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Conceptual subordination in the oral retelling of Spanish-speaking children

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Although retelling as a technique to assess narration has been widely used, the input modality seems to impact in different ways on the elicited text, generating a debate about the biases that may appear. To contribute to this discussion, the objective of this study is to describe the development of conceptual subordination and its forms of coding in the oral stories of Spanish-speaking children as well as its relationship with the source text. The stories of 28 five-year-old Chilean school children collected through a retelling task were studied. The analysis consisted of firstly assessing the production of conceptual subordination through the identification of asymmetric links between states of affairs. Then, the encoding forms that instantiated these links were classified. Finally, indices were constructed and applied to compare the children's texts with the source text. During the comparative analysis with the input, three qualitative categories emerged: similar production, reformulation and new link. The results showed that the participants' stories present significantly less production of conceptual subordination link than the source text. However, the children were able to create new links that were not presented in the story and reformulated others, as evidence of an interpretive process that goes beyond the mere reproduction of the input in these types of tasks. Regarding the encoding forms, the results were very similar between the source text and the children's text without significant differences. Both in source texts and children's texts, the prototypical forms of Spanish dominated, allowing us to conclude a possible input bias.

KEYWORDS

conceptual subordination, typical language development, retelling, syntactic complexity, subordination strategies in Spanish, typical and alternative encoding forms

1 Introduction

This study addresses the syntactic complexity through the study of the subordination oral uses of Spanish-speaking children. Similar studies have been carried out in various languages (Cohen and Walters, 2012; Zanchi et al., 2016, among others) but although they have assumed different theoretical perspectives, including generative and functionalist approaches, they could not develop a coherent framework to understand the complex conceptual and grammatical processes that syntactic development entails. Generative linguistics assess

syntactic complexity in terms of the extension of its major syntactic units (T-Units) (Hunt, 1965, 1970; Picca and Delicia, 2015). The functionalist perspective, on the other hand, emphasizes how much are interrelated the use of subordination and the kind of text (Ravid and Tolchinsky, 2002; Nir and Berman, 2010; Meneses et al., 2012; Crespo et al., 2013; Berman, 2018). Both perspectives have contributed in the description of some peculiar features of subordination in children's language but, because they focus mainly only on the formal structures they dismiss other characteristics of the children's linguistic knowledge that underlie. In fact, both approaches consider as isolated two complementary aspects.

This proposal aims to take a step further by linking syntactic forms with the conceptual representations that underlie these forms, particularly in the construction of a narrative. To achieve this, we have adopted Cristofaro's approach (Cristofaro, 2003), which defines subordination as a conceptual link between events or States of Affairs (SoAs). Subordination corresponds to a higher-order, asymmetric link between representational units, where one of them—dependent SoA—lacks an autonomous profile and is considered from the perspective of the other—the principal SoA (Cristofaro, 2003, 2014). This conceptual link has linguistic correspondence, as its encoding is based on verbs and the link between SoAs on clause relations. In completive relations, the asymmetric semantic link is established from the predicate of the main SoA and can be declarative, modal, phasal, desiderative, manipulative, etc. In relative relations, asymmetry occurs because the dependent SoA provides some type of specification about a participant in the main SoA. In adverbial relationships, two SoAs are linked in such a way that the dependent SoA corresponds to the circumstance under which the main SoA takes place, such as final, temporal, causal, etc. (Hopper and Thompson, 1984; Croft, 1990; Givón, 1990). By adopting this approach, we can determine the number of elements (semantic, pragmatic, and syntactic) that intervene in the processes of subordination and can more precisely visualize the linguistic-cognitive performance of the child.

