

Introduction

Most children are able to acquire a language naturally and with no difficulties. Since their early years of life, children are already able to spontaneously identify and internalize the phonological, morphological and syntactic properties that characterize their native language. Some children, however, do not follow the normal pattern of linguistic development and, because of that, their linguistic comprehension and production skills may be affected.

Linguistic limitations can lead to different kinds of difficulties related to the children's cognitive, educational and social performances. Understanding the origin and the possible consequences of this kind of impairment is thus important, so that effective methods of diagnosis and treatment may be developed.

Specific Language Impairment (SLI) is a developmental disorder that affects around 7% of the school-age children and, which can have an impact on some or all the subdomains of language (syntactic, phonological, lexical, semantic, pragmatic). This study is concerned with adolescents who manifest difficulties in the syntactic domain (who may have SLI), which is pervasively impaired and whose problems are subtle and may only be detected experimentally. More specifically this dissertation is concerned with the so-called highly costly structures, since the main problems that children with syntactic impairment show are related to their computation. These structures are acquired late in the typical language development and are often impaired in cases of linguistic deficiencies.

A syntactic impairment can also affect the intra-language interfaces, such as the syntax-phonology interface, causing consequently other types of difficulties, such as problems related to the reading ability.

A number of studies (Bishop and Snowling, 2004; Catts et al, 2005, Ramus et al, 2013) have investigated overlaps between SLI and dyslexia, and also between language deficits and reading disabilities (Catts & Hogan, 2003; Botting et al, 2006). Children with specific language impairments are considered to be at-risk readers, since they may face considerable difficulty when learning to read (Catts et al, 2008).

Reading accuracy, reading rate and prosody have been associated to reading fluency, which is an essential skill in the modern society (National Reading Panel, 2000; Hudson, Lane & Pullen, 2005; Rasinski, 2006). This last dimension of fluency stems from the syntax-prosody interface and can, therefore, reflect how it is mentally projected based on syntactic processing. A problem on the syntax-phonology interface could, therefore, result in reading difficulties.

This work investigates the possible relation between syntactic impairments and reading difficulties. Syntactic impairment (SI) is characterized here in terms of difficulty in the comprehension of orally presented sentences considered to be computationally costly. These sentences include reversible passives, object WH+N interrogatives and object relative clauses. SI, as characterized here, is a symptom of SLI across-languages (Leonard, 1998; Bishop, 2001; Friedmann & Novogrodsky, 2008; Silveira, 2002; Martins, 2007) and can also be affected by other syndromes that affect school children (such as ADHD – Attention Deficit and Hyperactivity Disorder) and can co-occur with SLI (Geurts & Embrechts, 2008). Among the costly structures, object WH+N interrogatives (e.g. *Which student did the teacher call?*) and object relative clauses (e.g. *The patient that the doctor helped took some medicine.*) will be focused on in the investigation of reading fluency abilities.

Important implications related to the learning process may be drawn from this study and contributions to the development of intervention ways intended to enable these children to reach their educational and cognitive potentials are expected.

1.1

Aims

The general aims of this research are:

- Investigating some of the cognitive processes involved in the reading ability;
- Verifying whether an impairment of the syntactic processing, for possibly affecting the syntax-prosody interface, could cause problems related to reading fluency and comprehension.

More specifically, it is intended to:

- Identify 6th grade students of public schools in Rio de Janeiro who may be syntactically impaired by means of a battery of tests called MABILIN I (Corrêa, 2000);
- Provide an assessment of the reading abilities of the 6th grade student population at word level in relation to adult standards;
- Verify whether syntactic impairment affects reading ability at the word level;
- Identify the students who do not have difficulty in the recognition of written words and in the oral reading of isolated words in order to proceed to the investigation of reading fluency;
- Verify the extent to which syntactic impairment in the oral comprehension of costly structures (object WH+N interrogatives and object relative clauses) affects the reading fluency and comprehension of these sentences in isolation and in discourse;
- Verify the extent to which fluency in oral reading affects comprehension;
- Evaluate the extent to which reading behavior provides cues to syntactic impairment.

1.2

Dissertation outline

This dissertation is organized as follows. Chapter 2 presents a discussion on language impairment, observing possible overlaps between SLI and reading disabilities. Chapter 3 provides the theoretical framework of this study with a formal characterization of the costly structures considered – object WH+N questions and object relative clauses – in the context of the Minimalist Program (Chomsky, 1995- 2007); a characterization of their computational/processing cost in a model of on-line computation which incorporates minimalist assumptions (Corrêa & Augusto, 2007; 2011) and in the light of syntactic and/or referential intervention (Gordon, Hendrick & Johnson, 2004; Grillo, 2008) are also considered. Chapter 4 presents major aspects of the reading process and in particular, those related to reading fluency. Chapter 5 presents how the assessment of participants' syntactic processing abilities was conducted. In chapter 6, the

word recognition test and the isolated words/pseudo words test created for this investigation are described. The data collected from these assessments are analyzed and participants' performances are compared with the performance of graduated adults. Chapter 7 is concerned with the participants' abilities to read fluently and to comprehend isolated sentences with the costly structures focused on here. In chapter 8, the participants' reading abilities to read fluently and to comprehend the target costly structures in discourse were assessed. The experiment described in this chapter also investigated whether the internal properties of the intervenient element (the subject of the WH+N and of the relative clause) have an impact on reading fluency and comprehension. An overall assessment of reading fluency is also provided based on a sample of text sentences with different punctuation marks. Chapter 9 presents the final remarks.