in the use of the irregular inflection by children. It may be the case that changes in the consonants do not intervene as much as the other features in the perception of phonetic saliency and this problem suggests a need of further studies.

The relation between language acquisition and language change

Linguists have long posited the possible relation between the process of language change and the steps in language acquisition (see Kuryłowicz, 1948; Manczak, 1958; Kiparsky, 1972; Venneman, 1972; Slobin, 1977; Naro, 1979 and Hooper, 1979). None of these authors affirm that one process causes the other. They also acknowledge that any principle suggested should not be considered absolute. Nevertheless, some striking similarities between the processes make this subject reappear frequently in the literature.

The case of the Brazilian Portuguese future subjunctive is an excellent one for testing some of the predictions made about morphologic change and language acquisition. The gradualness by which children acquire the forms allows the linguist to investigate some of the factors conditioning the variation. Furthermore, the instability of the paradigm among adults permits change over generations to be examined.

Consider some of the principles and predictions made by historical linguists and psycholinguists concerning these relations: Manczak, for example, predicts that

the indicative forms will induce the reconstruction of the other modes, but not vice versa. In fact, the future subjunctive shows a tendency to regularize towards the infinitive, which has the same stem as the indicative (see Wherrit, 1977) as has already happened in French. The counterpart for the process of acquisition is the fact that the indicative is the first acquired by children.

According to Kuryłowicz, the stem of the semantically unmarked form of the paradigm serves as the base form in language change. This is also within the scope of what has been examined: Adult regularization tends to make the future subjunctive merge with the infinitive stem, which is unmarked. The children follow the same process in reverse.

Slobin (1973) and Peters (1983) propose as an operating principle in language acquisition that a child will mark a semantic notion earlier if its morphological realization is more salient perceptually. Underlying semantic relations marked overtly and clearly will be the ones acquired first. If we extend Slobin's principle to language change, the future subjunctive forms should be more subject to change. We can say that they are not clearly and overtly marked in Portuguese because they can be substituted, in many contexts, either by the indicative mood or by similar constructions using the personal infinitive. Furthermore, the form of regular verbs is already similar to that same indicative, which makes the structure even more vulnerable to a merger. The future subjunctive is an instance of a semantically subtle and abstract relation, conditioned mainly by the conjunctions. These factors lead us to predict both late acquisition and vulnerability to change.

On the morphological level, the findings about phonetic saliency suggested by the case of the future subjunctive may be generalized to processes of acquisition as well as to processes of change of other morphemes.

The study of variation in verbal concordance (Naro & Lemle, 1977) and in nominal concordance (Braga, 1977; Scherre, 1978) in Portuguese indicates that for both phenomena there is a tendency for singular forms to be used in contexts where normative grammar prescribes the plural. This means that (4a) is used instead of (4b) for verbs, while (5a) is used instead of (5b) for nouns:

- (4) a) Eles come. 'They eat'
 b) Eles comem. 'They eat'
- (5) a) As casa. 'The houses'
 b) As casas. 'The houses'

The degree of saliency in verbal concordance was measured by comparing 3rd person singular to 3rd person plural. In nominal concordance, it was measured by com-

paring singular to plural nouns. The results of these studies showed that the more distinctive inflections are more frequently employed and maintained in the process of language change.

Emmerich (1977) pointed out that the acquisition of the Portuguese inflection of first and third persons in verbs also follows the principle of phonetic saliency. She observed that the acquisition of the 1st person inflection by children was parallel to the gradual acquisition of the same inflection by Brazilian Indian speakers who were learning Portuguese as a second language. In the first stages, both groups would say (6a) instead of (6b):

- (6) a) Eu bebe. 'I drink' (inflection of 3rd person)
 b) Eu bebo. 'I drink' (inflection of 1st person)

Phonetic saliency was measured by the morpho-phonological distinctions between the first and the third persons.

