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Visual stimuli and written production of deaf signers

Estímulos visuais e produção escrita de surdos sinalizadores

ABSTRACT

Purpose: To verify the interference of visual stimuli in written production of deaf signers with no complaints regarding reading and writing. **Methods:** The research group consisted of 12 students with education between the 4th and 5th grade of elementary school, with severe or profound sensorineural hearing loss, users of LIBRAS and with alphabetical writing level. The evaluation was performed with pictures in a logical sequence and an action picture. The analysis used the communicative competence criteria. **Results:** There were no differences in the writing production of the subjects for both stimuli. In all texts there was no title and punctuation, verbs were in the infinitive mode, there was lack of cohesive links and inclusion of created words. **Conclusion:** The different visual stimuli did not affect the production of texts.

RESUMO

Objetivo: Verificar a interferência de estímulos visuais na escrita de surdos sinalizadores sem queixas de leitura e escrita. **Métodos:** O grupo de pesquisa foi composto por 12 alunos com escolaridade entre o quarto e o quinto ano do ensino fundamental, com perda neurossensorial de grau severo ou profundo, usuários de Língua Brasileira de Sinais (LIBRAS) e com nível alfabético de escrita. Os sujeitos foram orientados a elaborar um texto para cada estímulo visual apresentado: figuras de sequência lógica e uma figura de ação. A análise foi realizada seguindo-se os critérios das competências comunicativas. **Resultados:** Não foram observadas diferenças na produção escrita dos sujeitos da pesquisa para ambos os estímulos. Observou-se ausência de título e pontuação, verbos no modo infinitivo, ausência de elos coesivos e inclusão de palavras inventadas. **Conclusão:** Os diferentes estímulos visuais não interferem na produção textual dos sujeitos.

Study conducted at the Reading and Writing Research Laboratory, Department Physical Therapy, Speech-Language Pathology and Audiology, and Occupational

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Conflict of interests: None

INTRODUCTION

Deaf users of sign language may have impaired written production and decreased vocabulary due to the structural characteristics of the sign language which differs from written Portuguese that results in a difficulty in relating one-another^(1,2). This way, to deaf signers, the acquisition of written language uses mainly the visual channel⁽³⁾.

Thus, it is important to develop strategies that might improve the use of written Portuguese by this group once it may provide better academic development and social inclusion. Accordingly, this study aimed to verify the influence of visual stimuli on the writing production of deaf signers with no complaints regarding reading and writing.

METHODS

This research was approved by the Research Ethics Committee of the School of Medicine, Universidade de São Paulo (CEP-FMUSP) under protocol number 003/10 and it was performed at a special education school for deaf persons. All parents/caretakers signed the consent form.

Participants were 12 students aged between 9-13 years, of both genders. The inclusion criteria were: severe or profound sensorineural hearing loss; absence of neurological, behavioral and cognitive disorders; alphabetical writing level; lack of complain regarding reading and writing acquisition (any complaint from parents or teachers regarding the academic performance of students).

In order to confirm the inclusion criteria, the teachers answered to a questionnaire concerning the academic performance of the students indicating if that performance was appropriate to their age and schooling level. The parents answered to an interview and all the subjects were screened by a speech-language pathologist.

Experimental tests

All students were instructed to write a text based on two different stimuli: picture in logical sequence and an action picture. The instruction was given by a deaf instructor, in signal language, through a recorded video. There was no instruction concerning the production of specific textual genres. The subjects were divided in small groups in order to avoid communication between them.

Following it a sequence of four pictures printed in paper, selected from an international study⁽⁵⁾ was presented in order to the prompt the subjects' first written text. In another moment it was shown an action picture selected from a book used in the language field^(6,7) for the purpose of prompting the production of a second text.

The written productions were analyzed according to the Communicative Competences⁽⁸⁾ (Generic, Linguistic and Encyclopedic) adapted in a protocol by a Brazilian study (Appendix 1). Generic Competence is the ability to produce texts in the scope of certain number of genres. Linguistic Competence is related to the language domain and Encyclopedic

Competence refers to the knowledge about the world⁽⁸⁾.

