Original Article

Artigo Original

Stimulability: auxiliary measure in the identification of difficulty in speech sounds production

Estimulabilidade: medida auxiliar na identificação de dificuldade na produção dos sons

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Keywords

Speech disorders/therapy
Speech articulation tests
Language development disorders
Speech-language pathology
Verbal behavior

ABSTRACT

Purpose: To analyze the effectiveness of stimulability as a complementary task to the diagnosis of speech sound disorders (SSD), and to describe the performance of children with absent sounds from the phonetic inventory according to stimulable absent sounds, severity, gender, age, and occurrence of different phonological processes. **Methods:** Participants were 130 male and female children with ages between 5 years and 10 years and 10 months, divided into two groups: Research Group (RG), comprising 55 children with SSD; and Control Group (CG), composed of 75 children with no speech and language disorders. Based on participants' performance on the Phonology test, the severity of the disorder was calculated through the Percentage of Consonants Correct – Revised (PCC-R), and the phonetic inventory was verified. The stimulability test was applied to each absent sound from the phonetic inventory, based on the imitation of single words. The RG was subdivided into RG1 (27 children who presented absent sounds) and RG2 (28 children with complete inventory). **Results:** None of the CG children presented absent sounds in the phonetic inventory, while 49% of the RG1 subjects presented absent sounds. There was absence of most language sounds. PCC-R means were lower for RG1, indicating higher severity. In the RG1, 22 children were stimulable, while five were not stimulable to any absent sound. There was association between the most occurring phonological processes and the need for stimulability assessment, indicating that the difficulty to produce absent sounds reflects difficulty with phonological representation. Stimulability is influenced by age, but not by gender. **Conclusion:** The stimulability test is effective to identify stimulable children among those who present absent sounds from their phonetic inventory. Children with SSD and absent sounds have lower PCC-R, and therefore present more severe disorder. Most of the children with absent sounds are stimulable, but may not be stimulable for complex syllable structures or articulatory gestures. The difficulty to produce absent sounds reflects phonological representation deficit. Speech production is influenced by maturation in both boys and girls.

Descritores

Distúrbios da fala/terapia
Testes de articulação da fala
Transtornos do desenvolvimento da linguagem
Patologia da fala e linguagem
Comportamento verbal

RESUMO

Objetivo: Analisar a efetividade da estimulabilidade como prova complementar ao diagnóstico do transtorno fonológico (TF) e descrever o desempenho de crianças com ausência de sons no inventário fonético quanto a sons ausentes estimuláveis, gravidade, gênero, idade e ocorrência de diferentes processos fonológicos. **Métodos:** Participaram 130 crianças de ambos os gêneros, entre 5 anos e 10 anos e 10 meses de idade, distribuídas em dois grupos: Grupo Pesquisa (GP), composto por 55 crianças com TF; e Grupo Controle (GC), composto por 75 crianças sem alterações fonoaudiológicas. A partir da aplicação da prova de Fonologia, foi calculada a gravidade do TF por meio do Percentual de Consoantes Corretas-Revisada (PCC-R) e verificado o inventário fonético. Para cada som ausente do inventário foi aplicada a estimulabilidade em imitação de palavras. O GP foi dividido em GP1 (27 crianças que apresentaram sons ausentes) e GP2 (28 crianças com inventário completo). **Resultados:** Nenhuma criança do GC apresentou som ausente no inventário e no GP1 49% apresentaram sons ausentes. Houve ausência da maioria dos sons da língua. As médias do PCC-R foram menores no GP1, indicando maior gravidade. No GP1, 22 crianças foram estimuláveis e cinco não o foram a qualquer som. Houve associação entre os processos fonológicos mais ocorrentes no TF e a necessidade de avaliação da estimulabilidade, o que indica que a dificuldade em produzir os sons ausentes reflete dificuldade de representação

