Original Article

Artigo Original

Narrative and orthographic writing abilities in Elementary School students: characteristics and correlations

Habilidades ortográficas e de narrativa escrita no ensino fundamental: características e correlações

Juliana Faleiros Paolucci Bigarelli[1]
Clara Regina Brandão de Ávila[2]

Keywords

Handwriting
Child
Language tests
Writing
Educational status

ABSTRACT

Purpose: To characterize, according to the school grade and the type of school (private or public), the performance on orthographic and narrative text production in the writing of Elementary School students with good academic performance, and to investigate the relationships between these variables. **Methods:** Participants were 160 children with ages between 8 and 12 years, enrolled in 4th to 7th grades Elementary School. Their written production was assessed using words and pseudowords dictation, and autonomous writing of a narrative text. **Results:** Public school students had a higher number of errors in the words and pseudowords dictation, improving with education level. The occurrence of complete and incomplete utterances was similar in both public and private schools. However, 4th graders presented more incomplete statements than the other students. A higher number of overall microstructure and macrostructure productions occurred among private school students. The essential macrostructures were most frequently found in the later school grades. The higher the total number of words in the autonomous written production, the higher the occurrence of linguistic variables and the better the narrative competence. There was a weak negative correlation between the number of wrong words and the total of events in text production. Positive and negative correlations (from weak to good) were observed between different orthographic, linguistic and narrative production variables in both private and public schools. **Conclusion:** Private school students present better orthographic and narrative performance than public school students. Schooling progression influences the performance in tasks of words' writing and text production, and the orthographic abilities influence the quality of textual production. Different writing abilities, such as orthographic performance and use of linguistic elements and narrative structures, are mutually influenced in writing production.

Descritores

Escrita manual
Criança
Testes de linguagem
Redação
Escolaridade

RESUMO

Objetivo: Caracterizar, de acordo com o ano escolar e a rede de ensino, o desempenho ortográfico e de produção textual da escrita de escolares do Ensino Fundamental, com bom aproveitamento acadêmico, e investigar as relações entre essas variáveis. **Métodos:** Participaram 160 crianças, entre 8 e 12 anos de idade, alunos do 4º ao 7º anos do Ensino Fundamental. Todos foram avaliados quanto à produção escrita, por meio de ditado de palavras e pseudopalavras e da escrita autônoma de texto narrativo. Computaram-se os erros ortográficos, os números de palavras, por classe gramatical, e os elementos de narrativa textual utilizados nas produções. **Resultados:** Escolares da rede pública apresentaram mais erros no ditado de palavras e pseudopalavras, com melhora de desempenho com o avanço da escolaridade. No entanto, a ocorrência de enunciados completos e incompletos mostrou-se semelhante quando comparadas as redes de ensino. Escolares do 4º ano apresentaram mais enunciados incompletos que os demais. Quanto às produções de microestruturas e macroestruturas gerais, maior número destas foi apresentado pelos escolares da rede particular. As macroestruturas essenciais foram mais frequentes nos anos mais avançados. Quanto maior o número de palavras escritas na produção autônoma, maior a ocorrência das variáveis linguísticas e melhor a competência narrativa. Houve correlação negativa e fraca entre o número de palavras erradas e o total de eventos na produção textual. Foram observadas correlações positivas e negativas (de fracas a boas) entre diferentes variáveis ortográficas, linguísticas e de produção narrativa em ambas as redes. **Conclusão:** Os escolares da rede particular apresentam melhor desempenho ortográfico e narrativo que os da rede pública. A progressão da escolaridade influencia o desempenho nas tarefas de escrita de palavras e produção textual e as capacidades ortográficas influenciam a qualidade da produção textual. Diferentes habilidades de escrita como desempenho ortográfico e uso de elementos linguísticos e de estruturas narrativas influenciam-se mutuamente na produção escrita.

