

An Introductory Analysis of the Roles of Duration, Intensity, and F0 of Explicit and Implicit Performatives in Brazilian Portuguese

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Introduction

The fundamental question of the present research involves the idea that studies in phonetics and phonology should be used in the search of a better understanding of the production of the locutionary act of explicit and implicit performatives as proposed by Austin (*How to Do Things with Words*, 1990). Such a belief is justified mainly due to fact the author (remember, a philosopher!) does not focus on questions of phonological analysis of his performative utterances. He limits himself to mention briefly the importance of certain linguistic resources, i.e., connectives, modals, adverbs, para-linguistic and circumstantial elements, as well as suprasegmental aspects such as tone of voice, cadence and emphasis for the realization of explicit performatives. A study focused on such characteristics of the utterance might help understanding the distinction between the production of explicit and implicit performatives in Brazilian Portuguese.

The main objective of this introductory research is, therefore, to describe and compare the characteristics of duration, fundamental frequency (F0) and intensity of explicit and implicit performative utterances. We aim at determining, in an interface study involving pragmatic and phonetic/phonological aspects, which of these performatives is normally associated with a higher level of prominence in Brazilian Portuguese.

Having in mind the aforementioned objective, we present as working hypothesis the idea that explicit performatives are produced, owing to their characteristic of making clear their illocutionary force, with a higher degree of prominence in Brazilian Portuguese. Such hypothesis implies directly that explicit performatives will present significant higher values of duration, intensity and fundamental frequency when compared to implicit ones.

Methodology

As regards our methodology, data collection procedures involved the recording of five performatives, all used in both explicit and implicit forms. We analyzed the performatives *condenar* (condemn), *proclamar* (proclaim), *prometer* (promise), *agradecer* (thank), and *afirmar* (affirm). Explicit performatives were produced in first person sentences, having penultimate-syllable stress. Implicit performatives in third person sentences, having last-syllable stress. F0 and intensity measures were carried out at the accented vowels. Duration was collected taking in consideration the whole word.

Informers were selected among university students. Ten were chosen, ranging from 19 to 32 years. All of them were from cities nearby Mossoró-Rio Grande do Norte-Brazil. Having in mind the number of informants, we had a total of 300 analyzed verbs, two groups of 150 explicit and implicit performatives. With each verb contributing with a value of duration, intensity and F0, the total number of variables was as high as 900.

Hardware used for data collection was an M-Audio external sound card model MobilePre USB and a Shure headset microphone WH20XLR. Software used involved Audacity version 1.3.5, for sound editing, and Praat version 5.1.19, for acoustical analyses. Statistical analyses involving the variables were performed with SPSS version 16.

Results & Discussions

A superficial analysis of the data points out that explicit performatives were mostly realized with higher duration, F0 and intensity values than implicit ones. In three moments only did this fact not occur: duration of the verbs *prometer*, *agradecer* and *afirmar*. Besides, observed data was rather homogeneous, once closely-related values of the mean, median, and small standard deviation were the norm. Full data reports are presented in Charts 1 and 2 below.

| CHART 1: quantitative data regarding explicit performatives. Duration values (dur) refer to the total length of the verb, while fundamental frequency (F0) and intensity (int) values refer to the stressed vowels of the syllable in bold . | | | | | | | | | | | | | | | |
|---|-----------|-------------|------------|------------|------------|------------|------------|-------------|------------|-----------|-------------|------------|------------|-------------|------------|
| | condeno | | | proclamo | | | prometo | | | agradeço | | | afirmo | | |
| Inf. | dur | F0 | int | dur | F0 | int | dur | F0 | int | dur | F0 | int | dur | F0 | int |
| 1 | 43 | 165 | 61 | 53 | 155 | 61 | 35 | 158 | 58 | 54 | 150 | 61 | 43 | 163 | 55 |
| 2 | 44 | 202 | 63 | 51 | 207 | 67 | 36 | 174 | 64 | 70 | 158 | 63 | 38 | 187 | 60 |
| 3 | 62 | 144 | 57 | 59 | 165 | 58 | 39 | 123 | 59 | 53 | 107 | 55 | 45 | 143 | 57 |
| 4 | 43 | 133 | 59 | 50 | 151 | 62 | 37 | 138 | 56 | 58 | 113 | 55 | 36 | 160 | 56 |
| 5 | 52 | 125 | 60 | 53 | 163 | 66 | 45 | 123 | 63 | 65 | 94 | 56 | 56 | 157 | 56 |
| 6 | 47 | 254 | 61 | 58 | 158 | 61 | 40 | 245 | 64 | 51 | 197 | 62 | 36 | 264 | 56 |
| 7 | 47 | 151 | 64 | 59 | 143 | 61 | 50 | 152 | 66 | 67 | 140 | 60 | 56 | 149 | 58 |
| 8 | 51 | 184 | 61 | 46 | 193 | 60 | 42 | 154 | 64 | 55 | 139 | 59 | 47 | 186 | 57 |
| 9 | 55 | 237 | 65 | 53 | 267 | 73 | 52 | 240 | 70 | 74 | 220 | 68 | 44 | 293 | 65 |
| 10 | 52 | 272 | 65 | 56 | 275 | 64 | 40 | 263 | 67 | 58 | 239 | 68 | 42 | 301 | 62 |
| mea | 50 | 187 | 62 | 54 | 188 | 63 | 42 | 177 | 63 | 61 | 156 | 61 | 45 | 201 | 58 |
| med | 49 | 175 | 61 | 53 | 164 | 62 | 41 | 156 | 64 | 58 | 145 | 61 | 44 | 174 | 57 |
| s.d. | 6 | 52,4 | 2,7 | 4,3 | 48 | 4,3 | 5,6 | 52,5 | 4,3 | 8 | 48,8 | 4,8 | 7,1 | 61,6 | 3,2 |