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Received: 5/10/2011

Accepted: 9/19/2011

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Conflict of interests: None
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fonológica. A estimulabilidade sofre influência da idade, mas não do gênero. **Conclusão:** A prova de estimulabilidade é efetiva para identificar dentre crianças com sons ausentes do inventário, aquelas que são estimuláveis. Tais crianças com TF, que apresentam sons ausentes do inventário, são mais graves uma vez que os valores do PCC-R são mais baixos. As crianças com sons ausentes são estimuláveis em sua maioria, e podem não ser estimuláveis para sons com estrutura silábica ou gesto articulatório complexos. A dificuldade em produzir os sons ausentes reflete dificuldade de representação fonológica. A produção motora da fala demonstrou receber influência da maturação de forma semelhante entre meninos e meninas.

INTRODUCTION

Children with Speech Sound Disorders (SSD) may present difficulties on language and/or on oro-motor speech processing. Diagnostic instruments try to define skills and specific deficits for each subject[1-5].

The measure of speech stimulability aims to detect whether sounds absent from the phonetic inventory are able to be produced after an imitation task[1-5]. It is related to the execution of different gestures involved in sound production[5].

The stimulability test can identify possible difficulties on the articulatory production of missing sounds from the phonetic inventory of a child. When a child have a cognitive linguistic deficit he/she tends to be stimulable, since he/she is not able to produce the sound by him/herself, but he/she produces it after an imitative model. On the other hand the child presenting a specific difficulty to produce necessary articulatory gestures for a sound is not stimulable[6].

The stimulability test is used by 95% of the North-American speech-language pathologists[7], who evaluate this ability by using tasks of syllable and word imitation[2,8-11] associated with the use of sensory cues[12-14]. Some authors use a dynamic evaluation of the stimulability by beginning the test with the application of simple stimuli, and, depending on the child's response, the therapist will be able to define the complexity degree of the next sequence to be tested (sound, syllable, word or sentence)[3,15]. A child is considered to be stimulable when he/she is able to produce at least 10% of the stimuli tested[2,8-11].

Studies about the stimulability from Brazilian Portuguese (BP) liquid consonants demonstrated different responses according to the task that was applied indicating that children with SSD performed better at words imitation followed by picture naming and syllables imitation tasks[16]. It was also observed that both the following vowel to the tested sound[17] plus the use of sensory cues[18] facilitated the sound production. The identification of the error types from the test[19] combined with the acoustic and articulatory characteristics of these sounds was also helpful on the identification of some oro-motor and acoustic parameters that can be used to facilitate the acquisition of each tested sound[20].

Another BP study investigated the relationship between stimulability and the severity of the phonological processes of stops devoicing in children. This research demonstrated that only children with PCC-R below 84% presented absent sounds from their phonetic inventory and among them 66% were stimulable[21]. Regarding the presence of the phonological process of cluster simplification studied in other research 40% of the subjects demonstrated absent sounds and all of them were stimulable[22].

The aim of the present study was to analyze the effectiveness of the stimulability as a complementary tool to the diagnosis of SSD in children by comparing the profiles of stimulable and not stimulable children according to the absent sounds tested, stimulable sounds, severity, gender, age and the occurrence of different phonological processes.

METHODS

Subjects

Research was approved by the Ethics Committee for the Analysis of Research Projects from the Clinical Board of the General Hospital and the School of Medicine of the Universidade de São Paulo, under the number 988/06. Parents signed a Free and Informed Consent to allow child's participation in the study.

Participants were 130 Brazilian Portuguese-speaking male and female children aged between 5 years and 10 years and 10 months. The Research Group (RG) was constituted by 55 children with speech sound disorder (SSD), and the Control Group (CG), by 75 children with no speech and language disorders.

RG children were diagnosed with SSD at the same institution where the study occurred. Inclusion criteria for this group were the presence of phonological processes characterized by errors such as omissions and/or substitutions at the Phonology Test from the Child Language Test ABFW[23] combined or not with written difficulties and the absence of syntactic, semantic or pragmatic difficulties.