Within this typological framework, Cristofaro (2003) assumes that subordination is a universal phenomenon given that all languages present subordination. Nonetheless, their speakers instantiate it by using different resources or strategies (Van Gijn et al., 2011), since they do not have the same formal elements to subordinate. Furthermore, it is recognized that within the same language there are similar contents that can be expressed in different ways (Foley and Van Valin, 1984; Givón, 1990, 2001; Van Valin and LaPolla, 1997; Cristofaro, 2003). Considering these premises, this article proposes that variation in resources or subordination strategies, usually observed between different types of languages, can also occur within the same language. Thus, in Spanish there is a predominant or prototypical strategy to account for an asymmetric relationship between events, which is characterized by syntactic embedding and morphosyntactic dependence (1.a; 2.a; 3.a; 4.a). However, along with it, other strategies that semantically imply an asymmetric link may appear, which we have called alternatives (Crespo et al., 2024), such as coordination (1.b), juxtaposition (2.b), nominalization (3.b), and the use of non-finite verbal forms (4.b).

(1) a. Cuando Pedro entró, María salía por la ventana
(When Peter entered, Mary was leaving through the window)
b. Pedro entró y María salía por la ventana.
(Peter entered and Mary left through the window).

(2) a. No iré al cine porque no tengo dinero
(I will not go to the cinema because I do not have money)
b. No tengo dinero, no iré al cine.
(I do not have money, I will not go to the movies).

(3) a. Espero que regreses a casa
(I hope you come home)
b. Espero tu regreso a casa
(I wait for your return home).

(4) a. Era un niño que se llamaba Juan
(It was a boy who was named Juan)
b. Era un niño llamado Juan
(It was a boy named Juan).

Crespo et al. (in press) observed in a longitudinal study of children that the number of alternative forms was significantly higher in the youngest group (5 years old) and subsequently decreased as they grew older, and their level of education increased. This finding suggests that at an early age, children are capable of conceptually representing instances of subordination. However, these instances have not been considered by other analyses that assume theoretical perspectives that rely only on formal elements. In this study, we examine subordination usages in preschoolers not only as a formal device although mainly a conceptual device influenced by the kind of elicitation method.

Children's narrative has been assessed through various techniques, of which the most notable is retelling. This task consists of asking the subject to retell a story to which they have been exposed through oral, visual or audiovisual input. This type of semi-structured task (Eisenbeiss, 2010; Reese et al., 2012) allows speakers to generate ecological discourses with comparable lexical and semantic structures; it is also easily replicable independently of the evaluator (Alonso-Sánchez et al., 2023). Regardless, there is a discussion about the advantages or disadvantages of using a certain input (Schneider, 1996; Schneider and Dubé, 1997; Gazella and Stockman, 2003; Schneider and Dubé, 2005; Diehm et al., 2020). Thus, both Schneider and Dubé (2005) and Diehm et al. (2020) point out that when retelling an audiovisual story, children produce significantly longer stories, with greater syntactic complexity and lexical variety, than with static stimuli and/or without language.

Therefore, in a study with a retelling technique based on an audiovisual stimulus, it is worth asking the following questions. What will be the influence that this specific input has on the construction of representations through subordination and on the choice of prototypical or alternative forms in 5-year- old children? Furthermore, and considering that the retelling technique is not a test of memorization but instead of linguistic production from a stimulus, it is necessary to pose a second question to understand the extent of influence of the input. Will the children produce a text whose representational and structural complexity will be similar to the source text or, on the contrary, will they create texts that are more representative of their own abilities to encode subordination? The issue is not minor, since the description of the linguistic production of a certain population must, without a doubt, consider the possible bias that discourse elicitation techniques could cause. To answer this question, the general objective of this research is to compare the conceptual subordination of children's stories with the source text in a retelling task. To this end, four specific objectives are proposed: (i) identify the number of links between SoAs, produced by 5-year-old Spanish-speaking children in a retelling task; (ii) identify the encoding

TABLE 1 Formal and conceptual measures of subordination.