Each written production was qualitatively and quantitatively analyzed by five judges with experience in the reading and writing field and previously trained by the researchers. All judges analyzed the written productions individually. The divergent cases were discussed during a meeting. The quantitative analysis used the McNemar test with significance level of 5%.

RESULTS

Concerning Generic Competence, the narrative genre predominated for both stimuli used.

Regarding Encyclopedic Competence (Table 1) and Linguistic Competence (Table 2) the statistical test was only applied to the following items: Topic Fidedignity, Use of Inferences, Punctuation and Global Cohesion and there were no differences to both stimuli presented. About the remaining items the statistical test could not be applied due to its own limitations.

DISCUSSION

It is known that the use of images is considered a strong support in working with deaf people because they need the visual support to grasp the meaning⁽⁵⁾. Thus, this study confirms this data considering that both stimuli elicited the production of written texts by deaf signers.

It is possible to state that this study provides an innovative contribution in proposing a new way to analyze written productions using an adaptation⁽⁹⁾ of discourse analysis that uses the Communicative Competence concept. This allowed a more precise characterization of the potentials and needs of the subjects of this study, which can allow better therapeutic targeting.

In the written text, the predominance of narratives in Generic Competence may be due to the fact that this is one of the first textual genres taught at school⁽¹⁰⁾ and can be found in children's book⁽¹¹⁾.

Disorders in Encyclopedic Competence indicates that deaf persons have little knowledge about the world and establish a certain distance from reading and writing revealing immaturity in what refers to the written language⁽¹²⁻¹⁴⁾.

Regarding Linguistic Competence, the orthographic errors and the lack of cohesion confirm findings of other studies^(9,10,14). This may occur because frequently teachers of deaf students provide words and phrases already written that meet the morphosyntax requirements of the Portuguese⁽¹³⁾, but does not allow its creative use.

A possible explanation for the similarity between the written productions of the subjects from this study may be because the group of pictures in logical sequence does not present a specific event but each picture represented isolated action events which led to likeness with the action picture. That can be a limitation of this study. Furthermore, this data do not allow generalization due to the small sample and it indicates the need of others researches in this field with larger samples. It should be noted the need of studies in order to make a better selection of pictures used as a prompting element, since the pictures used

Table 1. Comparison of the items of encyclopedic competence on written productions based on pictures in logical sequence and action pictures

Encyclopedic competence		Sequence						Total		p-value	
		0		1		2		n	%		
		n	%	n	%	n	%				
Encyclopedic knowledge	Action	0	0	0.0	3	25.0	0	0.0	3	25.0	Not applicable
		1	1	8.3	7	58.3	0	0.0	8	66.7	
		2	0	0.0	1	8.3	0	0.0	1	8.3	
	Total	1	8.3	11	91.7	0	0.0	12	100.0		
Reliability to the theme	Action	0	1	8.3	1	8.3	1	8.3	3	25.0	0.284
		1	0	0.0	4	33.3	4	33.3	8	66.7	
		2	0	0.0	1	8.3	0	0.0	1	8.3	
	Total	1	8.3	6	50.0	5	41.7	12	100.0		
Use of title	Action	0	12	100.0	0	0.0	0	0.0	12	100.0	Not applicable
		1	0	0.0	0	0.0	0	0.0	0	0.0	
		2	0	0.0	0	0.0	0	0.0	0	0.0	
	Total	12	100.0	0	0.0	0	0.0	12	100.0		
Intertextuality	Action	0	12	100.0	0	0.0	0	0.0	12	100.0	Not applicable
		1	0	0.0	0	0.0	0	0.0	0	0.0	
		2	0	0.0	0	0.0	0	0.0	0	0.0	
	Total	12	100.0	0	0.0	0	0.0	12	100.0		
Organization of ideas	Action	0	3	25.0	4	33.3	0	0.0	7	58.3	Not applicable
		1	0	0.0	4	33.3	1	8.3	5	41.7	
		2	0	0.0	0	0.0	0	0.0	0	0.0	
	Total	3	25.0	8	66.7	1	8.3	12	100.0		
Use of inference	Action	0	10	83.3	0	0.0	0	0.0	10	83.3	1,000
		1	1	8.3	1	8.3	0	0.0	2	16.7	
		2	0	0.0	0	0.0	0	0.0	0	0.0	
	Total	11	91.7	1	8.3	0	0.0	12	100.0		
Vocabulary	Action	0	0	0.0	0	0.0	0	0.0	0	0.0	Not applicable
		1	0	0.0	1	100.0	0	0.0	1	100.0	
		2	0	0.0	0	0.0	0	0.0	0	0.0	
	Total	0	0.0	1	100.0	0	0.0	1	100.0		