Children from the CG were selected from three public schools at the city of São Paulo. Children presenting oral and written language development complaints, phonological disorder (according to the scores proposed at the Phonology Test), speech and language therapy prior to evaluation and scholar complaints associated to social or cognitive difficulties were excluded from the study.

Materials

Phonology and stimulability tests were both recorded using a digital camcorder JVC® 20GB Hard Disk Everio and a digital recorder Panasonic® RR – US360, along with the microphone Evolution 817 Sennheiser®. Transcriptions from both tests were made at the moment that the speech was recorded and re-analyzed after that, based on the recordings.

Procedures

The Percentage of Consonants Correct-Revised (PCC-R)[24] was calculated based on words from the imitation task from the Phonology Test ABFW[23]. The stimulability test was applied to

the sounds absent from the phonetic inventory detected at the same test. The duration from the stimulability test was variable according to the number of absent sounds (mean time of ten minutes per child).

The stimulability test was developed to BP sounds based on literature[3,25,26]. The test consists on an imitation task with seven words with each BP phoneme in initial syllable position (according to the appropriate distribution of the language) combined with the seven oral vowels. In order to test all the 23 sounds there are 195 words including stops and fricatives voiced and devoiced, nasals, liquids, vibrants, glides and sounds in coda position (Appendix 1).

The stimulability test was applied by the first author of this research. Each word was produced once with the examiner seated and positioned in front of the child so the articulatory gestures could be visualized. The child was solicited to repeat each word after the examiner production. The order was: "Repeat the word…".

In order to verify the effectiveness of the test subjects were subdivided into three different groups: control group (CG), a research group (RG1) with 27 children with SSD diagnosis and absent sounds and another research group (RG2) with 28 children with SSD diagnosis without absent sounds from the phonetic inventory. Results were analyzed according to the tested sounds in response to the stimulability test, the number of absent sounds and the number of stimulable sounds for RG1.

For the three groups (CG, RG1 and RG2), the PCC-R was analyzed according to age and gender. For the RG1, analysis was also made for the number of both absent and stimulable sounds and for stimulable and not stimulable subjects. The association between the occurrence of phonological processes and the need for stimulability test application was analyzed for RG1 and RG2.

Scores from 0 (zero) to 2 (two) were created to analyze the responses. Score 0 (zero) for the child that was not stimulable, 1 (one) for the child who was stimulable but produced distortions or 2 (two) for the child that was stimulable and presented correct production of the target sound. A sound was classified as stimulable for 10% of correct productions (correct production from the target sound at least in one word).

Statistic test used to verify the correlation between PCC-R and the number of absent sounds and also between PCC-R and the number of stimulable sounds was Spearman correlation. Kruskal-Wallis test was applied to the comparisons among the distribution of PCC-R for both groups defined by the occurrence of stimulable sounds. Associations between stimulability and phonological processes were checked by Fisher test. Significance level adopted was 0.05.

RESULTADOS

None of the CG children presented absent sounds and, thus, the application of the stimulability test was not necessary. Absent sounds were observed in 49% of the RG subjects (RG1).

Tested sounds and response to the stimulability test

Three children from RG1 (11%) needed to be tested for devoiced stops, nine (32%) for voiced stops, five (18%) for devoiced fricatives, fifteen (53%) for voiced fricatives, nine (32%) for liquids, one (3%) for the velar fricative, four (14%) for the /s/ in coda position and seventeen (61%) for glides. The only sounds that were not omitted and did not need to be tested were the devoiced stop /p/ and the three nasals /m, n, ɲ/.

Two children (67%) were stimulable for the devoiced stops, six (67%) for the voiced stops, two for the devoiced fricatives (40%), nine (60%) for the voiced fricatives, five (55%) for the liquids, one (100%) for the velar fricative, two (50%) for the /s/ in coda position and eleven (65%) for the glides. Children were not stimulable for three sounds: /s/, /ʃ/, and in final syllable position. Only three boys (aged 5 years and 2 months, 6 years and 8 months, and 8 years and 10 months) presented the sound /ʃ/ as an absent sounds and one boy (aged 6 years and 8 months) did not produce /s/ in coda position.

