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Original Article

Conceptual Subordination in Typical and Atypical Child Language Development

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ABSTRACT

Subordination in child language is usually approached from a structural perspective, focusing on grammatical forms. For children with developmental language disorder (DLD), it remains unclear whether their difficulties with subordination are due solely to morphosyntactic limitations or also reflect a reduced capacity to establish conceptual relationships between propositions. Drawing on the notion of conceptual subordination, this study examines the ability of children with typical development (TD) and DLD to recognize and encode it in Spanish. The sample consisted of 40 Spanish-speaking 10-year-old children (TD = 25; DLD = 15), who completed a verbal task to elicit clausal relations with conceptual load. Responses were transcribed and analyzed by two expert raters, yielding moderate agreement (k = .45). Results did not reveal significant group differences in conceptual subordination production. However, encoding strategies diverged: both groups used prototypical forms, but children with DLD relied more on alternative forms than their TD peers. The complexity of encoding varied across relationship types and depended on the semantic properties of the associations. These findings indicate that while children with DLD can establish conceptual subordinations, their difficulties lie in selecting and managing the morphosyntactic resources required to encode them. Accordingly, language therapy should prioritize strengthening diverse subordination strategies, particularly for relationships with high semantic-syntactic density.

Keywords:
Child Language Development; Developmental Language Disorder; Conceptual Subordination; Spanish Grammar; Complex Syntax

La subordinación conceptual en el desarrollo típico y atípico del lenguaje infantil

RESUMEN

La subordinación en el lenguaje infantil suele abordarse desde una perspectiva estructural, centrada en las formas gramaticales. En el caso de los niños y niñas con trastorno del desarrollo del lenguaje (TDL), no está claro si sus dificultades para subordinar se deben únicamente a limitaciones morfosintácticas o reflejan también una capacidad reducida para establecer vínculos conceptuales entre proposiciones. Basado en la noción de subordinación conceptual, este estudio describe la capacidad de niños y niñas con desarrollo típico (DT) y TDL para reconocer y codificar instancias de subordinación conceptual en español. La muestra estuvo constituida por 40 escolares hispanohablantes de 10 años (DT=25; TDL=15). Se aplicó una prueba de producción oral diseñada para elicitar relaciones clausulares con carga conceptual. Las respuestas fueron transcritas y analizadas por dos anotadores expertos, con un índice de concordancia moderado (k = .45). Los resultados no revelaron diferencias significativas entre grupos en la productividad de la subordinación conceptual. Sin embargo, las estrategias de codificación divergieron: ambos grupos utilizaron formas prototípicas, pero los niños con TDL emplearon más formas alternativas que sus pares con DT. La complejidad de la codificación varió entre los tipos de relaciones y dependió de las características semánticas de los vínculos. Estos hallazgos indican que, si bien los niños con TDL pueden establecer subordinaciones conceptuales, sus desafíos radican en la selección y manejo de recursos morfosintácticos para codificarlas. Se propone que la intervención lingüística priorice el fortalecimiento de diversas estrategias de subordinación, especialmente, en relaciones con alta densidad semántico-sintáctica.

Palabras clave:
Desarrollo del Lenguaje Infantil; Trastorno del Desarrollo del Lenguaje; Subordinación Conceptual; Gramática del Español; Complejidad Sintáctica

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INTRODUCTION

Studies with children diagnosed with Developmental Language Disorder (DLD) consistently show that grammatical difficulties are a central feature in most cases of this condition (Bishop & Leonard, 2014; Contreras González & Mendoza Lara, 2011; Van der Lely, 1994, 1998, 2005). Impairments in complex syntax, particularly in subordinate clauses, stand out among the primary difficulties (Marinellie, 2004; Owen & Leonard, 2006; Schuele & Dykes, 2005; van der Lely, 2005). This phenomenon has been observed both during the early stages of language acquisition and in later developmental periods, after children have entered the school system (Nippold et al., 2009).

In Chile, most children with DLD receive therapeutic intervention during their early school years (Granada Azcárraga et al., 2020). However, despite this support, they continue to experience difficulties in syntactic complexification throughout their linguistic development (Crespo Allende, Alfaro-Faccio, et al., 2020; Crespo Allende, Alvarado, et al., 2020). These difficulties negatively affect their learning and academic performance (Araya et al., 2023; López-Rubio Martínez et al., 2010). Accordingly, there is a need for deeper discussion of the challenges this population faces when moving to more complex linguistic productions, particularly in clause linkage (Givón, 1995, 2001, 2009; Lehmann, 1988).

Evidence indicates that when attempting to construct subordinate structures, children with DLD produce a greater number and wider variety of formal errors than their typically developing (TD) peers. This phenomenon has been documented across multiple languages (Contemori & Garraffa, 2010; Novogrodsky & Friedmann, 2006; Schuele & Dykes, 2005; Souto et al., 2016; van Der Lely & Battell, 2003), including Spanish (Crespo Allende, Alfaro-Faccio, et al., 2020; Crespo Allende, Alvarado, et al., 2020; Holst Chaires et al., 2021; Serra Raventós et al., 2002). Therefore, subordination becomes a central topic in the conversations and research surrounding this disorder.

It is noteworthy that most studies on subordination and DLD have been grounded in formal theoretical approaches to language (Paradis, 2010; Rice et al., 1995; Van Der Lely, 1998; Zwitserlood et al., 2015). Mastropavlou & Tsimpli (2011) examined the difficulties children with DLD face in handling complement clauses in Greek, drawing on the Interpretability Hypothesis proposed by Tsimpli (2001). This hypothesis, rooted in Chomsky's (2014) Minimalist Program, posits that such constructions require numerous functional elements that are virtually invisible to children with DLD because they lack clear lexical meaning. This is why these structures pose greater difficulty for them.

