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ARTICLE

Development of a word accentuation test for predicting cognitive performance in Portuguese-speaking populations

Desenvolvimento de um teste de acentuação de palavras em português para predição de desempenho cognitivo

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ABSTRACT

The Word Accentuation Test (WAT) has been used to predict premorbid intelligence and cognitive performance in Spanish-speaking populations. It requires participants to read a list of words without the accent marks that indicate the stressed syllable. **Objective:** As Portuguese pronunciation is also strongly based on accent marks, our aim was to develop a Brazilian version of the WAT. **Methods:** An initial pool of 60 items was constructed and a final version of 40 items (named WAT-Br) was derived by item response theory. A sample of 206 older adults underwent the WAT-Br and a standardized neuropsychological battery. Independent ratings were performed by two observers in 58 random participants. **Results:** The items showed moderate to high discrimination (α between 0.93 and 25.04) and spanned a wide range of difficulty (β between -2.07 and 1.40). The WAT-Br was shown to have an excellent internal consistency (Kuder-Richardson Formula 20 = 0.95) and inter-rater reliability (intraclass correlation coefficient = 0.92). It accounted for 61% of the variance in global cognitive performance. **Conclusion:** A version of the WAT for Portuguese-speaking populations was developed and proved to be a valuable tool for estimating cognitive performance.

Keywords: Neuropsychological tests, intelligence, elderly.

RESUMO

O Teste de Acentuação de Palavras (TAP) tem sido utilizado para predizer inteligência pré-mórbida e desempenho cognitivo em populações de língua espanhola. Requer que os sujeitos leiam uma lista de palavras sem os sinais gráficos de acentuação que indicam a sílaba tônica. **Objetivo:** Como a pronúncia da língua portuguesa também é fortemente baseada em acentos gráficos, nosso objetivo foi desenvolver uma versão brasileira do TAP. **Métodos:** Um conjunto inicial de 60 itens foi construído e uma versão final de 40 itens (denominada TAP-Br) foi derivada por teoria da resposta ao item. Uma amostra de 206 idosos foi submetida ao TAP-Br e a uma bateria neuropsicológica padronizada. Registros de pontuação independentes foram realizados por dois observadores em uma subamostra de 58 participantes aleatórios. **Resultados:** Os itens apresentaram moderada a alta discriminação (α entre 0,93 e 25,04) e abrangeram uma ampla gama de dificuldades (β entre -2,07 e 1,40). O TAP-Br apresentou excelente consistência interna (Fórmula de Kuder-Richardson 20 = 0,95) e confiabilidade inter-examinador (Coeficiente de Correlação Intraclasse = 0,92). O escore do TAP-Br explicou 61% da variância do desempenho cognitivo global. **Conclusão:** Uma versão do TAP para as populações de língua portuguesa foi desenvolvida e mostrou-se uma ferramenta útil para estimar desempenho cognitivo.

Palavras-chave: Testes neuropsicológicos, inteligência, idosos.

When cognitive decline is suspected, a previous neuropsychological assessment that could serve as a criterion for comparison is rarely available. Thus, one of the great challenges faced in this field is the attempt to estimate premorbid

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intelligence, a benchmark against which current neuropsychological functioning is compared in order to establish the existence and degree of cognitive decline[1].

Reading tests comprising irregularly-spelled words are highly correlated with cognitive performance and have proven to be useful in estimating premorbid intelligence[2]. Those tests can be used for adjusting norms, thus helping clinicians to detect cognitive decline by comparing the actual performance with the performance that would be expected[3]. Pronunciation of irregular words must be accessed from a lexical store and not by grapheme-phoneme correspondence rules. Lexical functions that rely on implicit memory are less dependent on higher cognitive processes and, therefore, are relatively stable in normal aging and neuropathological conditions[4]. Accordingly, it has been shown that patients with dementia can read irregular words even when their meaning can no longer be assessed[5].

The first well-structured reading test designed to estimate premorbid intelligence was the National Adult Reading Test (NART), which requires participants to read aloud a list of 50 words with irregular spelling-sound correspondence[6]. The NART, originally developed in England, has been adapted for North American and Canadian English speakers[7]. Versions of the NART have also been successfully validated in other languages such as Italian, French, Japanese, Korean, and Polish[8,9,10,11,12].

