

# NARRATIVE LANGUAGE AND FLUENCY IN DOWN SYNDROME: A REVIEW

## *Linguagem narrativa e fluência na síndrome de down: uma revisão*

Marília Piazzini Seno<sup>(1)</sup>, Célia Maria Giacheti<sup>(2)</sup>, Danilo Moretti-Ferreira<sup>(3)</sup>

### ABSTRACT

Down's syndrome is a condition in which individuals have intellectual impairment and oral language disorders. Speech disfluency is present during both spontaneous conversations as in productions of directed oral narratives. This study aimed to review the published literature between 2002 and 2012 in electronic databases on disfluency and narrative in individuals with Down syndrome. There were 17 articles and eight were selected according to the criteria of inclusion and exclusion. Two of these articles specifically discoursed on dysfluency in Down's syndrome and the other six on the narrative in this population. Intellectual disability is part of the phenotype of individuals with DS and, as a result of the intellectual impairment, losses occur on the acquisition and development of language. Specific studies about, mainly on fluency/disfluency, and the performance on a task of narrative and, are still scarce and inconclusive. Disfluency doesn't appear in most descriptions of the language phenotype of individuals with this condition, which would deserve additional clinical studies.

**KEYWORDS:** Down Syndrome; Narration; Stuttering

### ■ INTRODUCTION

The Down syndrome is considered one of the most frequent autosomal chromosomes number anomalies, affecting approximately one in each 700 alive born babies. Its phenotype had included typical characteristics of face and members, and could present articulation's hyperextension, ear low implantation, muscular hypotonic, congenital heart diseases, intestine tract malformation, hearing loss, ophthalmologic changes, thyroid dysfunction, gingival and periodontal anomalies and hypogonadism<sup>1</sup>.

The intellectual disability had always been presented in DS individuals, ranging from light to moderate<sup>2</sup> degree and, because of this deficit; it

may occur changes in language, as expressive as receptive, with the reception more preserved, when compared to verbal expression<sup>3</sup>.

A difficult of verbal expression's presented by DS individuals is to narrate facts and happening with precision<sup>4</sup>. It had been observed that these children, in narrative task, present common and stuttering non-fluencies. It exists an average prevalence of stuttering in 3% of intellectual disability children contrasting to 1% in general population. DS individuals present more non-fluencies than intellectual disability individuals of other origins<sup>5</sup>. Do not exist a consensus in literature to the causes of non-fluency in DS<sup>6</sup>. Some writers associate the non-fluency to motor loss, others, to language impairment<sup>7</sup>. Besides, the articulation's changes and language disturb can co-exist, or even overlap to others disorders<sup>8</sup>.

Based on the above, this study has as aim review the literature, between 2002 and 2012, about non-fluency and the narrative task development in Down syndrome.

<sup>(1)</sup> Marília Philosophy and Science College – UNESP, Hearing Science post-graduation program, Marília, SP, Brazil.

<sup>(2)</sup> Marília Philosophy and Science College of Sao Paulo State University – UNESP Hearing Science Department, Marília Campus, Marília, SP, Brazil.

<sup>(3)</sup> Julio de Mesquita Filho Sao Paulo State University – UNESP, Botucatu, SP, Brazil.

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## ■ METHODS

It was done a systematic review of literature since the search in electronic databases PubMed, Lilacs and Medline, in periods between 2002 and 2012. The keywords stuttering, fluency and narrative were used, as in English as in Portuguese combined with the term Down syndrome.

The inclusion standard was the publication of the work in the period between 2002 and 2012. The articles, which abstract containing was not related directly to the aim of the research, were exclude.

The first analysis considered the articles' titles. After, the abstracts, verifying which of them fulfilled the inclusion standards.

It has been found 17 publications about the theme. After a selection considering the exclusion standard, remained eight specific works to be analyzed: two about fluency/stuttering and six about narrative in DS.

The results were presented following the increasing chronological order. It were exclude the literature review studies in the presentation of the chart.