Correspondence address:
Juliana Faleiros Paolucci Bigarelli
Tv. Timbó, 1890/811, Marco, Belém (PA), Brasil, CEP: 66087-128.
E-mail: jfpaolucci@hotmail.com

Received: 7/7/2010

Accepted: 12/28/2010

Study conducted at the Graduate Program (Masters degree) in Human Communication Disorders, Speech-Language Pathology and Audiology Department, Universidade Federal de São Paulo – UNIFESP – São Paulo (SP), Brazil.
(1) Graduate Program (Masters degree) in Human Communication Disorders, Universidade Federal de São Paulo – UNIFESP – São Paulo (SP), Brazil.
(2) Speech-Language Pathology and Audiology Department, Universidade Federal de São Paulo – UNIFESP – São Paulo (SP), Brazil.

INTRODUCTION

The learning of reading and writing is fundamental for the learning of other academic competences. This importance does not only refer to the orthographic and alphabetic code domain, but also to the many capabilities and connections of several cognitive and linguistic levels involved in the learning process and in the use of reading and writing. In general, the main concern of educational systems is focused on reading proficiency – i.e. reading with comprehension and critical reading. Scientific societies dedicated to the study of reading strive to identify the best conditions for teaching and learning from the most comprehensive perspective – socio-cultural domain – to the more specific one – intrinsic characteristics of the school or the learner.

On the other hand, studies that investigate writing proficiency are less numerous regarding the clinical investigations of failure. As an example, the clinical investigations of text production tentative are more accustomed to investigate changes in phonological processing, which is the fundamental basis of learning the written alphabetic system[1-5] or orthographic learning[6-11]. However, the use of writing is more comprehensive than that. The development of a coherent text requires other linguistic, metalinguistic and communicative resources. Competence is necessary in the use lexical, semantic and grammatical elements to allow the production of content organized according to a network of causal chains that can effectively express the intention of the writer. Therefore, it is necessary that the texts are written to achieve pre-established goals, fulfilling different communication and interpersonal relations as well as social, educational, institutional, and government functions.

The different skills involved in the complex process of writing develop and improve over the school years. This process can be more or less rapidly depending on the particular conditions of the learner, the teaching method and the demands and offers of the socio-cultural environment. The fact is that the skills related to orthographic coding should lead the learner to automatically recognize morphemes or complete words and use this knowledge to produce correct written spelling. When these recognition mechanisms are not automatic, they may overload the learner, who ends up spending more time and attention in activities of planning and organizing the correct spelling in his own writing. Thus, the cognitive activities of textual construction are consequently poorly executed and may impair the quality of production. As the encoding processes become automatic, the learner is able to more easily produce a text and display better skills at writing words and sentences. This way, the written discourse also develops[12].

The number of ideas described in the written composition – as well as their organization, planning and structuring – and the realm of cohesive and coherent use of different items and linguistic categories (lexical-semantic and syntactic, for example) are also indispensable for the construction of propositions, i.e. utterances with meaning. As a consequence, these may be used as indicators of text quality.

Previous findings are unanimous in attesting that the school system and the school grade interfere with writing performance. However, it is known that different skills involved in written production, as well as in other instances of human language, influence each other and such interference may not be as effective. These assumptions led to the definition of the purposes of the current study which were to characterize, according to the school grade and school system type, the orthographic performance and textual production of Elementary School students with good academic achievement, and to investigate the relationships between these variables.

METHODS

This study was approved by the Research Ethics Committee of Universidade Federal de São Paulo (UNIFESP) under protocol number 0827/06.

Sample selection

At the beginning of the first school semester, 178 students (83 boys and 95 girls) were evaluated. The students were between 8 and 12 years of age and were regularly enrolled in the 4th, 5th, 6th and 7th grades of Elementary Education (EE) of different public and private schools of the cities of São Paulo and Santana do Parnaíba.

The students were first referred by their teachers who were asked to select children with better academic performance according to the following criteria: absence of complaints or evidence related to deficits in hearing, vision and/or corrected hearing and visual difficulties; absence of complaints or evidence related to neurological, behavioral or cognitive disorders; absence of complaints or evidence related to difficulties of reading and writing and academic difficulties; no indication of retention in school history.