Some languages, such as Swedish, Spanish, and Portuguese, are orthographically transparent, meaning that there is almost total correspondence between graphemes and phonemes. In these languages, versions of the NART seem unattainable, because most readers can pronounce previously-unknown words by using phoneme-grapheme correspondence rules. Therefore, in countries with transparent languages, alternative strategies have been designed to create irregularity between grapheme and phoneme[13,14].

Del Ser et al.[15] designed the Word Accentuation Test (WAT) by using a newly-proposed source of irregularity between grapheme and phoneme. In Spanish, accent marks are an extra symbol added to existing letters to indicate the stressed syllable. However, when the accent mark is not present, the Spanish readers need to have prior knowledge to achieve a correct pronunciation. Using that rationale, the WAT requests participants to read aloud a list of words without the accent marks. The WAT has been demonstrated to have adequate properties in Spain, Argentina, Colombia, and among Spanish-speaking immigrants in the United States[15,16,17,18].

Brazil is a country with 208 million inhabitants in which Portuguese is the only language in daily life[19]. No validated test is available to assess premorbid intelligence in Brazil. Because Portuguese is also a transparent language and its pronunciation is strongly based on accent marks, our aim was to develop a version of the WAT for Portuguese speakers.

In this study, an initial pool of 60 items was selected and a final version of 40 items (named the WAT-Br) was derived by item response theory. Initial validation criteria were obtained by assessing item discrimination, item difficulty, and correlation with neuropsychological tests. In addition, we calculated the internal consistency and assessed the inter-rater reliability of the proposed test.

METHODS

Elaborating the preliminary version of the test

A preliminary study was conducted to establish an initial list of words that were suited for composing the test. The first step consisted of selecting 300 words with graphic accents from Brazilian Portuguese dictionaries. We did not include: 1) words with more than one possible pronunciation (e.g., "equilátero"); 2) words in which the absence of a graphic accent indicates a different meaning or grammatical class (e.g., "denúncia" *vs* "denuncia"); 3) words borrowed from other languages (foreignisms); 4) technical jargon; and 5) words with a regional bias determining variation of frequency across the country, such as those representing fauna, flora, cuisine, artistic expressions, or proper names.

Subsequently, three of the authors reviewed the initial pool, through an iterative process and successive discussions, to select 60 words. Because difficulty of pronunciation is influenced by word occurrence, we selected words with a variety of frequencies in the Brazilian corpus: 19 with high frequency (> 1/1,000), 26 with intermediate frequency (between 1/1,000 and 1/10,000), and 15 with low frequency (< 1/10,000)[20]. The selection was conducted with the additional goal of ensuring the same proportion of words stressed in the last, penultimate, and antepenultimate syllable (20/20/20).

Participants

We recruited 206 healthy community-dwelling individuals aged 60 years and older from different regions of the city of São Paulo, in southeast Brazil. Recruitment was targeted to obtain a minimum of 30 participants in each preplanned age and schooling strata, as shown in Table 1. The sample size was calculated to suffice for a two-parameter logistic model with a dichotomously-scored test, in which at least 200 respondents are recommended for accurate parameter estimates[21].

General exclusion criteria were: suspected cognitive impairment (consistent self-complaint or cognitive decline reported by a close informant), diagnosis of neurological diseases, psychiatric disorders, use of medications with deleterious effects on the central nervous system, severe or decompensated clinical condition, and severe sensory deficit (visual or auditory). Non-native speakers were allowed to participate as long as they had been living in Brazil for at least 10 years and were perfectly fluent in Portuguese.

Three tests were performed for screening major exclusion criteria. Individuals were excluded if they presented with cognitive impairment indicated by a delayed recall < 7 on the Brief Cognitive Screening Battery[22], functional

impairment as indicated by a score > 5 on the Functional Activities Questionnaire[23] or fulfilled criteria for major depressive disorder as defined by the Patient Health Questionnaire-9[24]. The study was approved by the institutional review board. All the participants signed an informed consent before the research interview.