## ■ LITERATURE REVIEW

### General aspects about language in Down syndrome

The language is the human capacity to comprehend and use a complex and dynamic system of agreed symbols, in many modals to communicate and think. It represents one of the most important aspects to be developed by any children who could relate to other people and integrate themselves in a social environment. Language more capable individuals can communicate better their feelings, wishes and thoughts<sup>9</sup>.

The development of language competencies implies a 4-component-acquisition:

The phonologic (sounds perception and production, which form the language verbal code); the syntactic (grammar rules group, which order the worlds on phrases that allows comprehensible language); the cognitive (covers the lexicon – words group that constitute an idiom and the semantics – knowledge of words' meaning) and the pragmatic (language context adequacy, serving to a socio-communicative function)<sup>10</sup>.

In DS individuals, the language is one of the areas, which is damage. It is the most studied domain inside the cognitive system of this population. It is broadly accepted that the language capacity interferes, and is affected by the cognitive system.

Communication disorders in individuals with Down syndrome can be related to the overall delay

in the development and thinking skills, which can be critical to the ability to develop<sup>11</sup>.

Studies on language development in individuals with Down syndrome showed that the most significant losses occur mainly in the area of communication and, especially in verbal expression<sup>4</sup>.

Several factors contribute to the change of oral language that is present in individuals with Down syndrome; they are both anatomic as on the nervous system and hearing levels<sup>12</sup>. Is still a relative delay in the development of nonverbal behaviors, the use of eye contact, gesture or vocalization for instrumental purposes<sup>13</sup>.

The main causes or factors related to language disorder in children with Down syndrome are cognitive impairment, impaired short-term memory, impaired quality of mother-child interaction, developmental delay, neurological disorders of the stomatognathic system, auditory and visual. The phonological, semantic, syntactic language may have to be changed<sup>14</sup>

In children with DS, the use of gestures remains longer in the period of acquisition of oral language, than in children with typical development, varying according to the environment in order to be better understood by the interlocutor<sup>15</sup>. Regarding the development of language in these individuals, there is a significant impairment in syntactic and semantic aspects – such as average length of expression and number of words<sup>16</sup>. In addition, exhibit changes in uttering that can persist into adulthood.

The opportunity of life experience is a factor that influences the pragmatic language skills of these children. The verbal intelligibility does not limit the attempts communication and the interactive is one of the strengths of the communication of these children social language<sup>17</sup>.

### The task of narrative in Down syndrome

It is strong stereotype of a person with intellectual disability. It is believed that he is unable to talk about their lives, opinions and understanding. For other children with developmental delays, children with DS presents changes in the communicative act, and difficulties to communicate clearly<sup>18</sup>.

Because of individuals with DS using figures, favors the production of long listed compared to situations conversational<sup>19</sup>. However, the factors intelligibility syntactic difficulty, non-fluency and especially typical non-fluencies tend to be more evident when the speech sample analyzed is obtained through situations that emphasize narrative oral histories and personal accounts<sup>20</sup>.

Personal narratives are descriptions of past events experienced by callers and are one of the most commonly found in children for storytelling. A

study investigated the abilities of personal narratives of 25 children with Down syndrome, between 5 and 13 years of age, classified as beginning readers. The samples were collected from personal narratives by audiologists using a standard protocol in which they were presented with 11 photographs with introductory script and asked if something had happened to them. Were analyzed in measures of length of utterance in morphemes, semantics (number of different words) and quality of personal narrative. There was an increase in the number of words with age. Only four participants showed quality in personal narrative, pointing out the difficulty of this population to narrate facts<sup>21</sup>.

Another study evaluated the oral counting and printing history, analyzing a group of 20 individuals with DS aged 8-19 years of age and compared the findings to the control group. Concluded that individuals with Down syndrome showed high verbal productivity, which was measured by the number of expressions used to produce a fictional narrative<sup>22</sup>.

Assessing the pragmatic through situations of free play, a group of DS children 7-13 years of age showed the communicative functions of commentary and narrative as the most frequent situation<sup>23</sup>.

We compared the narratives of 33 individuals with DS; aged 12-26 years to results obtained by individuals from three other groups were matched as follows: the mental age by syntactic comprehension and the mean length of statement. It was found that although the syntax and vocabulary restricted, the narrative of the DS group was similar to the control group matched for syntactic comprehension<sup>24</sup>.