Subordination index	T-Unit	Conceptual subordination index
[The mother bought bread (because the children were crying for food)]. (The father saw them crying.)	(The mother bought bread because the children were crying for food). (The father saw them crying.)	(The mother bought bread because the children were crying for food*). (The father saw them crying) In spanish is: *asking food
Number of subordinate clauses (1)* 100, divided by total clauses (2)	Number of words (14) divided by number of T Units (2)	Subordination links (3: bought-crying, crying-asking, saw-crying) dividing by total number of clauses (2) for 100
50%	T-Unit = 7 palabras	150%

forms (prototypical and alternative) used to instantiate such links; (iii) compare the productivity of conceptual subordination and its prototypical and alternative encoding forms in stories produced by the participants with the source text, and (iv) describe the relationship between the encoding forms in the source text and the encoding forms in the children's text, by means of three categories (similar production, reformulation and new linkage). Based on the questions and objectives posed, two research hypotheses were proposed: (i) The texts created by children will present a significantly lower subordination link productivity index than the source text. (ii) The texts created by children will have a significantly higher encoding through alternative forms than the source text.

2 Methods

A mixed study is proposed, with a non-experimental, cross-sectional, comparative design of descriptive scope. The subordination links (SL) elicited in a child's narrative as well as their encoding forms (prototypical and alternative) were measured and compared with the links present in the source text (ST). Along with this, unforeseen linguistic manifestations in the children's stories were also analyzed and quantified.

2.1 Corpus and participants

We worked with a part of the NIR2014 corpus (Crespo, 2019), composed of narratives (elicited through audiovisual stories) by 28 native Spanish-speaking Chilean school children, who were in preschool education and were between 5;0 and 5;11 years of age at that time (mean = 5.6; SD = 0.11). Of the total participants, 13 were boys and 15 were girls, all within Typical Development (TD). For sampling, the following inclusion/exclusion criteria were applied: presenting a normal cognitive and linguistic performance, having a schooling history according to the regular standards of the Chilean educational system, attending a normotypical schooling according to the criteria of the educator and the psycho-pedagogical department of the educational establishments and not having a history of language disorders or being part of an integration or school support program. The participation of all subjects was carried out after obtaining a consent signed by their parents or guardians and the assent of the boys and girls, under regulation of the Bioethics Committee of the Pontificia Universidad Católica de Valparaíso, Chile. The children's corpus was composed of a total of 28 texts, totaling 2,177 words.

2.2 Data collection instrument

The children's narratives were elicited in a retelling task of the audiovisual story "The Flopi Butterfly."[1] The source text (ST) was created within the framework of two previous investigations (Fondecyt 1130420, 11606539) and following the concept of story grammars (Stein and Glenn, 1979; Marchesi and Paniagua, 1983; Pavez et al., 2008). The structure presented: (i) the establishment of the scene; (ii) two episodes, each composed of an initial event, internal response, plan, intention, and direct consequence; and (iii) resolution and conclusion. The images, which were in both the audiovisual version and the paper format, were designed with the purpose of promoting the elicitation of a narrative and non-descriptive discourse, based on the considerations of visual grammar (Kress and van Leeuwen, 1996; Kress and van Leeuwen, 2001). Table 1 presents the linguistic features of the story, including the following measurements: mean clausular extension (MCLEx), index of subordination linkage (ISL), index of prototypical forms (IFProt) and index of alternative forms (IFAlt) which are explained in detail in 2.3.

To apply the retelling task, the participation of two speech therapists trained for this purpose was needed. The first one initially showed the story drawn in paper format and, later, in audiovisual mode. Subsequently, the participant was asked to narrate the story to the second evaluator, who had not participated in the previous activity, to simulate a more natural rhetorical situation. During this phase, the child was encouraged to manipulate the story in paper format to control the memory variable. The entire interaction was recorded on video.

The children's stories were transcribed phonetically according to the Chilean Phonetic Representation System (AFI-CL) (Sadowsky and Salamanca, 2011). Subsequently, the texts were segmented to identify the presence of the narrative elements proposed by Stein and Glenn (1979). Three expert analysts then segmented the clauses and identified the analysis categories: (i) subordination links, (ii) encoding forms, and (iii) their relationship with the source text: (iii.a) similar form to source, (iii.b) reformulation, and (iii.c) new link. Inter-rater agreement among the analysts was 92%. Discrepancies were re-analyzed, and if they remained unresolved, a fourth codifier was consulted to solve them. The inter-rater agreement was calculated based on the total number of tokens analyzed, and the percentage of agreement was calculated. It is worth noting that this procedure was carried out collaboratively, combining criteria to assess the degree of elaboration of a category in the oral production of each student and resolving any doubts that arose during the application of the instrument.