Assessment

The respondents received the initial list of 60 words in a descending order of frequency observed in the Brazilian corpus. The items were printed on an A4 sheet, (Times New Roman, font size 20). The test was presented to the examinee as follows: *Please, read aloud, slowly, the following words. You may not recognize some words, but try reading them anyway*. Examiners scored whether or not the participants pronounced the words correctly and one point was assigned for each correctly read word. Individuals who declared being unable to read even simple words were considered to have a score of zero. The list of words, administration instructions, and scoring rules are available in the Appendix.

For assessing inter-rater reliability, ratings were performed by two observers in 58 random participants. In this subsample, a resident physician remained in the testing room to record the score of the WAT-Br independently.

All participants underwent a 60-minute standardized neuropsychological battery for evaluating memory (Hopkins Verbal Learning Test-Revised[25] and the Logical Memory Test of the Wechsler Memory Scale[26]), attention (Forward and Backward Digit Span of the Wechsler Adult Intelligence Scale-III[27] and Color Trails 1[28]), language (Semantic Fluency for Animals[29] and 30-item version Boston Naming Test[30]), visuospatial functions (Line Orientation of the Repeatable Battery for the Assessment of Neuropsychological Status[31] and CLOX 1[32]), and executive functions (Color Trails 2[28] and Matrix Reasoning of the Wechsler Abbreviated Scale of Intelligence[33]). A global composite score was derived by averaging z-scores of the primary measures described above.

Statistical analysis

First, we conducted an exploratory factor analysis to test unidimensionality. A principal component analysis was undertaken based on a tetrachoric correlation matrix. A scree plot of the eigenvalues was derived for visual inspection and the number of factors to be retained was guided by Horn's parallel analysis with 100 randomly generated datasets[34].

A two-parameter logistic item response theory model was fitted to provide information regarding discrimination (α) and difficulty (β). Items with discrimination values (α) ranging from 0 to 0.64 show poor discrimination, 0.65 to 1.34 moderate discrimination, 1.35 to 1.69 high discrimination, and above 1.70 very high discrimination[35]. Item difficulty values (β) typically range between -2 and +2, with higher values indicating a greater amount of latent trait needed to obtain a correct pronunciation.

The initial pool of items was reduced using a strategy that would maximize psychometric properties and efficiency by selecting items with high discrimination and that were targeted to span a wide range of difficulty levels. To reduce possible redundancy, we eliminated items that were measuring the same level of difficulty.

Internal consistency was assessed using the Kuder-Richardson formula 20 (KR-20), with values above 0.70 indicating satisfactory internal consistency[36]. The intraclass correlation coefficient (ICC) was used to assess inter-rater reliability. The ICC was calculated using a one-way random-effects model for absolute agreement. Values between 0.75 and 0.90 were taken as indicative of good inter-rater agreement and those greater than 0.90 indicated excellent agreement[37].

Because formal education has been widely used for adjusting norms on neuropsychological tests, we investigated whether the WAT-Br would provide independent predictive power in addition to schooling for predicting cognitive performance. Fractional polynomial regression models were used to account for the nonlinear relationship between predictors and cognitive performance. Nonlinear terms were fitted if they explained variability in the cognitive scores significantly better than a simple linear pattern. The adjusted coefficients of determination of the regression models were used to estimate the proportion of the variance on cognitive performance that could be predicted by the WAT-Br and schooling. The Wald test was used in a hierarchical strategy to test significance of the additional predictor.

All statistical analyses were performed using Stata for Windows, version 14.1 (StataCorp, College Station, TX). The level of statistical significance was set at.05 in two-tailed tests.

RESULTS

Our sample consisted of 206 cognitively unimpaired Brazilians with ages varying from 60 to 98 years (mean 73.6 years; SD = 7.6), representing several levels of formal education (mean 8.0 years; SD = 5.2). Fifteen participants (7.3%) were born in other countries. The immigrants had similar schooling (7.4 *vs* 8.0; p = 0.666) and a similar performance on the WAT-Br (23.3 *vs* 23.2; p = 0.968) when compared with native speakers. The characteristics of the sample are shown in Table 1.

The first factor of the 60-item principal component analysis showed an eigenvalue of 32.4 and explained 53.9% of the variance. The second component was substantially smaller, accounting for only 3.4% of the variance. Only the first eigenvalue was greater than the corresponding average in parallel analysis, thus confirming the one-factor structure.