A longitudinal study evaluated 32 patients with DS having three collections of oral narrative in one year. There was a significant growth in semantic complexity and structure of the narrative without evidence of increased syntactic complexity or length of the narrative<sup>25</sup>.

Comparing three groups of adolescents and young adults – and, 24 with DS, 12 with the syndrome fragile X chromosome and 21 in the control group – about the macrostructure of narratives, no differences were observed between groups with DS and fragile X having these two groups, a limited number of narratives, surpassed the control group<sup>26</sup>.

### **Fluency in Down syndrome**

The fluency of the speech is a parameter that provides important data regarding the individual's linguistic maturity<sup>27</sup> and its production, is one of the more complex skills acquired by humans. It is learned gradually with practice and necessarily requires the development of linguistic mechanisms that reduce the processing load of information, leading to longer and more complex statements<sup>28</sup>.

The fluent speaker is one that can produce long sequences of syllables, effortlessly combining quick and continuous emissions, allowing your next issue is the reflection of your intent, in other words, their ability and maturity linguistic<sup>27</sup>.

Break is a disruption in the flow of speech causing a discontinuity in the speech. It is common to all speakers and primarily reflects the uncertainties and inaccuracies language; aim to broaden the understanding of the message. Breaks are common type: hesitation – short break of one or two seconds while the person seeks the word; interjection – inclusion of irrelevant words in the context of the message; review – change in pronunciation, grammatical form or content of the message; incomplete word; word and abandoned segment repeat, word or phrase<sup>27</sup>.

Non-fluency is a change of speech fluency that may or may not affect the content of the message. Disruptions of fluent speech are associated with the increased demands of language.

The level of cognitive impairment may explain the difficulty in conducting studies on fluency in populations with genetic syndromes, since many of these have intellectual disabilities as part of the phenotype. The severe intellectual impairment restricts the ability of the individual to present a substantial speech sample, which can be analyzed with respect to specific aspects of fluency. There are few studies on fluency in populations with genetic syndromes, compared to the number of studies with other types of communication disorders in this population.

The intellectual impairment present in individuals with Down syndrome contributes to a higher average prevalence of stuttering when compared to the general population. For any genetic condition in which individuals exhibit intellectual disabilities and fluency disorders is necessary to consider that these cases do not correspond to a stuttering itself, but several aspects, including the analysis of language skills should be studied and better designed for this population. Although considered a primary symptom in various genetic syndromes, data on the flow are not yet clear, which prevents the differentiation of stuttering development of this anomaly associated with stuttering<sup>28</sup>.

The initial proposal was to analyze the non-fluency in Down syndrome. Correlating descriptors Down syndrome with stuttering and / or fluency, were found in the literature, through research on electronic database, only two articles on the subject<sup>28,29</sup> widening the review for the study of narrative.

In one of the articles, the authors compared the speech non-fluency among several genetic syndromes concluding that before definitive

statements about its occurrence much research still needs to be conducted<sup>28</sup>.

In another study, the realization of which was justified by the wide variety of symptoms that can be found in individuals with speech non-fluency, observe the following data: 76 individuals participated with Down syndrome, aged between 3.8 and 57.3 years, they replied to the inventory "Predictive Cluttering Inventory" for his Speech therapist. As a result, 78.9% had a score that ranked as one non-fluency and 17.1% were classified as stutterers. The results show the need for a consensus on the symptoms of the non-fluency, which are essential for the diagnosis, indicating also that the instrument may not be suitable for all clinical population<sup>29</sup>.

Abstracts of the studies found in the literature on fluency and narrative in individuals with Down syndrome are presented in the figure 1.

## ■ FINAL CONSIDERATIONS

The theme researched in this study is quite complex. Studying fluency in oral narrative task of stories in DS involves many aspects. This population the cognition is changed and the language, in expressive level, is severely compromised, making it difficult to analyze the data.

The studies about Down syndrome fluency are scarce. The last 10 years, only two articles were about this issue, both written in their conclusions the difficult to analyze obtained data in this population.