1 https://vimeo.com/91330174

2.3 Measures

The subordination links codifying a semantic-syntactic relationship between two SoAs were measured through the subordination linkage index (ISL). The clausular encoding corresponds to the morphosyntactic structure used to encode a conceptual link between SoAs and it is measured through the mean clausular extension (MCLEx), index of prototypical forms (IFProt), and index of alternative forms (IFAlt).

The structures that enabled us to distinguish between subordination and non-subordination in children's stories were determined based on the fundamental functional parameter: whether or not they differ from an independent declarative clause structure in the context of isolated use (Cristofaro, 2003). To calculate the productivity of this variable, the Index of Subordination Linkage (ISL) was applied, which is calculated by dividing the total number of subordination links by the total number of clauses, multiplied by one hundred. As we observe in Table 1, if we analyze and compare the parsing proposed of some different subordination index (such as the Formal Subordination Index or T-units) with those obtained through the Typological-Functional approach (Cristofaro, 2003) we could obtain very different measures. In fact, via the ISL we could assess if the child conceives the functional relationships that some lexical items entail even they omit the lexical item that typically subordination requires.

The results of this analysis were compared with the amount of subordination links of the source text (Table 2). Likewise, during the comparative analysis with the input, three qualitative categories emerged: similar form to source text (SFST), reformulation (REF) and new link (NL) that allowed to establish the relationship between the children's stories and the linguistic input. These categories will be explained in depth when the results are analyzed (section 3.1).

The number of clauses and words of the encoding forms were quantified. Subsequently, the number of instances of subordination links was observed and the proportion of prototypical forms (FProt) and alternative forms (FAlt) was identified. Thus, the MCLEx was calculated based on the total number of clauses divided by the total number of words, multiplied by one hundred. The variable FProt instantiates a representative encoding within the possibilities that Spanish offers, whereas the variable FAlt refers to a structure that does not present the morphosyntactic features of subordination but is semantically equivalent to an asymmetric link between events. To calculate this variable, three indices were constructed: (i) Mean clausular extension (MCLEx), (ii) Index of Prototypical Forms (IFProt), and (iii) Index of Alternative Forms (IFAlt). To calculate the productivity of these variables, the IFProt and IFAlt were each divided by the total number of subordination links, multiplied by one hundred.

2.4 Hypothesis

Based on the questions and objectives posed, two research hypotheses were proposed:

> *H1*: The texts created by children will present a significantly lower subordination link productivity index than the source text.
>
> *H2*: The texts created by children will have a significantly higher encoding through alternative forms than the source text.

3 Results

3.1 Relationship between children's retellings and the source text

To address the first research hypothesis, the ISL was applied to the texts created by the children (CT) and compared with the ISL of the source text (ST). Table 3 shows the descriptive data for the ISL of the CT. Once these results were obtained, the normality and homogeneity of variance tests were applied: Shapiro–Wilk & Levene, respectively. In both cases the p value indicated violation of the assumptions ($p = <0.0001$). With this background, to compare the ISL of the source text reported in Table 2 (=50.0) with the mean obtained by the children (=42.7), the Mann–Whitney U test was used under the hypothesis that the text created by children (CT) would have a lower ISL than that of the source text (ST). The data showed that it is possible to reject the null hypothesis: the difference between CT and ST was significant ($p = <0.01$) with a large effect size ($d = 0.0571$).

It is necessary to point out that not all the subordination links (SLs) created by the children exactly reproduced those presented by the source text. As indicated in Figure 1, the children elaborated 55.1% of the stimulus links in a similar way to the source text, however, they reformulated these links by 30.1% and created 14.8% new links.