Only one item was excluded for showing poor discrimination ("solideu"; $\alpha = 0.63$). Significant redundancy was detected for items with difficulty (β) between -1 and 0. Therefore, the 19 items with the lowest discrimination parameters in this difficulty level were eliminated.

Table 1. Characteristics of the study sample (n = 206).

Variable	Category	N (%)	WAT-Br*	p-value**
Age	60–69 years	74 (35.9)	23.7 (9.7)	0.2026
	70–79 years	92 (44.7)	24.0 (9.1)	
	≥ 80 years	40 (19.4)	20.9 (10.0)	
Sex	Female	151 (73.3)	22.9 (10.0)	0.4050
	Male	55 (26.7)	24.1 (10.9)	
Schooling	0–3 years	34 (16.5)	10.0 (7.6)	< 0.001**
	4–7 years	66 (32.0)	20.4 (5.4)	
	8–11 years	55 (26.7)	27.7 (6.7)	
	≥ 12 years	51 (24.8)	30.9 (5.7)	
Color or ethnicity	White	122 (59.2)	24.2 (9.4)	< 0.001***
	Admixed	30 (15.0)	18.3 (10.2)	
	Black	15 (7.3)	18.5 (7.8)	
	Asians	38 (18.4)	26.3 (7.7)	

*The final version of the Brazilian version of the Word Accentuation Test (WAT-Br) is presented as means (standard deviation) for each demographic stratum; ***Post hoc* analysis with the Scheffe method revealed a p-value < 0.05 for all comparisons; ****Post hoc* analysis revealed significant differences between Admixed vs White and between Admixed vs Asians.

The final scale, the WAT-Br, comprised 40 words: 12 with the stress on the last syllable, 13 with stress on the penultimate, and 15 with the stress on the antepenultimate syllable. Items showed moderate-to-high discrimination (α ranging from 0.93 to 25.04) and spanned a wide range of difficulty (β between -2.07 and 1.40; Table 2).

Overall KR-20 for the 40 items was 0.95, indicating high internal consistency. The ICC between two independent raters was 0.92 (95%CI 0.86 to 0.95), indicating excellent inter-rater agreement.

Scores of the WAT-Br varied from 0 to 40, with a mean of 23.2 (± 9.5). We observed a normal distribution and only 1.4% of the sample obtained the maximum score, suggesting that the ceiling effect was not a significant problem. The WAT-Br scores did not vary across age and sex strata, but were significantly associated with education and race (Table 1). When adjusted for education, differences between races did not maintain significance and, in a stepwise backward model, the only demographic characteristic associated with the WAT-Br scores was education (β = 1.34; p < 0.001)

A linear relationship was found between the WAT-Br and the global composite score of the neuropsychological battery (Figure), with a Pearson's correlation coefficient of 0.78 and a coefficient of determination (R^2) of 0.61, which means that the WAT-Br predicted 61% of the variance in global cognitive performance.

In comparison with schooling, the WAT-Br provided equal or superior prediction of cognitive performance for all neuropsychological scores (Table 3). The addition of the schooling to a model already containing the WAT-Br improved the explained variance modestly for a few neuropsychological measures. On the other hand, the prediction of all neuropsychological measures was significantly improved by adding the WAT-Br to models already containing schooling.

Table 2. Final version of the Brazilian Word Accentuation Test (WAT-Br) with parameter estimates for a two-parameter logistic model.