The number of the absent sounds to which stimulability test was applied and the number of stimulable sounds (E≥10%) on RG1 is demonstrated in Table 1. There was no difference either between the mean number of absent sounds and gender (p=0.337) nor for the mean number of stimulable sounds and gender (p=0.980).

Only five children from RG1 were not stimulable: one girl (aged 8 years and 1month – four absent sounds; and four boys (5 years and 10 months old – three absent sounds; 7 years and 11 months old – one absent sound; 8 years old – two absent sounds; and 8 years and 10 months old – two absent sounds.

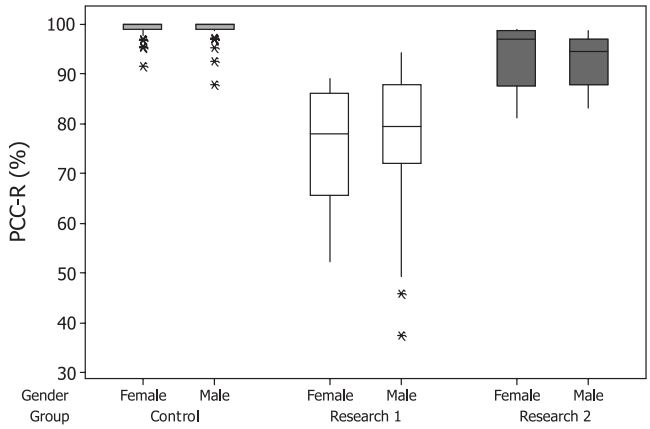
Table 1. Number of absent sounds and stimulable sounds by gender on RG1

Sounds	Gender	n	Mean	SD	Minimum	Median	Maximum
Absents	F	8	4.8	3.0	1	4.5	8
	M	19	3.8	3.2	1	3	13
	Total	27	4.1	3.1	1	3	13
Stimulable	F	8	2.3	1.9	0	1.5	5
	M	19	2.2	2.1	0	2	7
	Total	27	2.2	2.0	0	2	7

Note: F = female; M = male; SD = standard deviation

PCC-R

PCC-R means were higher for CG in comparison to RG1 and RG2. Values were more similar between CG and RG2 than for CG and RG1. Distributions of PCC-R in the three groups (p=0.000) were statistically different with CG values higher than RG1 (p=0.000) and RG2 (p=0.000). The most severe cases (mean PCC-R around 75%) presented absent sounds (RG1) while the less severe (mean PCC-R around 93%) presented all the sounds in their phonetic inventory (RG2). PCC-R values were more homogeneous for CG while for the RG2 they were more homogeneous and higher than RG1 (Figure 1).



Note: PCC-R = Percentage of Consonants Correct – Revised

Figure 1. PCC-R distribution on CG, RG1 and RG2 according to gender

Distribution of PCC-R was not different by gender for CG (p>0.999), for RG1 (p>0.999) and for RG2 (p>0.999). Even though the number of boys (19) was higher than the girls (8) with absent sounds the comparison study using the mean of absent sounds was not different. The mean number of absent sounds was 4.1 and of stimulable sounds 2.2. Age increase was positive correlated to PCC-R for the three groups CG r=0.43 (p=0.000), RG1 r=0.46 (p=0.016) and RG2 r=0.38 (p=0.049).

PCC-R decreased with the increase of the number of absent sounds indicating that these cases were more severe. Spearman coefficient demonstrated an inverse correlation between PCC-R and the number of absent sounds (r=-0.74; p=0.000) but not between PCC-R and the number of stimulable sounds (r=-0.35; p=0.076).

There was no difference between stimulable children to at least one sound and not stimulable ones (p=0.189).