The categories of similar form to the source text (SFST), reformulation (REF), and new link (NL) emerged in the analysis. We believe it is necessary to include examples of these forms to illustrate the findings. As seen in Table 4, in the similar form to the source text (SFST), the link and the form as presented in the source text are preserved. Thus, the example of this category shows the relative link (named) that occurs in the two texts. Regarding the reformulation (REF) category, it refers to the fact that, although the links are maintained, they appear in a different order or logic within the grammar structure of stories. Sometimes, they are even implied. Thus, in the reformulation example in Table 4 there are two links: A complement relation (wait) and a temporal adverbial relation (Don

TABLE 2 Formal and conceptual characteristics of the source text (ST).

Word count (WCT)	Total number of clauses (CLAU)	Mean clausular extension (MCLEx)	Total number of subordination links (SL)	Index of subordination linkage (ISL)	Total number of prototypical forms (FProt)	Index of prototypical forms (IFProt)	Total number of alternative forms (FAlt)	Index of alternative forms (IFAlt)
253	58	23	29	50.0	19	67	10	33

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TABLE 3 Descriptive data for the ISL of the CT.

	Group	N	Mean	Median	SD	SE
ISL	CT	28	42.7	42.3	15.62	2.952

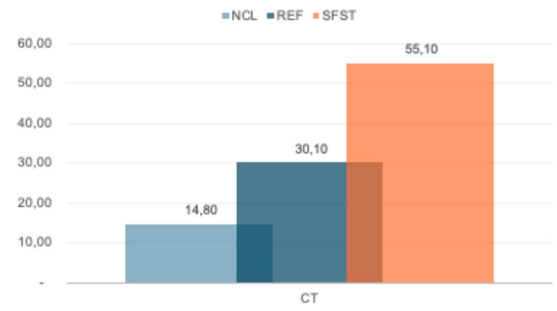

FIGURE 1
Proportion of qualitative categories in the CT.

TABLE 4 Relationship between the encoding forms in the source text and encoding forms in the children's text.

Category	Source text (ST)	Children's text (CT)
Similar form to source text (SFST)	*El campo era de un señor muy enojón llamado Don Bigotes The field belonged to a very angry man named Don Bigotes.*	*"y llegaron al campo de un señor llamado Bigotes" (DT17) "and they arrived at the field of a man named Bigotes"*
Reformulation (REF)	*"Esperemos a que se duerma Don Bigotes y vamos a rescatarla." "Let us wait for Don Bigotes to fall asleep and let us rescue her."*	*"y las amigas se preocuparon y fueron a salvarla. (Esperemos) Primero que don Bigotes se quede dormido" (DT67) "And her friends got worried and went to save her. (Let us wait) First Don Bigotes falls asleep" (DT67)*
New link (NL)	*"Flopi y sus amigas huyeron rápidamente " "Flopi and her friends quickly fled"*	*"y escaparon rapidito antes que don bigotes despertara" (DT 10) "and they escaped quickly before Don Bigotes woke up" (DT 67)*

TABLE 5 Descriptive data of the CT.

	Group	N	Mean	Median	SD	SE
MCLEx	CT	28	20.1	21.0	2.59	0.490
IFProt	CT	28	66.2	69.5	21.73	4.107
IFAlt	CT	28	30.3	29.5	18.50	3.496

Bigotes falls asleep—Friends rescue) are identified. The child omits the completive link and inverts the order of the temporal link. Finally, the new link (NL) corresponds to a link that is not present in the source text and that the child creates in his retelling. For example, the temporal link (escaped—Don Bigotes wakes up) illustrates this process.

3.2 Encoding forms

Regarding the linguistic encoding of conceptual links, Table 5 shows the descriptive data applied to the mean clausular extension (MCLEx), the index of prototypical forms (IFProt) and the index of alternative forms (IFAlt). When comparing these productivities with those of the source text (Table 2), results show that the average clausular extension MCLEx (=20.1) obtained by the subjects in their retellings is below that of the input text (MCLEx_ST = 23). The same trend is observed when comparing the average Index of Alternative Forms (IFAlt) of the produced texts (=30.3) with the IFAlt of the input (=34.5). On the other hand, the average of the Index of Prototypical Forms IFProt (=66.2) is slightly higher than that of the input (=65.5). Considering that the sample violates the assumptions of normality, these differences were analyzed with the Mann–Whitney U test. By observing the *p* values, it can be stated that the difference between the MCLEx of the input and that of the texts produced by the children is statistically significant and that the effect size is large. However, this significance does not occur when comparing the IFProt and IFAlt indices of the source text with the texts produced by the children. In this way, for this second result, the second null hypothesis of this research is accepted.