Accented Form	WAT-Br Item	Difficulty (β)	Discrimination (α)
você	voce	-2.072	4.555
política	politica	-1.963	25.04
café	cafe	-1.962	4.732
açúcar	açucar	-1.909	4.205
herói	heroi	-1.668	3.989
após	apos	-1.562	2.231
alguém	alguem	-1.532	4.582
táxi	taxi	-1.338	3.649
pôster	poster	-1.277	1.360
dossiê	dossie	-1.090	2.407
canapé	canape	-1.040	2.748
flexível	flexivel	-1.022	4.660
aprazível	aprazivel	-0.963	3.307
talismã	talisma	-0.866	2.335
igarapé	igarape	-0.804	2.510
dócil	docil	-0.579	2.930
convés	conves	-0.442	3.271
mártir	martir	-0.410	3.356
cântaro	cantaro	-0.348	2.712
eloquência	eloquencia	-0.330	3.231
síncope	sincope	-0.234	4.141
munícipe	municipe	0.018	3.291
lúgubre	lugubre	0.254	2.242
léxico	lexico	0.273	3.054
amálgama	amalgama	0.324	2.732
melífluo	melifluo	0.376	1.358
lânguido	languido	0.430	2.358
atávico	atavico	0.462	1.663
uníssono	unissono	0.462	3.288
marzipã	marzipa	0.582	2.097
antiquíssimo	antiquissimo	0.595	1.360
oboé	oboe	0.657	1.098
exegético	exegetico	0.684	0.931
antítese	antitese	0.776	2.218
córtex	cortex	0.845	2.396
látex	latex	0.853	1.186
aquífero	aquifero	0.862	2.566
arquétipo	arquetipo	0.955	3.500
exequível	exequivel	1.279	1.723
hálux	halux	1.404	1.113

WAT-Br: Brazilian Word Accentuation Test.

DISCUSSION

In this report we present the development of the Brazilian Word Accentuation Test (WAT-Br) and provide a preliminary investigation of its psychometric properties. From an initial poll of 60 items, we derived a final version with 40 items that was evaluated.

The WAT-Br showed high internal consistency (KR-20 = 0.95). This finding is in line with the versions of the WAT for Spanish-speaking populations that showed values varying from 0.91 to 0.95[15-17]. In addition, an excellent

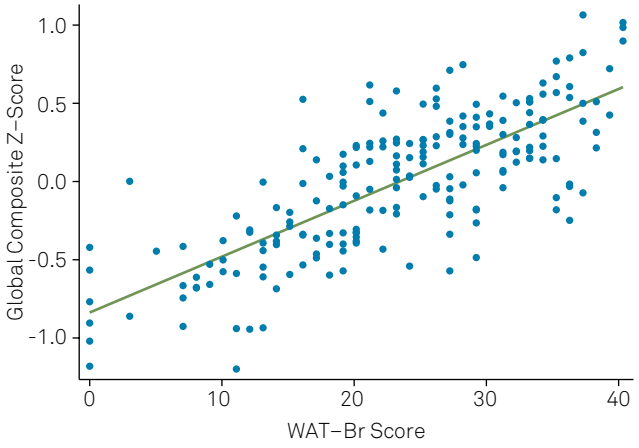

Figure. Scatter plot showing a linear relationship between the WAT-Br and the global composite z-score.

inter-rater agreement was found in our study (ICC = 0.92), aligned with the value found in Spain (ICC = 0.93) by Del Ser et al.[15] Finally, the WAT-Br accounted for 61% of the variance observed in the global composite score for current cognitive performance, a value that is in the range of those found by studies that used the WAT to predict the WAIS full-scale IQ in Spanish-speaking samples[17].

This is the first study to show that the ability of reading Portuguese words without accent marks is a good indicator of lexical knowledge and that this task may be an efficient way of estimating cognitive performance in Portuguese-speaking adults. This finding is of paramount importance for most Portuguese-speaking countries, where social inequality remains a relevant problem. In those countries, with heterogeneous quality of education, schooling may not be the best indicator of premorbid cognitive performance.

Our study included a heterogeneous sample. A significant proportion of the participants (40.8%) were not white and a wide range of schooling levels were represented. Nineteen unschooled individuals were included and 68.4% of them were able to read at least one word, thus revealing that the WAT-Br can discriminate performance even in populations with very low levels of schooling or no schooling at all. We also included individuals born in other countries. Brazil received many European and Japanese immigrants during World War II. Therefore, the inclusion of non-native speakers was important to improve the external validity of the study.

An irregular word reading test, the TeLPI, was developed in Portugal using the very few grapheme-phoneme irregularities encountered in Portuguese[13], namely the pronunciation of the intervocalic "x" or the syllables "que/qui/gue/gui", that can have more than one pronunciation[38]. The TeLPI was able to predict only 53% of the variance of the WAIS full-scale IQ[14]. In contrast, in Spanish-speaking populations, the WAT predicted between 59% and 70% of the variance in the WAIS full-scale IQ scores[15,17]. These findings suggest that exploring the few grapheme-phoneme irregularities encountered in Portuguese may be a limited strategy. Future studies using the WAT to predict the WAIS full-scale IQ in Portuguese-speaking populations will provide more adequate parameters of comparison between these two assessment strategies.