Association between phonological processes and stimulability

Table 2 demonstrates the association between the occurrence of phonological processes and stimulability. Association was made between the percentage of subjects from RG1 and RG2 who presented phonological processes and the need for stimulability test application. Statistical analysis indicated difference for the following phonological processes: palatal fronting (PF), liquids simplification (LS), stops devoicing (SD) and fricatives devoicing (FD) for both groups. The percentage of phonological processes occurrence was higher for RG1 than for RG2. For the velar backing (VB) and gliding simplification (GS) p-values were marginal (between 0.005 and 0.10).

DISCUSSION

This study demonstrated the effectiveness of stimulability test to detect difficulties at sounds production in children with SSD by analyzing the absent sounds from the phonetic inventory, the number of absent and stimulable sounds, severity, age, gender and the occurrence of phonological processes.

Phonetic inventory is usually complete at five years of age in normally developing children[23]. This study indicated that children with SSD at the same age may not present all the sounds since few children from RG presented absent sounds during evaluation.

The only sounds to which stimulability test was not applied were the bilabial devoiced obstruents and the three nasals. This is an interesting result for BP since such classes of sounds are usually acquired by the age of two years old[23].

Children were similarly stimulable to almost every tested sound with little exceptions: the devoiced fricative /s/ and /ʃ/ at coda position. Speech is a complex linguistic process and even though the neural representation of speaking gestures is associated to production it is inseparable from the linguistic system[27]. Maybe because of the structure involved at the /s/ production in coda position (CVC) children with SSD were not stimulable for this sound. Besides being a sound of later acquisition during language development (four years and six months of age) the /ʃ/ sound demands complex articulatory gestures to be correctly produced (the tongue body elevation and lip rounding).

The verification of the need for stimulability test application was based on the phonetic inventory. Younger children presented more absent sounds. The age influence was also observed in English[9] indicating that maturity interferes at the ability of producing sounds once it is also dependent on the development of oral-motor control which involves the synergy between lips and jaw movements during the vocal tract constriction[28]. Maturation process of the articulators is sequential from lips to pharynx and such process is even more complex to lips and tongue movement[29]. Oral cavity is full of cutaneous and synesthetic sensors and this information is used by the speaker to control the appropriate movements for the sound production[27].

The production of a sound demands subtlety of articulation and specific motor and sensorial abilities[5,28] that requires the child's maturation in both cognitive and motor terms[18]. Growth causes slow and significant changes on shape and size of the articulators which causes constant adaptation from motor control[27]. In the cases where such control is not used to produce the sounds precisely children present some approximation strategies which are expressed by distortions, omissions or substitutions indicating both the impossibility of production and a failure at the sounds' knowledge[29]. The index PCC-R was effective on differentiating subjects with from subjects without SSD and those with absent sounds.