| CHART 2: quantitative data regarding implicit performatives. Duration values (dur) refer to the total length of the verb, while fundamental frequency (F0) and intensity (int) values refer to the stressed vowels of the syllable in bold . | | | | | | | | | | | | | | | |
|---|------------|-------------|------------|------------|-------------|------------|------------|-------------|------------|-------------|-------------|------------|------------|-------------|------------|
| | condenou | | | proclamou | | | prometeu | | | agradeceu | | | afirmou | | |
| Inf. | dur | F0 | int | dur | F0 | int | dur | F0 | int | dur | F0 | int | dur | F0 | int |
| 1 | 42 | 144 | 55 | 48 | 136 | 51 | 42 | 150 | 56 | 66 | 144 | 55 | 47 | 137 | 53 |
| 2 | 45 | 178 | 56 | 52 | 157 | 58 | 43 | 171 | 66 | 62 | 182 | 68 | 45 | 161 | 55 |
| 3 | 43 | 139 | 59 | 49 | 116 | 56 | 45 | 111 | 57 | 60 | 131 | 56 | 48 | 112 | 55 |
| 4 | 37 | 113 | 47 | 45 | 108 | 48 | 41 | 134 | 53 | 67 | 122 | 53 | 46 | 107 | 47 |
| 5 | 48 | 102 | 54 | 61 | 105 | 58 | 55 | 111 | 59 | 60 | 136 | 58 | 58 | 96 | 53 |
| 6 | 41 | 161 | 54 | 43 | 177 | 51 | 39 | 209 | 62 | 217 | 191 | 56 | 38 | 168 | 51 |
| 7 | 52 | 134 | 58 | 54 | 128 | 52 | 53 | 134 | 63 | 67 | 132 | 60 | 49 | 121 | 54 |
| 8 | 46 | 146 | 57 | 52 | 129 | 50 | 49 | 145 | 61 | 64 | 129 | 59 | 51 | 125 | 52 |
| 9 | 41 | 174 | 56 | 41 | 160 | 58 | 43 | 182 | 62 | 64 | 185 | 62 | 45 | 165 | 56 |
| 10 | 44 | 217 | 56 | 50 | 196 | 51 | 42 | 196 | 60 | 56 | 192 | 59 | 46 | 174 | 47 |
| mea | 44 | 151 | 56 | 50 | 142 | 54 | 46 | 154 | 60 | 79 | 155 | 59 | 48 | 137 | 53 |
| med | 44 | 145 | 56 | 50 | 133 | 52 | 44 | 148 | 61 | 64 | 141 | 59 | 47 | 131 | 53 |
| s.d. | 4,0 | 33,4 | 3,2 | 5,7 | 30,4 | 3,7 | 5,5 | 34,1 | 3,8 | 48,8 | 29,2 | 4,2 | 5,0 | 28,6 | 3,2 |

Results of 15 paired-samples t-tests comparing duration, F0 and intensity values of the aforementioned verbs in both explicit and implicit roles indicated 9 significant differences. As regards the verb *condenar*, the explicit performative was realized with higher variable values than its implicit counterpart. On the other hand, the explicit forms of the verbs *proclamar*, *prometer* and *afirmar* were significantly higher than their implicit form in F0 and intensity variables only, as no difference was found in the duration variable. Finally, the explicit and implicit forms of the performative verb *agradecer* showed no significant difference in any of the variables analyzed. Full t-tests results are presented in chart 3 below, as well as boxplots of selected comparisons in Figures 1 and 2.