A Speech and Language screening was carried out with the students referred by the teachers in order to assure the inclusion criteria and provide information about the writing reception and production of the participants. The sample was composed only by students who passed the Speech and Language screening[13] and presented the free and informed consent forms signed by their parents or guardians. Twenty children from each grade and school system were selected, totaling 160 students included in the study sample.

Parents and teachers of students who failed the screening were oriented on the importance of conducting comprehensive Speech and Language assessment. They also received information and/or referrals to specialized services.

Procedures

Data collection was performed during the first school year semester, in two meetings: one for Speech and Language screening and one for assessing writing. The duration of assessments varied according to the permission given by each school, aiming minor prejudice of the academic activities of students. All procedures were individually performed in a silent room. The 160 students were evaluated for their written production, with specific writing tasks on dictation of words and pseudowords

and text production. The materials used were pencil, A4 paper sheets. The participants also had the permission to use of rubber.

The orthographic performance was analyzed only from writing after dictation of a list of 35 words (*pato, fada, pito, diva, mesa, carro, jogador, feno, boné, chuteira, peixinho, torneira, fingir, altura, campeão, letreiro, árvore, atrás, assistir, gravidez, vassoura, horário, guerrilha, próximo, anzol, negócio, detectar, frequente, cresceram, exagerou, sebo, sentença, magnífico, excedeu, flexível*) and a list of 21 pseudowords (tupa, nusa, dumaz, tavor, dofé, melha, chediza, morja, praixo, andaça, fliro, balsomão, cinhela, bunfe, daguite, virru, zosvibe, queuci, jiborá, brossudam, flômina). Both lists were balanced[14,15] for Brazilian Portuguese orthographic rules[13], based on familiarity of words – identified with the help of a group of elementary school teachers, from the textbooks used at the time of data collection - and extension (disyllabic and trisyllabic).

After the words and nonwords dictation tasks, each student was asked to write a narrative which was elicited from the presentation of a sequence of five computerized figures adapted[17] from the children's story "A Pedra no Caminho"[16]. First these images sequentially appeared on the computer screen and following this presentation they appeared all together on the screen and remained available to the student for approximately two minutes. The images were then removed at the end of the presentation and the student was requested to start the written production. The images could be restated upon request by the student before the start of writing, however for no more than three times.

Analysis of collected materials

The analysis either followed the criteria established in the literature or was specifically developed for the current study[11,13,18]. The following possibilities of orthographic errors were considered: errors by improper segmentation; omissions or additions of letters; changes in the ordering of letters or syllables; errors in coding of context-independent graphemes; confusion in coding voiced or voiceless phonemes for their equivalent; confusion in the coding of the endings -am, and -ão; errors of multiple representations; coding with support of speech; generalization of rules; confusion in the encoding between similar letters; defy the rules of graphic accents; complex errors; denials; others. All errors were analyzed but, for this study, the total number of incorrect words and pseudowords were computed.

The production of narratives was analyzed for linguistic proficiency and for the narrative structure. The above cited events (from all possibilities provided by the figures) and the pertinence to the macro or microstructure in the text were considered.

The following elements were computed in the analysis of linguistic competence[19] of the narratives: total number of words – including all grammatical classes and repeated words; total number of nouns; total number of verbs – including all verbs in the infinitive or other tenses besides past tense; total number of verbs in the past tense (characterizing the productions of narrative structures); total number of adjectives; number and discrimination of temporal markers – *quando, então, depois e antes* (when, then, after and before); number of complete utterances (units that presented a conjugated verb as center); number of incomplete utterances (units that did not present a conjugated verb as center, but expressed an idea).