At the present study the more severe the child the higher

Table 2. Occurrence of phonological processes in RG1 and RG2

Groups	No		Yes		Total	
	n	%	n	%	n	%
Syllable reduction						p=1.0
RG 1	27	100.00	0	0	27	100.00
RG 2	28	100.00	0	0	28	100.00
Total	55	100.00	0	0	55	100.00
Consonantal cluster						p=0.422
RG 1	23	85.20	4	14.80	27	100.00
RG 2	26	92.90	2	7.10	28	100.00
Total	49	89.10	6	10.90	55	100.00
Consonantal cluster						p=0.352
RG 1	24	88.90	3	11.10	27	100.00
RG 2	27	96.40	1	3.60	28	100.00
Total	51	92.70	4	7.30	55	100.00
Velar backing						p=0.051
RG 1	23	85.20	4	14.80	27	100.00
RG 2	28	100.00			28	100.00
Total	51	92.70	4	7.30	55	100.00
Palatal backing						p>0.999
RG 1	26	96.30	1	3.70	27	100.00
RG 2	26	92.90	2	7.10	28	100.00
Total	52	94.50	3	5.50	55	100.00
Velar fronting						p=0.252
RG 1	22	81.50	5	18.50	27	100.00
RG 2	26	92.90	2	7.10	28	100.00
Total	48	87.30	7	12.70	55	100.00
Palatal fronting						p=0.040
RG 1	19	70.40	8	29.60	27	100.00
RG 2	26	92.90	2	7.10	28	100.00
Total	45	81.80	10	18.20	55	100.00
Liquid simplification						p=0.007
RG 1	10	37.00	17	63.00	27	100.00
RG 2	21	75.00	7	25.00	28	100.00
Total	31	56.40	24	43.60	55	100.00
Glide simplification						p=0.080
RG 1	5	18.50	22	81.50	27	100.00
RG 2	12	42.90	16	57.10	28	100.00
Total	17	30.90	38	69.10	55	100.00
Final consonante deletion						p=0.285
RG 1	12	44.40	15	55.60	27	100.00
RG 2	17	60.70	11	39.30	28	100.00
Total	29	52.70	26	47.30	55	100.00
Stop voicing						p>0.999
RG 1	26	96.30	1	3.70	27	100.00
RG 2	27	96.40	1	3.60	28	100.00
Total	53	96.40	2	3.60	55	100.00
Fricative voicing						p=1.0
RG 1	27	100.00	0	0	27	100.00
RG 2	28	100.00	0	0	28	100.00
Total	55	100.00	0	0	55	100.00
Stop devoicing						p=0.015
RG 1	9	33.30	18	66.70	27	100.00
RG 2	19	67.90	9	32.10	28	100.00
Total	28	50.90	27	49.10	55	100.00
Fricative devoicing						p=0.014
RG 1	7	25.90	20	74.10	27	100.00
RG 2	17	60.70	11	39.30	28	100.00
Total	24	43.60	31	56.40	55	100.00

* Significant values (p≤0.05) – Fisher's Exact test

Note: RG 1 = research group 1; RG 2 = research group 2

was the number of absent sounds. It is important to notice that most part of them were stimulable demonstrating that the sound is able to be produced after an imitation task but not spontaneously. Stimulability is considered as an evidence of the structural integrity from speech mechanisms as it results from the capacity to produce sounds and reveals the phonological knowledge of a phoneme by imitating it[2].

PCC-R was age related indicating a gradual growth on precision and motor/articulatory stability[30]. This finding was different than those in English previously reported by the authors from the original instrument[24] .

The association between stimulability and gender was not confirmed. PCC-R distribution was similar to CG, RG1 and RG2. The fact that PCC-R is not influenced by gender confirms the proposals of some studies that indicate this index as a valid measure to compare speakers with different characteristics[24]. Findings from the present research suggest that oro-motor production is influenced by maturation for both boys and girls.

The fact that 22 children were stimulable suggests that children with SSD with absent sounds have no difficulty in producing a sound but to use it at communicative environments indicating a specific difficulty at word selection on the lexicon, at morpho-semantic-syntax organization or at the phonological/phonetic programming.

The evidence that children who present absent sounds are more severe associated to the fact that most of them are stimulable indicates the such deficits are related to the mental representation of a sound[6]. On the other hand the five children who were not stimulable demonstrated specific difficulties on the production of selected sounds (the maximum of four) and such aspect must be considered when the therapist is about to choose the most appropriate therapeutic model.

Children to whom stimulability test was applied demonstrated to present phonological processes related to the class of palatals, liquids and sonorants as well as marginal values to velars and glides. Children with SSD having a specific deficit on production present more difficulty associated to palatals and liquids which are the latest sounds to be acquired and the ones requiring more complex gestures on their execution. Devoicing is a frequent phonological process in BP and such evidence indicates that maybe these specific sounds demand some articulatory gestures that sometimes children with SSD are not able to produce.

Phonological processes associated to the tests used at this research are the ones that most occur in children with SSD. Phonology test is used to diagnose SSD while stimulability test is used to detail specific difficulties. The evaluation of children with SSD by using additional tests such as stimulability is helpful since they provide detailed information about the linguistic organization and oro-motor speech commitments that need to be focused at the intervention.