| CHART 3: paired-sample t-tests comparing explicit and implicit performatives. Significant differences are presented in bold . | | | | | | | | | | | | | | | |
|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|------|------|-----------|-------------|-------------|
| | condeno(u) | | | proclamo(u) | | | prometo(eu) | | | agradeço(ceu) | | | afirmo(u) | | |
| | dur | F0 | int | dur | F0 | int | dur | F0 | int | dur | F0 | int | dur | F0 | int |
| Sig | ,029 | ,002 | ,001 | ,100 | ,002 | ,001 | ,065 | ,012 | ,005 | ,313 | ,883 | ,171 | ,059 | ,001 | ,001 |

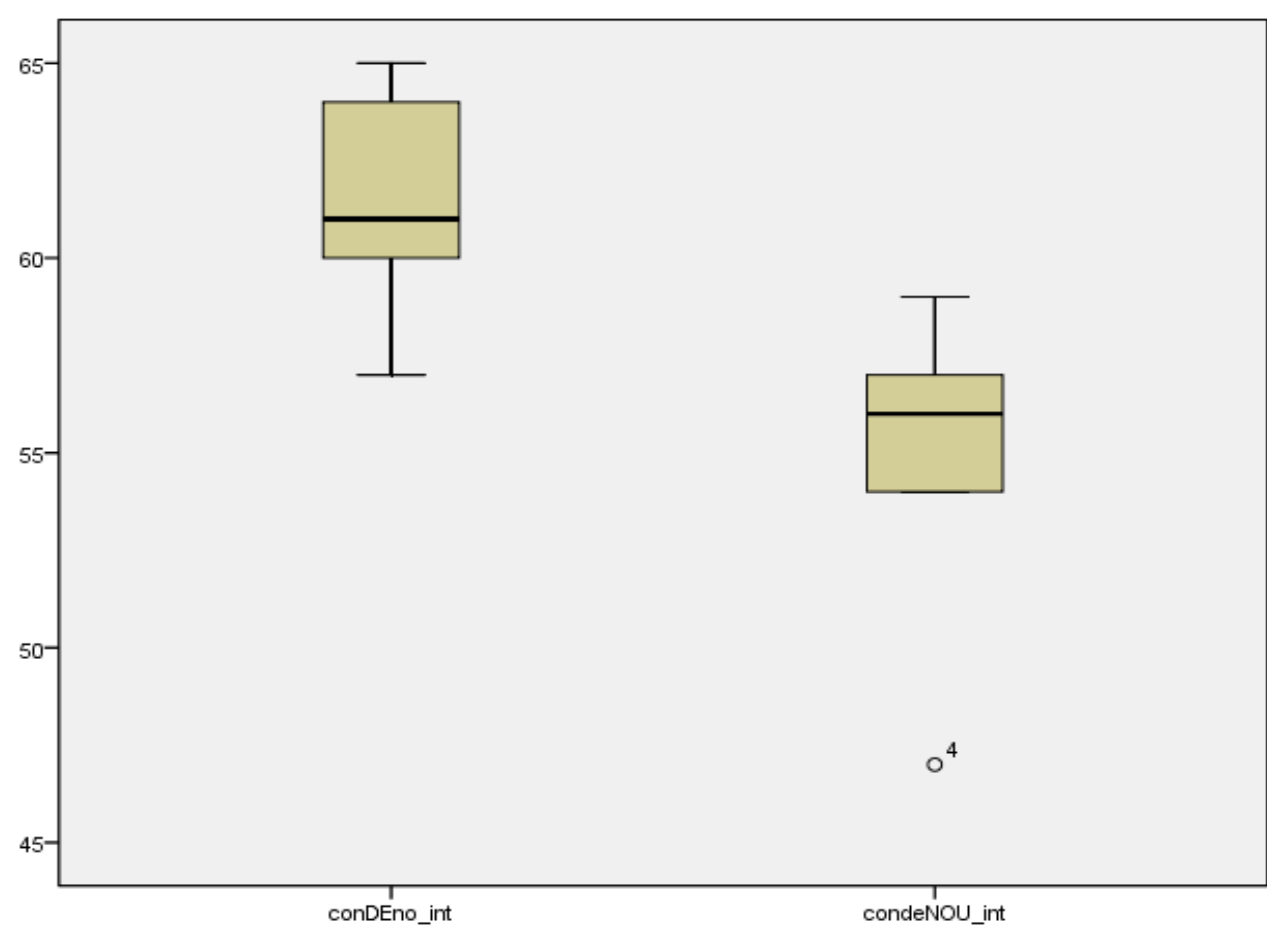


FIGURE 1: Boxplot for intensity of the verbs *condeno* (left) e *condenou* (right).