A panel of two Speech Language Pathologists was constituted for the analysis of events. The panel identified, in all 160 narratives, events pertaining to the macrostructure (ideas considered as essential or general) or microstructure (less relevant details) of history[20,21]. Next, the narratives produced by students were read and analyzed by a second panel composed by three different Speech Language Pathologists instructed to individually carry out the mapping of micro and macrostructures presented in the 160 narratives (the structure was considered as present in the text production when there was a 100% percentage agreement among the panel members). This analysis determined the identification of micro and macrostructures produced by each student.

Analysis of Variance (ANOVA) and Pearson's correlation coefficient (c) were used on the statistical analysis. For the Pearson's correlation coefficient values lower than 0.40 indicated a weak correlation, values between 0.40 and 0.70 indicated a moderate correlation, values between 0.70 and 0.90 indicated a good correlation, and values above 0.90 indicated great correlation.

RESULTS

Students from Public Schools exhibited more errors in writing words ($p<0.0001$) and pseudowords ($p=0.0008$) than the students from Private Schools (Table 1). When investigating only the grade, the 4th graders exhibited the highest number of word errors ($p<0.0001$). A similar performance was observed for pseudowords. The analysis of the school system and school grade effects revealed differences in performance between students of 4th and 7th grades from Public Schools and their respective peers in Private Schools. The Public School students exhibited more errors in the writing of words ($p=0.0225$) and pseudowords ($p=0.0453$) (Table 1).

The analysis of the number of utterances showed no differences in the carried out comparisons. One exception was the number of incomplete utterances which was higher on the 4th grade ($p=0.0343$) of both Public and Private school systems (Table 2).

Differences in the number of microstructures ($p=0.0203$) and overall macrostructures ($p=0.0003$) was observed only when the school systems were compared, without considering the school grade. A higher number of productions was observed for students from Private Schools. When only the grade was analyzed, the comparisons showed similar performance for the 4th and 5th grades, and for 6th and 7th grades for the essential macrostructures. The occurrence of these structures was significantly more frequent in more advanced grades ($p<0.0001$) (Table 3).

Positive and negative correlations, from weak to good, were observed among the different variables of orthographic errors, linguistic variables and narrative production (Table 4). A mo-

Table 1. Distribution of data of incorrect and correct words and pseudowords in the dictation task according to school system and grade

Dictation	School system		Grade				Effects (p-values)		
			4th	5th	6th	7th	School system	Grade	School system x grade
Words	PUS	Mean	14.5	9.4	8.3	8.4	<0.0001*	<0.0001*	0.0225*
		SD	5.8	3.9	3.8	5.3			
	PRS	Mean	8.2	6.9	8	5.5			
		SD	4.2	3.5	3.9	3.9			
Pseudowords	PUS	Mean	8.95	7.25	7.45	7.7	0.0008*	0.0543	0.0453*
		SD	2.95	2.25	1.96	2.34			
	PRS	Mean	6.85	7.35	6.85	5.15			
		SD	2.01	1.84	3.12	2.25			

* Significant values (p≤0.05) – ANOVA
Note: PUS = public system; PRS = private system; SD = standard deviation

Table 2. Distribution of total number of complete and incomplete utterances presented in textual productions according to school system and grade

Textual production	School system		Grade				Effects (p-values)		
			4th	5th	6th	7th	School system	Grade	School system x grade
Complete utterances	PUS	Mean	10	13	11	11	0.8365	0.2588	0.1532
		SD	3.2	6.2	3.2	3.1			
	PRS	Mean	11	11	11	13			
		SD	3.1	3.3	3.4	4.2			
Incomplete utterances	PUS	Mean	1.2	0.2	0.5	0.7	0.4405	0.0343*	0.9806
		SD	2.2	0.5	1.1	1.4			
	PRS	Mean	0.9	0.1	0.5	0.5			
		SD	1.7	0.5	1	1.4			

* Significant values (p≤0.05) – ANOVA
Note: PUS = public system; PRS = private system; SD = standard deviation

Table 3. Distribution of the total number of microstructures, essential and overall macrostructures presented in textual productions according to school system and grade