There are many reasons for a child not to correctly produce speech sounds[6] and this research contributed to the identification of the different patterns that characterizes BP speaking-children with SSD. Being stimulable is an evidence that the child is able to produce an absent sound by imitation and that the specific difficulty is based on the use of such sounds in communicative environments. Not being stimulable indicates a specific difficulty on producing speech sounds. Based on the results from this research achieving an accurate diagnosis is important to approach the procedures applied by the speech clinician to the evidence based practice aspects used to guide clinical decisions.

CONCLUSION

Stimulability test applied was effective on the identification of stimulable children among those presenting absent sounds. Children with SSD with absent sounds are more severe since their PCC-R are lower. The most part of the children with absent sounds are stimulable but may not be stimulable depending on the syllable structure or the complex articulatory gestures involved at the production.

The difficulty on producing absent sounds reflects the difficulty with the phonological representation of the sound. Oro-motor speech production demonstrated to be influenced by the maturation for both boys and girls at the same proportion.

ACKNOWLEDGMENTS

This research was supported by research grants (05/50465-3 e 06/56997-0) from the São Paulo Research Foundation (*Fundação de Amparo à Pesquisa do Estado de São Paulo* – FAPESP). We also thank Luciana Oliveira Pagan-Neves, PhD, for the English version of this paper.

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Appendix 1. Words used at the stimulability test

Stops	p	b	t	d	k	g
	palhaço	baleia	tarefa	data	cavalo	galinha
	pêssego	bexiga	telhado	desenho	querida	guerreiro
	pega	bela	terra	dela	quero	guerra
	pirata	bicho	tijolo	direita	quilo	guia
	polegar	bolo	toalha	doce	coruja	gorila
	pote	bola	tosse	dose	cola	gola
	pula	buraco	tubarão	duro	cubo	gulosa
Fricatives	f	v	s	z	ʃ	ʒ
	fala	vaso	sapo	zabumba	xale	janela
	felizes	velhota	cena	zebra	chegada	gelo
	febre	vela	seta	zero	chefe	jegue
	filhote	violão	cidade	ziper	chinelo	girafa
	folhinha	você	sopa	vaso	chocalho	jogo
	foca	voto	sólido	camisola	chove	joga
	futebol	vulcão	suco	zulu	chuveiro	juba
Nasals	m	n	ɲ			
	mágico	nariz	galinha			
	melhor	nenhum	desenhe			
	médica	nela	conhece			
	mico	ninho				
	mochila	nome	parquinho			
	mola	nove	minhoca			
	mula	número	nenhuma			
Liquids	l	ɾ	ʎ			
	lata	girafa	palhaço			
	leão	árvore	bilhete			
	leque	jacaré	colher			
	lixo	lambari	folhinha			
	lobo	chuveiro	vermelho			
	loja	farofa	filhote			
	lua	coruja	orelhudo			
Vibrant	r					
	rato					
	retalho					
	régua					
	risada					
	robô					
	rosa					
	rua					

Sounds in coda position	R	S
	árvore	rasteira
	vermelho	escola
	perto	festa
	irmão	listada
	portão	rosto
	corda	gosta
	urso	susto

... continue

... continuation

Glides	pɾ	bɾ	tɾ	dɾ	kɾ	gɾ	fɾ	vɾ
	prato	bravo	trave	dragão	crachá	grave	fraco	livra
	presentes	febre	treino	pedreiro	creme	grêmio		livre
	prego	breve	treva	André	creche	greve		
	primeira	briga	trilha	Rodrigo	crime	grilo	frito	
	procure	broa	tropeçou		crocodilo	grosso		livro
	próximo	broche	troca	droga		grossa		
		bruxa			cru	gruda	fruta	
Glides	pl	bl	kl	gl	fl			
	placa	nublado	classe	glacê	flauta			
	completa	tablete	chiclete		flecha			
		público	clima					
	diploma	Pablo		globo	florido			
		bloco	cloro	glória	floco			
	pluma	blusa	clube	iglu	flutua			