Summing these facts to the case of the future subjunctive, I am also claiming that the diffusion of both morphophonological change and acquisition originate in environments where there is minimal differentiation and fewer changes in superficial forms. To quote Naro (1976, p.76), due to the similarity of forms, "at some moment one may still admit only one analysis". This analysis "extends to other points following the path of the fewer phonological differentiations" towards the more salient or more perceptive ones.

Conclusions

The following points summarize what has been discussed:

1. The acquisition of the future subjunctive in Portuguese seems to be a case where morphophonological irregularities are learned from the total regularization of the paradigm to the gradual use of the irregular adult forms. This probably happens because its late acquisition coincides with the phase when the child is regularizing other structures of the language. It represents an exception to other processes of paradigm regularization discussed in the literature.
2. Generational differences indicate that adults are gradually regularizing the verb forms in the direction of the total merger of the future subjunctive and the personal infinitive in Portuguese. Several forces appear to be behind this direction of change: Future subjunctive inflections are identical to the infinitive for the great majority of verbs. This tense can be replaced by semantically similar structures that require the personal infinitive. This tense occurs in subordi-

nate complex structures and is semantically subtle.

3. Some verbs, like the composite verbs, the verb pôr 'to put' and the verb ver 'to see' have been practically regularized in the language, either by restructuring (the composite verbs) or to avoid ambiguities with other forms (pôr and ver).

4. The rest of the strong irregular verbs show an order of acquisition or change of inflected forms which obeys a general principle of phonetic saliency between the marked and the unmarked inflections: The more salient items are acquired first and tend to resist in the process of change.

5. Detailed analysis of these phenomena was made possible by the quantitative approach of variation theory. The future subjunctive turns out to be an ideal case for studying relations between language change and language acquisition: On one side, it is learned late and slowly, permitting the linguist to observe the gradual process. On the other hand, it is an unstable structure in the adult language.

6. The results presented constitute more evidence of Slobin's and Peter's proposed operating principles, which are also related to the acquisition of salient items. Slobin refers to the saliency of the items per se. I have studied the saliency between two morphemes. The most perceptually salient features appear to be the changes in the number of syllables, the changes in the quality of the vowels and the monosyllabicity of the item.

Table 1 - Ranking probabilities of use of irregular stems by children.

	Apl./Total	Prob.
Ter - tiver 'have'	182/246	.84
Dar - der 'give'	143/195	.82
Estar - estiver 'be'	136/180	.81
Ir - for 'go'	96/195	.73
Saber - souber 'know'	80/143	.66
Fazer - fizer 'make'	53/108	.60
Trazer - trazer 'bring'	77/136	.60
Vir - vier 'come'	50/104	.59
Ser - for 'be'	60/131	.56
Querer - quiser 'want'	52/96	.51
Poder - puder 'can'	63/134	.50
Dizer - disser 'say'	50/109	.46
Haver - houver 'there be'	26/68	.44
Caber - couber 'fit'	36/122	.38
Pôr - puser 'put'	16/60	.23
Conter - contiver 'contain'	13/189	.08
Ver - vir 'see'	2/71	.04

Table 2 - Ranking probabilities
of use of each verb in the irregular stem among adults.

Verb	Young		Verb	Old	
	Apl. Total	Prob.		Apl. Total	Prob.
Estar	117/129	0.93	Ser	128/129	0.94
Fazer	33/39	0.88	Ter	72/74	0.80
Ir	59/69	0.88	Fazer	105/109	0.78
Querer	32/42	0.86	Haver	62/65	0.75
Saber	120/157	0.82	Estar	118/121	0.75
Vir	113/141	0.81	Querer	104/113	0.70
Ser	112/147	0.81	Dar	179/186	0.69
Dar	47/59	0.78	Ir	95/101	0.62
Trazer	89/138	0.72	Caber	118/125	0.58
Caber	101/149	0.70	Saber	128/129	0.56
Poder	84/154	0.54	Dizer	132/149	0.52
Dizer	104/215	0.49	Trazer	85/97	0.42
Ter	3/7	0.46	Poder	104/118	0.35
Haver	58/74	0.38	Vir	113/130	0.35
Pôr	68/215	0.24	Pôr	98/156	0.08
Dispor	17/76	0.16	Conter e outros	197/399	0.05
Obter	15/90	0.14			
Conter	19/128	0.11			
Ver	14/142	0.06			
Reter, Deter	7/72	0.06			
Compor	8/149	0.04			

Table 3 - Influence of age in the use of irregular stems.