Textual production	School system		Grade				Effect (p-value)		
			4th	5th	6th	7th	School system	Grade	School system x grade
Microstructures	PUS	Mean	3.6	4.4	3.7	3.7	0.0203*	0.0567	0.4479
		SD	2.3	1.4	1.2	1.4			
	PRS	Mean	4.5	4.8	3.7	4.7			
		SD	1.3	1.6	1.5	1.5			
Overall macrostructures	PUS	Mean	3.1	3.4	3.7	3.5	0.0003*	0.1891	0.9559
		SD	1.1	1.9	1.4	1.7			
	PRS	Mean	3.8	4.2	4.7	4.4			
		SD	1.2	1.5	1.4	1.8			
Essential macrostrutures	PUS	Mean	0.9	1.3	2.2	2.2	0.2523	<0.0001*	0.9703
		SD	0.6	0.7	1	1.2			
	PRS	Mean	1.1	1.4	2.5	2.4			
		SD	0.7	0.7	1.3	1.2			

* Significant values (p≤0.05) – ANOVA
Note: PUS = public system; PRS = private system; SD = standard deviation

derate positive correlation was observed between the number of errors when writing words and pseudowords (r=0.544). Negative correlations between the number of errors in dictation of words and the total occurrence of general macrostructure (r=-0.228) and essential macrostructure (r=-0.210), and between pseudowords errors and the total number of verbs (r=0.257), complete utterances (r=-0.179) and total number of words (r=-0.183) were found.

As for the linguistic variables, the presence of positive correlations, from weak to good was observed between the total number of words and frequencies of nouns (r=0.654), verbs (r=0.156), verbs in past tense (r=0.766), adverbial phrases (r=0.365), adjectives (r=0.173), "então" (then) (r=0.231), "quando" (when) (r=0.355) and the frequency of complete utterances (r=0.882). The total number of nouns was positively correlated with past tense verbs (r=0.522), adverbial phrases (r=0.188), adjectives (r=0.197), complete utterances (r=0.567), "então" (then) (r=0.156) and "quando" (when) (r=0.328).

Table 4. Correlations between the linguistic variables, narrative variables and the number of orthographic errors regardless of school system and grade