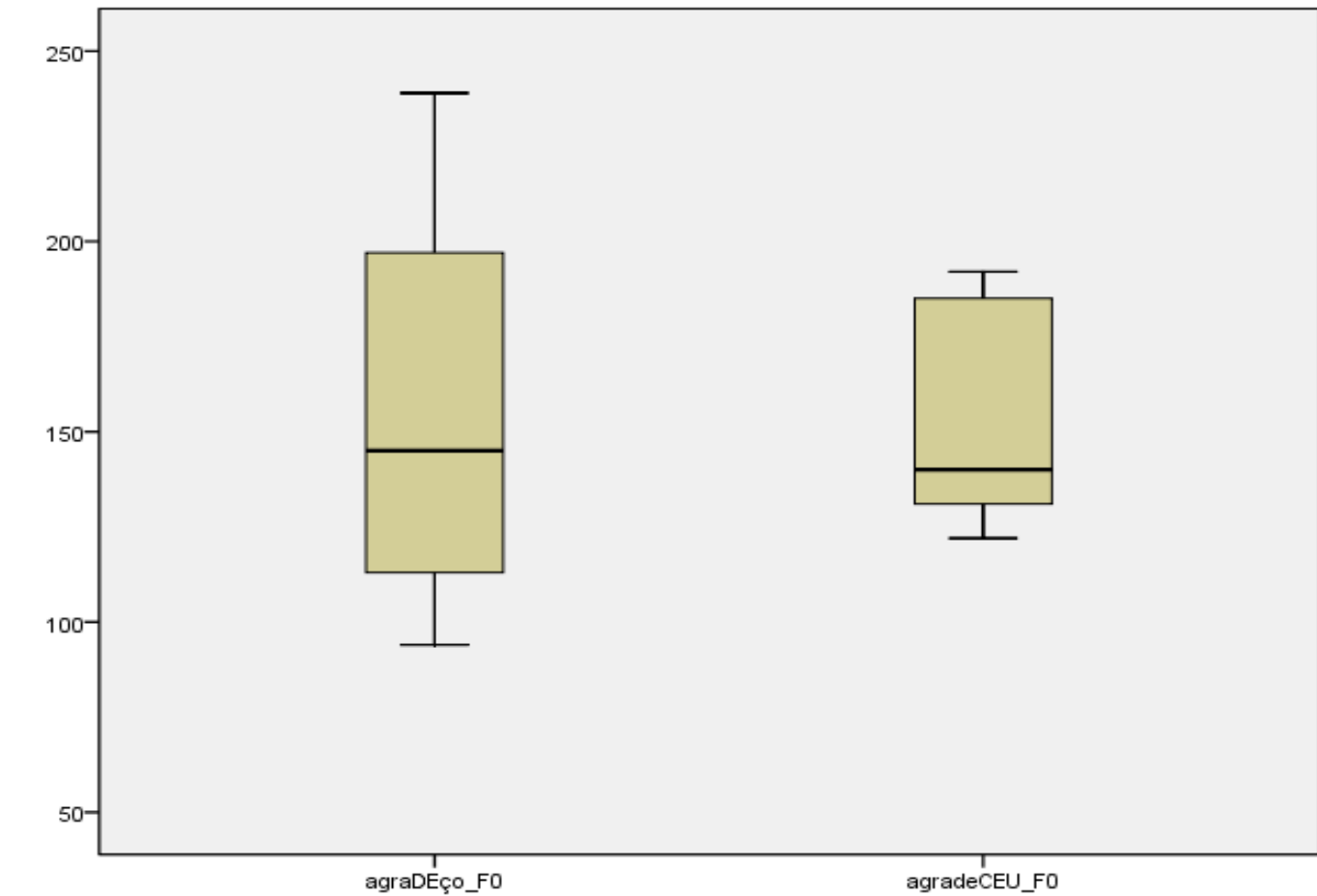


FIGURA 2: Boxplot for intensity of the verbs *agradeço* (left) e *agradeceu* (right).

Conclusions

Having these results in mind, we noticed 80% of the intensity and F0 measures were significantly different in our statistical tests. Such values indicated acoustic parameters were used in order to give the accented syllable of explicit performatives peculiar characteristics in Brazilian Portuguese. Total duration of explicit and implicit performatives resulted, however, in significant differences in 20% of the data only, indicating this acoustic parameter was not highly productive to distinguish the different forms of performative verbs.

Our hypothesis was, thus, *partially confirmed*. The absence of significant differences in most duration comparisons between explicit and implicit performatives, as well as the fact no difference was found in the realization of the verb *agradecer*, was the key for this conclusion. However, the intensity and F0 tendencies found here indicate research on performatives might greatly benefit from a methodology based on acoustic studies.