	Children			Adults	
	Apl. Total	Prob.		Apl. Total	Prob.
5 - 6 y/o	118/258	45,74%	young	7906/9531	.38
7 - 8 y/o	487/854	57,03%			
9 -10 y/o	498/794	62,72%	old	1539/1653	.66

Table 4 - Ranking of the verbs by phonetic saliency.

	increases syllables	changes consonant	vowel changes	monosyllabicity	degree of saliency
Estar - estiver	+1	+2	+3	-	6
Ir - for	-	+2	+3	+1	6
Ter - tiver	+1	+2	+1	+1	5
Ser - for	-	+2	+2	+1	5
Dar - der	-	-	+2	+1	3
Fazer - fizer	-	-	+3	-	3
Querer - quiser	-	+2	+1	-	3
Trazer - trazer	-	(homorg.)+1	+2	-	3
Vir - vier	+1	-	-	+1	2
Saber - souber	-	-	+2	-	2
Haver - houer	-	-	+2	-	2
Caber - couber	-	-	+2	-	2
Poder - puder	-	-	+1	-	1
Dizer - disser	-	(homorg.)+1	-	-	1

Table 5 - Influence of alterations in the number of syllables.

	Children		Adults	
More syllables	368/530	.63	1864/2115	.57
No change in syllables	733/1372	.37	7581/9069	.42

Table 6 - Influence of vowel changes

	Children		Adults	
Vowel changes in 3 or more degrees	345/577	.58	2808/3108	.63
Vowel changes in 2 degrees	362/664	.60	3525/4126	.58
Vowel changes in 1 degree	294/448	.51	1803/2194	.46
Vowel does not change	100/213	.30	1309/1756	.33

Table 7 - Influence of monosyllabicity.

	Children		Adults	
Monosyllabic	531/834	.58	3524/4029	.52
Non-monosyllabic	570/1068	.41	5921/7155	.48

Table 8 - Influence of consonant changes.

	Children		Adults	
Different consonant	526/811	.46	3257/3677	.54
Homorganic consonant	127/245	.57	1350/1785	.49
Same consonant	448/846	.47	4838/5722	.47

NOTES

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² Similar facts occur in Continental Portuguese as well as in Portuguese dialects in Africa and Asia (see Macedo, 1981).

³ The VARBRUL 2 program calculates the probability of contribution of each variable restriction to the global probability of application of a given rule. In this case, the variable rule was the inflection of the future subjunctive in the irregular stems, in environments where both irregular or regularized forms would be possible. The global probability of occurrence of a given form should be equal to the product of the probabilities respectively associated with each factor studied. For the present paper, only the influence of the verbs and the influence of age were illustrated. For full information, see Macedo (1981), Sankoff (1975) and Rousseau & Sankoff (1978).

⁴ The data on the left side of table 2 refer to a group of young speakers whose parents had elementary school level of education and were obtained by oral tests. The results on the right refer to oral and written tests together. The oral and written tests displayed similar results (see Macedo, 1981).

⁵ Age and education were interdependent factors. We were able to measure the influence of age by calculating separately the overall frequency for each group of children shown in table 3.

⁶ The rank order correlation coefficient was statistically significant at .01 level for table 1, at .03 level for table 2 (young speakers) and at .01 level for the old speakers in table 2. I would like to thank Ann Kalinowski for these calculations.

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