		WE	PWE	N	V	VPast	AdvPhr	Adj	D	E	Q	TW	CUtt	IUtt	MI	OMa	EssMa
WE	PC	1	0.544	-0.12	-0.133	-0.03	-0.131	-0.01	0.017	-0.1	-0.103	-0.127	-0.132	-0.063	-0.05	-0.228	-0.210
	(p)		0**	0.119	0.094	0.74	0.1	0.907	0.827	0.191	0.195	0.11	0.096	0.43	0.526	0.004**	0.008**
PWE	PC	0.544	1	-0.12	-0.257	0	-0.065	-0.14	0.071	0.021	-0.061	-0.183	-0.179	-0.031	-0.02	-0.119	-0.074
	(p)	0**		0.133	0.001**	0.998	0.414	0.088	0.37	0.793	0.446	0.02*	0.024*	0.696	0.819	0.133	0.352
N	PC	-0.124	-0.119	1	0.023	0.522	0.188	0.197	-0.147	0.156	0.328	0.654	0.567	-0.025	0.415	0.314	0.338
	(p)	0.119	0.133		0.772	0**	0.017*	0.012*	0.064	0.048*	0**	0**	0**	0.758	0**	0**	0**
V	PC	-0.133	-0.257	0.023	1	-0.375	-0.048	0.052	-0.086	-0.1	0.211	0.156	0.238	0.236	-0.1	0.122	0.117
	(p)	0.094	0.001**	0.772		0**	0.547	0.513	0.281	0.211	0.008**	0.049*	0.002**	0.003**	0.189	0.126	0.141
VPast	PC	-0.026	0	0.522	-0.375	1	0.311	-0.01	-0.02	0.250	0.293	0.766	0.785	-0.152	0.461	0.370	0.411
	(p)	0.74	0.998	0**	0**		0**	0.871	0.798	0.001**	0**	0**	0**	0.055	0**	0**	0**
AdvPhr	PC	-0.131	-0.065	0.188	-0.048	0.311	1	-0.02	-0.07	0.118	0.182	0.365	0.313	0.002	0.272	0.07	0.170
	(p)	0.1	0.414	0.017*	0.547	0**		0.777	0.379	0.138	0.021*	0**	0**	0.979	0.001**	0.381	0.032*
Adj	PC	-0.009	-0.135	0.197	0.052	-0.01	-0.023	1	0.137	0.057	0.057	0.173	-0.004	0.005	-0.03	-0.012	-0.06
	(p)	0.907	0.088	0.012*	0.513	0.871	0.777		0.085	0.475	0.472	0.028*	0.959	0.949	0.69	0.878	0.447
D	PC	0.017	0.071	-0.15	-0.086	-0.02	-0.07	0.137	1	-0.03	-0.088	-0.011	-0.078	-0.094	-0.1	-0.063	-0.161
	(p)	0.827	0.37	0.064	0.281	0.798	0.379	0.085		0.691	0.27	0.886	0.327	0.237	0.23	0.428	0.043*
E	PC	-0.104	0.021	0.156	-0.099	0.250	0.118	0.057	-0.032	1	-0.038	0.231	0.158	0.042	0.116	0.105	0.083
	(p)	0.191	0.793	0.048*	0.211	0.001**	0.138	0.475	0.691		0.631	0.003**	0.046*	0.598	0.143	0.186	0.298
Q	PC	-0.103	-0.061	0.328	0.211	0.293	0.182	0.057	-0.088	-0.04	1	0.355	0.430	-0.007	0.139	0.213	0.238
	(p)	0.195	0.446	0**	0.008**	0	0.021*	0.472	0.27	0.631		0**	0**	0.935	0.079	0.007**	0.002**
TW	PC	-0.127	-0.183	0.654	0.156	0.766	0.365	0.173	-0.011	0.231	0.355	1	0.882	0.008	0.452	0.405	0.446
	(p)	0.11	0.02*	0**	0.049*	0**	0**	0.028*	0.886	0.003**	0**		0**	0.922	0**	0**	0**
CUtt	PC	-0.132	-0.179	0.567	0.238	0.785	0.313	-0.004	-0.078	0.158	0.430	0.882	1	-0.014	0.417	0.469	0.500
	(p)	0.096	0.024*	0**	0.002**	0**	0**	0.959	0.327	0.046*	0**	0**		0.857	0**	0**	0**
IUtt	PC	-0.063	-0.031	-0.03	0.236	-0.15	0.002	0.005	-0.094	0.042	-0.007	0.008	-0.014	1	-0.256	0.029	-0.022
	(p)	0.43	0.696	0.758	0.003**	0.055	0.979	0.949	0.237	0.598	0.935	0.922	0.857		0.001**	0.72	0.779
Mi	PC	-0.05	-0.018	0.415	-0.104	0.461	0.272	-0.03	-0.095	0.116	0.139	0.452	0.417	-0.256	1	0.126	0.309
	(p)	0.526	0.819	0**	0.189	0**	0.001**	0.69	0.23	0.143	0.079	0**	0**	0.001**		0.111	0**
OMa	PC	-0.228	-0.119	0.314	0.122	0.370	0.07	-0.01	-0.063	0.105	0.213	0.405	0.469	0.029	0.126	1	0.728
	(p)	0.004**	0.133	0**	0.126	0**	0.381	0.878	0.428	0.186	0.007**	0**	0**	0.72	0.111		0**
EssMa	PC	-0.210	-0.074	0.338	0.117	0.411	0.170	-0.06	-0.161	0.083	0.238	0.446	0.500	-0.022	0.309	0.728	1
	(p)	0.008**	0.352	0**	0.141	0**	0.032*	0.447	0.043*	0.298	0.002**	0**	0**	0.779	0**	0**	