McNemar test (p<0.05)

Table 2. Comparison of the items of linguistic competence on written production based on pictures in logical sequence and action pictures

Linguistic competence		Sequence						Total		p-value	
		0		1		2		n	%		
		n	%	n	%	n	%				
Length of the text	Action	0	3	25.0	2	16.7	0	0.0	5	41.7	Not applicable
		1	3	25.0	2	16.7	0	0.0	5	41.7	
		2	2	16.7	0	0.0	0	0.0	2	16.7	
	Total	8	66.7	4	33.3	0	0.0	12	100.0		
Punctuation	Action	0	4	33.3	1	8.3	0	0.0	5	41.7	0.625
		1	3	25.0	4	33.3	0	0.0	7	58.3	
		2	0	0.0	0	0.0	0	0.0	0	0.0	
	Total	7	58.3	5	41.7	0	0.0	12	100.0		
Orthography	Action	0	0	0.0	2	16.7	0	0.0	2	16.7	Not applicable
		1	0	0.0	3	25.0	5	41.7	8	66.7	
		2	0	0.0	1	8.3	1	8.3	2	16.7	
	Total	0	0.0	6	50.0	6	50.0	12	100.0		
Global cohesion	Action	0	8	66.7	1	8.3	0	0.0	9	75.0	1.000
		1	1	8.3	2	16.7	0	0.0	3	25.0	
		2	0	0.0	0	0.0	0	0.0	0	0.0	
	Total	9	75.0	3	25.0	0	0.0	12	100.0		

McNemar test (p<0.05)

in this study induced predominantly the production of texts with narrative genre.

CONCLUSION

The visual stimuli did not influence the written production of the deaf subjects. This data might indicate new paths to the speech language pathology practice and denotes the importance of using multiple stimuli for deaf people in order to improve the use of the written Portuguese by them. Furthermore this study proposes a new way to analyze the written production.

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Appendix 1. Classification and score criteria of written productions according to Lima and Cárnio (2007)⁽⁹⁾

Competence	Description	Classification	Score
Generic	Discourse type	Narrative:	
		Report:	
		Argumentation:	
		Exposure:	
		Description:	
Encyclopedic	Encyclopedic knowledge	Knowledge of the topic	2 points
		Partial knowledge of the topic	1 point
		No knowledge of the topic	0 point
	Reliability to the theme	Topic maintenance	2 points
		Partial topic maintenance	1 point
		No topic maintenance	0 point
	Title use	Use of title related to text production	2 points
		Use of title not related to text production	1 point
		No title	0 point
	Intertextuality	Present	2 points
		Partially present	1 point
		Absent	0 point
Organization of ideas	Adequate	2 points	
	Partially adequate	1 point	
	Inadequate	0 point	
Organization of ideas	Adequate	2 points	
	Partially adequate	1 point	
	Inadequate	0 point	
Vocabulary	Complex	2 points	
	Simple	1 point	
	Inadequate	0 point	
Linguistic	Text extension	Long: 5 or more paragraphs	2 points
		Medium: 2 to 4 paragraphs	1 point
		Short: 1 paragraph	0 point
	Punctuation	Sufficient and adequate in most paragraphs	2 points
		Insufficient or inadequate	1 point
		Absent	0 point
	Orthography	Up to 2 orthographic errors	2 points
		From 2 to 5 orthographic errors	1 point
		More than 5 orthographic errors	0 point
	Global cohesion	Present	2 points
Partially present		1 point	
Absent		0 point	