Related to the oral narrative task in DS were found six studies. The collection used guided situations of spontaneous speech or pictures visual support. It had been observed methodological diversity used by the authors. Two articles analyzed only DS individuals. A research compared DS individuals group to control groups. Another study compared DS individuals group to three different control groups. Only one study was longitudinal and other compared three groups: DS, X-fragile and control.

The intellectual disability is part of the phenotype of DS individuals and, because of the intellectual impairment, the damages in language acquisition and development.

Specific studies, mainly about the fluency/non-fluency, and about the narrative task development are scarce and inconclusive yet. The non-fluency does not appear in major language phenotype descriptions of individuals in this condition, which deserved additional clinical studies.

2007	Borsel e Tetnowski			Data analysis of literature comparing the manifestation of non-fluencies in genetics syndromes	The differential diagnosis of non-fluencies in genetic syndromes requires more than just a speech superficial analysis. The characterizations of non-fluencies kinds could be the key for the diagnosis and well succeed treatment
2008	Borsel e Vandermeulen	76 DS	3to 57 years-old	“Predictive Cluttering Inventory” questionnaire apply by hearing professionals in their patients	It's necessary that it has a consensus about basic symptoms of non-fluency. The material used could be a better instrument to classify this population
2008	Bird, Cleave, Pike e Helmkey	20 DS 20 Control	8 to 19 years 4 to 10 years-old	Stories oral and graphical counting about four Mayer's series images (1967)	The DS group presented high verbal productivity that was measured by the number of expressions used to produce the fictional narrative
2009	Soares, Pereira e Sampaio	10 DS	7to 13 years-old	Pragmatic evaluation through the free playing situation, using the ABFW test	The communicative functions of higher frequency were the comment and the narrative. The communication environment more used was the verbal. All the participants used the communicative functions of comment type
2010	Miles e Chapman	33 DS G1 Paired by mental age G2 paired by syntactic comprehension. G3 paired by average length of the enunciation.	12 to 26 years-old	Narration of the book: “Frog, Where are you?” (Mayer,1967)	Besides of restrict words syntax , the narrative with DS groups resembled to the control group 2
2012	Cleave, Bird, Czutrin, Smith	32 DS	Childrenand Teenagers	Three oral narrative collections in a year period	Significant growing in semantic complexes and in narrative structure. There was no evidence syntactic complex growing or narrative length
2012	Finestack, Palmer e Abbeduto	24 DS 12 Fra-X 21 Control	Teenagers andyoungadults	Macrostrutural evaluation of oral narratives applying three comparing between the groups	It was not observed differences between the DS groups and with Fra-x. in a limited number the DS group narrative and Fra-X outweigh the control group

**Figure 1 – Results of studies about narrative and fluency in Down syndrome (DS)**



**RESUMO**

A síndrome de Down é uma condição na qual os indivíduos apresentam comprometimento intelectual e alterações de linguagem oral. A disfluência de fala está presente tanto durante a conversa espontânea como em produções orais de narrativas direcionadas. Este estudo teve como principal objetivo revisar a literatura sobre a disfluência e a narrativa em indivíduos com a síndrome de Down, publicada entre 2002 e 2012, em bases de dados eletrônicas. Foram encontrados 17 artigos e selecionados oito, de acordo com os critérios de inclusão e exclusão. Destes, dois discorriam especificamente sobre a disfluência na síndrome de Down, e seis sobre a narrativa nesta população. A deficiência intelectual é parte do fenótipo dos indivíduos com SD e, em decorrência do comprometimento intelectual, prejuízos na aquisição e no desenvolvimento da linguagem. Estudos específicos, principalmente sobre a fluência/disfluência; e, sobre o desempenho na tarefa da narrativa, ainda são escassos e inconclusivos. A disfluência não aparece na maioria das descrições do fenótipo de linguagem dos indivíduos com esta condição, que mereceria, estudos clínicos adicionais.

**DESCRITORES:** Síndrome de Down; Narração; Gagueira

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Mailing Address:

Danilo Moretti-Ferreira

Depto. de Genética – Inst. de Biociências

– UNESP

Botucatu/SP

CEP: 18618-000

E-mail: [sag@fmb.unesp.br](mailto:sag@fmb.unesp.br)