* Significant values (p≤0.05) – Pearson Correlation Test

** Significant values (p≤0.01) – Pearson Correlation Test

Note: PC = Pearson correlation; (p) = p-value; WE = word errors; PWE = pseudoword errors; N = nouns; V = verbs; VPast = past tense verb; AdvPhr = adverbial phrase; Adj = adjective; D = "depois" (after); E = "então" (then); Q = "quando" (when); TW = total number of words; CUtt = complete utterances; IUtt = incomplete utterances; Mi = microstructure; OMa = overall macrostructure; EssMa = essential macrostructure

The total number of verbs was negatively correlated with past tense verbs (r=-0.375) and positively correlated with "quando" (when) (r=0.211) and with the number of complete (r=0.238) and incomplete utterances (r=0.236). The total number of verbs in the past tense was positively correlated with the number of adverbial phrases (r=0.311), "então" (then) (r=0.250) and "quando" (when) (r=0.293), and complete utterances (r=0.785). The adverbial phrases were positively correlated with the number of appearances of temporal markers – "quando" (when) (r=0.182) and complete utterances (r=0.313). The temporal markers "quando" (when) e "então" (then) showed positive correlations with the number of complete utterances (r=0.430 and r=0.158, respectively).

Positive correlations were also found in the comparisons among the different structures identified in the narratives. Weak correlation was observed between the occurrence of microstructures and essential macrostructures (r=0.309), and good correlation between overall macrostructure and essential macrostructure (r=0.728).

Finally, the following correlations were also found: positive from weak to moderate between the number of events of microstructure and the total number of words (r=0.452), nouns (r=0.415), past tense verbs (r=0.461), adverbial phrase (r=0.272), complete utterances (r=0.417), and negative correlation with the number of incomplete utterances (r=-0.256); positive from weak to moderate between the number of events of overall macrostructure and the total number of words (r=0.405), nouns (r=0.314), past tense verbs (r=0.370), temporal marker "quando" (r=0.213), and complete utterances (r=0.469); positive correlation from weak to moderate between the number of events of essential macrostructure and the total number of words (r=0.446), nouns (r=0.338), past tense verbs (r=0.411), adverbial phrases (r=0.170), temporal markers (r=0.238), complete utterances (r=0.500), and negatively correlated with the number of temporal marker "depois" (after) (r=-0.161) (Table 4).

DISCUSSION

Public School students exhibited a higher number of orthographic errors when compared to students from Private Schools showing that the school system interfered in academic performance regarding orthographic competence. This finding is observed despite the attempt to obtain a homogeneous sample as all students were referred by their teachers as having good academic performance. Furthermore, these results also support the majority of Brazilian studies that compare the writing of elementary school students which have found poorer performance of students belonging to Public Schools, even without learning complaints[7,9,11,18,22,23].

It is known that the written orthography develops over the school process. This fact explains the presence of errors in the writing of the students considered of good performance. It also justifies the difference in performance of 4th graders with a higher number of errors in words than the students from other grades, regardless of the school system[7,9,11,18,20]. Taken together, these data reaffirm that the school system and educational process influence the orthographic and textual competence of the students, encouraging the production of more cohesive and coherent texts, and influencing the quality of written material produced[24]. Social experiences and interactions that the individual establishes with written texts can also influence and help in multiple manners of representing knowledge[7,9,11,22,25-27].

For the study of linguistic skills, the performances were also compared according to the school system and the school grade. The results of the ANOVAs for the linguistic variations (nouns, verbs, past tense verbs, adverbial phrases, adjectives, temporal markers – "antes, depois, então" (before, then, after) – and number of words), showed no difference for the school system and grade effects and for the interaction between them. However, the frequency of occurrence of the temporal marker "quando" (when) was different when investigating the grade effect, being similar in the narratives of students from 4th and 6th grades, but more frequent in the narratives of students from 5th and 7th grades.