4 Discussion

The aim of this study was to explore the production of conceptual subordination and its encoding forms in Spanish during a retelling task. To achieve this, various descriptive and inferential statistical tests were applied. The results revealed several phenomena. It is possible to conclude that, although children at this age produce fewer subordination links compared to the source text, they utilize the typical resources of syntactic complexity to encode them, specifically those related to subordination.

In this retelling with audiovisual stimuli, the children produced texts that are significantly shorter than the source text and they also produced a significantly smaller number of subordination links. This was to be expected given the age of the children. However, there is a finding that is very interesting when analyzing the children's texts, because only 50% of the links produced by the children were similar to the source text, i.e., there was a space for linguistic creativity whether they reformulated links that were present or created links that were not present in the text. This finding allows three inferences to be made regarding the instrument and the population that was measured.

First, the instrument is only an elicitation, and, in that sense, it allows creativity and reformulations by the subjects, confirming the value of a semi-structured and ecological instrument as pointed out by Reese et al. (2012). Secondly, we highlight the value of employing an audiovisual stimulus, ratifying the findings by Schneider and Dubé (2005) and Diehm et al. (2020). Finally, regarding the child population, it is expected that in a population of normotypical 5-year-old children, there will be processes of interpreting information that lead to

paraphrasing and the creation of new elements. Now, regarding the encoding forms, the children's selections were very similar to what the ST presented. This finding leads us to seriously consider the need to control the stimulus to truly observe the linguistic competence of children.

5 Limitations and projections

The small sample (28 children) could be one of the limitations of this study. In fact, although we could perform some statistical analyses, the extension of the findings remains an issue to address. To replicate this study, we believe it is necessary to proceed with a larger sample. Additionally, it would be interesting to analyze subordination within this perspective in a longitudinal way. Moreover, studying and describing the mechanisms by which children construct subordination links from texts solely of independent sentences, without any formal subordination features, and asking them to create subordination links spontaneously (Alfaro-Faccio and Figueroa-Leighton, 2020) could provide further insights.

6 Conclusion

The objective of this study was to describe the development of conceptual subordination and its encoding forms in the oral narratives of Spanish-speaking children, as well as its relationship with the source text. The results showed that the participants' stories had significantly lower production of subordination links compared with the source text. Regarding the encoding forms, the results were very similar between the source text and the children's texts, with no significant differences. In both the source texts and the children's texts, the prototypical forms of Spanish dominated, suggesting a possible input bias. However, the children were able to create new links that were not present in the story and reformulated others, indicating an interpretive process that goes beyond mere reproduction of the input in these types of tasks.

Data availability statement

The data analyzed in this study is subject to the following licenses/restrictions: the base of the NIR2014/2019 children's linguistic corpus used in this study is in the process of being transcribed to be uploaded to the CHILDES platform. Requests to access these datasets should be directed to NC, nina.crespo@pucv.cl.

Ethics statement

The studies involving humans were approved by Comité de Bioética de la Pontificia Universidad Católica de Valparaíso, Chile. The studies were conducted in accordance with the local legislation and institutional requirements. Written informed consent for participation in this study was provided by the participants' legal guardians/next of kin.

Author contributions

CA: Writing – original draft, Writing – review & editing, Conceptualization, Formal analysis, Investigation, Methodology. NC: Conceptualization, Methodology, Writing – review & editing, Writing – original draft, Investigation, Resources. PA-F: Formal analysis, Methodology, Writing – review & editing. MS: Conceptualization, Formal analysis, Validation, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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