Although the focus of our test was the ability to read words without the accent marks, items with additional elements of irregularity were not excluded. Indeed, 10 of the 40 words of the final list contained an intervocalic "x" or the syllables "que/qui/gue/gui". Therefore, the WAT-Br is not a pure test in its linguistic mechanism of irregularity. As can be seen in Table 2, words with additional irregularities are among the most difficult and were important to avoid a ceiling effect. A concern could be raised about the presence of more than one irregularity mechanism increasing the variance. However, that concern was not confirmed, once the test showed an excellent internal consistency.

Table 3. Hierarchical strategy to test significance of adding the WAT-Br to a model already containing schooling.

Variable	Coefficient of Determination (R^2)			Change in R^2*
	Schooling	WAT-Br	Schooling + WAT-Br	
HVLT-R total recall	0.20	0.25	0.25	0.05
HVLT-R delayed recall	0.18	0.25	0.25	0.07
WMS-III logical memory I	0.21	0.21	0.24	0.03
WMS-III logical memory II	1,058	0.27	0.28	0.06
WAIS-III digit span	0.24	0.37	0.36	0.12
Color trails test 1	0.54	0.68	0.70	0.16
Color trails test 2	0.51	0.64	0.64	0.13
Verbal fluency (animals)	0.14	0.21	0.21	0.07
Boston naming test	0.52	0.70	0.70	0.18
Clock drawing test (CLOX1)	0.36	0.43	0.43	0.07
RBANS line orientation	0.35	0.45	0.46	0.11
WASI matrix reasoning	0.42	0.49	0.53	0.11
Global composite score	0.47	0.61	0.62	0.15

*The Wald test been used in a hierarchical strategy to test significance of adding the WAT-Br (Brazilian Word Accentuation Test) to a model already containing schooling. The prediction of all neuropsychological measures was significantly improved by adding the WAT-Br (all with $p < 0.01$). HVLT-R: Hopkins Verbal Learning Test-Revised; WMS: Wechsler Memory Scale; WAIS-III: Wechsler Adult Intelligence Scale; RBANS: Repeatable Battery for the Assessment of Neuropsychological Status; WASI: Wechsler Abbreviated Scale of Intelligence.

This research has some limitations that should be noted. Firstly, although a sample with 206 participants was deemed sufficient for a two-parameter logistic model, a larger sample would have provided more accurate parameter estimates. Secondly, although the sample was diverse and represented a wide range of schooling levels, this was a single-center study. Further research with samples from different regions of the country is needed to validate our findings. Thirdly, only a few items had a difficulty parameter (β) above 1, raising the concern that the WAT-Br may be a limited tool for estimating cognitive performance in persons with high levels of the latent trait. In this study, we found a linear relationship between the WAT-Br and cognitive performance without a plateau at higher levels. However, because the ceiling effect has been a common phenomenon among tests of irregular words, this concern should be examined in highly-educated individuals.

In conclusion, a version of the WAT for Portuguese-speaking populations has been developed and proved to be a valid tool for estimating cognitive performance. Future studies should evaluate the WAT-Br as a predictor of intelligence and evaluate its stability in patients with cognitive impairment.

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APPENDIX

Brazilian Version of the Word Accentuation Test (WAT-Br)

1. **VOCE**	15. **IGARAPE**	29. **ATAVICO**
2. **CAFE**	16. **DOCIL**	30. **MARZIPA**
3. **AÇUCAR**	17. **CONVES**	31. **ANTIQUISSIMO**
4. **POLITICA**	18. **MARTIR**	32. **OBOE**
5. **HEROI**	19. **CANTARO**	33. **EXEGETICO**
6. **APOS**	20. **ELOQUENCIA**	34. **ANTITESE**
7. **ALGUEM**	21. **SINCOPE**	35. **CORTEX**
8. **TAXI**	22. **MUNICIPE**	36. **AQUIFERO**
9. **POSTER**	23. **LUGUBRE**	37. **LATEX**
10. **DOSSIE**	24. **LEXICO**	38. **ARQUETIPO**
11. **CANAPE**	25. **AMALGAMA**	39. **EXEQUIVEL**
12. **FLEXIVEL**	26. **MELIFLUO**	40. **HALUX**
13. **TALISMA**	27. **LANGUIDO**	
14. **APRAZIVEL**	28. **UNISSONO**	