On the other hand, the analysis of the occurrence of complete and incomplete utterances in textual productions showed that, when analyzing the grade effect on the written production, the 4th graders presented the highest number of incomplete utterances (although the average values of occurrence were low). Studies that have used the parameter "number of complete and incomplete utterances" in the analysis of written production were not found in the literature. Researchers[19] have compared children with and without alterations in language development. In that study, the oral and written narrative structures were similar for the total number of complete and incomplete utterances presented by the groups.

Fewer citations of microstructure in textual production were observed in the narratives of students from the Public school system. The same result was found in the analysis of the frequency of overall macrostructure, with better overall performance of students from private schools. These findings are similar to those observed in the writing of words and pseudowords, reinforcing the improved performance of students in Private schools in writing tasks both on the orthographic analysis as on text production. One can suggest that in addition to variable school system, socio-cultural factors may also have influenced the different performances[26,28].

No differences were found regarding the occurrence of macrostructures considered essential when comparing the narratives of the two school systems. The analysis according to grades showed similar performances of 4th and 5th grades, and between 6th and 7th grades, being the occurrence of essential macrostructures higher in more advanced grades. In fact, the literature indicates that there is a progression in writing narratives with increasing education, i.e., the ability to elaborate written constructions receives positive influence of formal and systematic education[26,29].

Positive correlations were found between linguistic variables and the total number of words. The results showed that the higher the total number of words used in text production, the greater the possibility of occurrence of the different linguistic variables studied.

On the other hand, the analysis showed that the difficulty in internalizing orthographic rules can undermine the textual

production. Such impairment was observed by means of correlations between orthographic ability and linguistic variables. The investigation of possible correlations between the total number of errors in words and pseudowords and the total number of events described in the text production showed the presence of negative correlation, although weak, between the number of incorrect words (written under dictation) and total events of overall and essential macrostructure in the production of texts. The greater the number of orthographic errors, or the worse performance in the writing words, the lower number of events cited in the narratives. These results confirm reports in the literature[2,11] and indicate that orthographic difficulties can actually negatively interfere in the productive and efficient textual construction.

It was also observed that the use of verbs in the past tense – markers of narrative structures[30] – elicited a higher number of temporal markers ("então" and "quando") that are also important in the proposed text structure and therefore of complete utterances. The analysis of correlations with other linguistic variables showed that the highest the frequency of occurrence of any of the linguistic variables, the higher the number of written events.

The analyzed data lead to the conclusion that during the elaboration of a text, the citations of events influence each other. As the overall macrostructures appear, the events of essential macrostructure also become evident. The statistical analysis allowed the observation that the quality – assessed by the completeness of the structural components of text production – observed through the identification of the events cited was naturally influenced by linguistic proficiency.

Despite the fact that these analyses consisted on data from students considered by their teachers with good academic performance, it is necessary to take into account certain inherent limitations. Such limitations consist on the lack of randomness of sample selection, the small number of students who composed the samples and the period of the school year when data collection had occurred. The regional proximity of the selected schools should also be considered in assessing these data. However, despite these notes, the findings were significant and consistent with those from the literature.

CONCLUSION

The analysis of the results according to grade progression showed a positive correlation between grade and performance of students from both school systems (Public and Private) in the tasks of orthographic writing and text production. In other words, with the advancing grade, a higher frequency of correct orthographic writing and a better narrative production is observed as well as a gradual increase in frequency of the essential macrostructure in written texts. However, students from Private schools exhibit better orthographic performance than the students from Public schools and show better ability to produce narratives when considering the number of events cited in micro and macrostructures. The current study showed that orthographic skills influence the quality of textual production – the poorer the performance in the writing of words, the poorer the text production. The evident correlation between different writing skills confirmed the hypothesis that such skills influence each other in the written production process.

ACKOWLEDGEMENTS

We thank the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP – Foundation for Research Support of the State of São Paulo) for their support, under process number 2007/53746-9.

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