INSTRUÇÕES

• ***"Agora eu quero que você leia essas palavras em voz alta. Não se preocupe com o significado das palavras. Apenas leia em voz alta."***

• ***"Comece por essa palavra*** (aponte), ***passe para a debaixo e assim por diante. Quando terminar essa coluna vá para a próxima coluna*** (aponte)***."***

• ***"Leia sem pressa, uma palavra de cada vez."***

REGRAS DE APLICAÇÃO

- Caso o sujeito comece a ler rápido interrompa e peça que leia mais devagar.
- Caso comece a ler em tom de voz baixo interrompa e peça que leia mais alto.
- Caso você não tenha ouvido bem alguma palavra, solicite que a palavra seja repetida.

• Interrompa o teste após **10 erros sequenciais**. É possível permitir que o indivíduo complete a tarefa mesmo após 10 erros sequenciais, desde que se perceba interesse na tentativa e não haja sinais de constrangimento. Não pontue eventuais pronúncias corretas após 10 erros sequenciais.

• No caso de desistências precipitadas, tente incentivar para que o indivíduo continue.

REGRAS DE PONTUAÇÃO

• Antes de administrar o teste familiarize-se com a pronúncia das palavras. Atente-se aos erros de sílabas tônicas (acentuação), pronúncia do "X" que pode ter som de "*cs*" (flexível) ou "*z*" (exequível) e pronúncia do "QU" que pode ter som de "k" (arquétipo) ou "qü" (eloquência).

• São aceitas pronúncias variantes por coloquialismo, sotaque ou dicção. No Nordeste é comum a palatização das consoantes "D" e "T", além da abertura das vogais pre-tônicas. No Rio de Janeiro utiliza-se o "S" palatal e o "R" aspirado. Em Minas Gerais as palavras podem ser encurtadas. Em muitas regiões do país permuta-se o som de "E" por "I" (*munícipi*) e "O" por "U" (*léxicu*) no final das palavras. Essas variações devem ser aceitas como corretas.

• No formulário de aplicação, circule "1" se a pronúncia for correta e "0" se a pronúncia for incorreta.

• Em caso de autocorreção considere a última tentativa.

• Um ponto é atribuído a cada palavra pronunciada corretamente (total de 0-40).

1. vo**cê**	0 1	15. igara**pé**	0 1	29. a**tá**vico	0 1
2. ca**fé**	0 1	16. **dó**cil	0 1	30. marzi**pã**	0 1
3. a**çú**car	0 1	17. con**vés**	0 1	31. anti**quí**ssimo [qü]	0 1
4. po**lí**tica	0 1	18. **má**rtir	0 1	32. obo**é**	0 1
5. her**ói**	0 1	19. **câ**ntaro	0 1	33. exe**gé**tico [z]	0 1
6. a**pós**	0 1	20. elo**quê**ncia [qü]	0 1	34. an**tí**tese	0 1
7. al**gué**m [g]	0 1	21. **sí**ncope	0 1	35. **có**rtex [cs]	0 1
8. **tá**xi [cs]	0 1	22. mu**ní**cipe	0 1	36. a**quí**fero [qü]	0 1
9. **pô**ster	0 1	23. **lú**gubre	0 1	37. **lá**tex [cs]	0 1
10. dossi**ê**	0 1	24. **lé**xico [cs]	0 1	38. ar**qué**tipo [k]	0 1
11. cana**pé**	0 1	25. a**má**lgama	0 1	39. exe**quí**vel [z][qü]	0 1
12. fle**xí**vel [cs]	0 1	26. me**lí**fluo	0 1	40. **há**lux [cs]	0 1
13. talis**mã**	0 1	27. **lâ**nguido [g]	0 1		
14. apra**zí**vel	0 1	28. u**nís**sono	0 1		TOTAL: _____