Tuller et al. (2012) address the difficulties that adolescents with DLD experience with subordinate clauses using Jakubowicz's (2005, 2011) Derivational Complexity Hypothesis. According to this proposal, complexity can be measured in terms of syntactic derivational processes and the depth of embedding. Tuller et al. (2012) found that adolescents with DLD tend to avoid structures involving greater syntactic complexity.

The authors observed that these adolescents not only produce fewer subordinate constructions than their neurotypical peers, but also make more failed attempts at subordination. In addition, they resort to alternative structures—such as coordinated clauses, juxtaposed clauses, or direct speech. In other words, they avoid certain forms (as in 1.a) and replace them with others that convey a similar meaning but are structurally simpler (as in 1.b).

(1) a. María got angry because the cat knocked over the vase.
b. The cat knocked over the vase, and María got angry.

Both examples show a relationship between two propositions, where one is subordinated to or dependent on the other: María's anger results from the cat's action. Thus, both constructions convey equivalent meanings. However, only one of them is formally produced through subordination (1.a).

These studies support the linguistic specificity notion of DLD (Van der Lely, 1994, 1998, 2005; Van der Lely & Stollwerck, 1997), suggesting that only language—in this case, its grammar component—is impaired. From this perspective, it could be argued that the representational system of people with DLD remains intact, and that the observed impairments are limited to their linguistic manifestation, stemming from failures in syntactic computation. This would imply that all children, both typically developing and atypically developing—particularly those with DLD—are capable of representing relationships in subordinate combinations. However, children with DLD experience difficulties in formally encoding such linkages.

To date, this hypothesis has not been empirically confirmed. To address this issue, it is essential to examine subordination from a perspective that goes beyond purely formal accounts. The functional-typological approach proposed by Givón (1983, 1990, 1995, 2001, 2009) provides an appropriate explanatory and descriptive framework in this case. This approach advocates a functional perspective in language studies and conceptualizes grammar not as a self-contained formal system, but as one intrinsically interconnected with functional dimensions—

semantic, pragmatic, and cognitive. From this theoretical standpoint, grammar and the cognitive representational system of experience are two fundamental subsystems of language (Givón, 2001, 2009).

Proposing a functional description of grammatical behavior in children with DLD may enrich the discussion around this disorder's specificity. The question arises of whether the difficulties of children with DLD in increasing their discoursive complexity through subordinate structures stem solely from issues with formal construction rules, or whether they relate to challenges in establishing propositional connections within these grammar structures.

Accordingly, this study aims to examine the phenomenon from a functional perspective. This approach not only considers formal subordination criteria—such as clausal embedding and morphosyntactic dependency—but also incorporates semantic, pragmatic, and conceptual features related to linkage. To this end, we adopt the notion of *conceptual subordination* proposed by Cristofaro (2005, 2014), grounded in functional-typological grammar (Givón, 1995, 2001, 2009; Haspelmath, 2021).

From this perspective, subordination is defined as a specific way of establishing asymmetrical cognitive relationships between events or states of affairs (SoAs) (Dik, 1997), whereby one of them—the dependent event or SoA—lacks an autonomous profile and is interpreted from the perspective of the other—the main event or SoA. This cognitive configuration underlies all constructions traditionally classified as subordinate in grammar, including complement, relative, and adverbial clauses (Brucart Marraco, 2019; Cristofaro, 2005, 2014). However, it may also extend to constructions not traditionally recognized as subordinate, such as juxtaposition, coordination, nonfinite verb forms, and nominalization (Alvarado & Koza, 2019; Crespo Allende et al., 2024; Crespo Allende & Alvarado, 2021; Van Gijn et al., 2011).

In other words, unlike formal grammatical theories, the functional-typological approach seeks to explain linguistic structure in terms of its communicative function, emphasizing the interconnections between morphosyntactic structures and their semiotic functions. Within this framework, the units of analysis are semantic rather than syntactic. When one SoA depends on another, the relation is characterized as conceptual subordination, regardless of whether it is encoded through a morphosyntactic form prototypically associated with grammatical subordination (Crespo Allende et al., 2024). This functional definition allows for the inclusion of cases that, despite exhibiting different morphosyntactic manifestations, reveal a similar underlying cognitive structure.

This phenomenon has been documented through comparative studies across a wide range of languages (Cristofaro, 2005; Van Gijn et al., 2011). For instance, in example (1), both sentences may be regarded as a conceptual relationship expressing causal dependency, regardless of whether their syntactic forms are classified as subordination in Spanish grammar. A distinction is therefore proposed between the conceptual event linkage and their encoding according to language-specific grammatical rules. The parameters that determine how an asymmetrical linkage between events or SoAs is encoded have been termed *subordination strategies* (Van Gijn et al., 2011). We argue that the determining factor accounting for variation in these strategies is the presence of a disorder affecting a specific population, rather than TD populations.

It is important to note, however, that syntactic encoding does not manifest homogeneously. On the contrary, it operates along an implicational hierarchy (Cristofaro, 2005) based on the semantic–syntactic integration of SoAs. This hierarchy allows different subordinations to be classified according to a gradation of clausal relations. For example, a temporal relation, as illustrated in (2.a), exhibits a higher degree of semantic–syntactic integration than a conditional relation, as shown in (2.b).

(2) a. I will call you when I arrive.
b. If you are hungry, go to the kitchen.

We refer to the outcome of this integration as *density*. When semantic–syntactic integration is stronger, the clausal relation is less dense, and vice versa. In other words, when the relationship between form and meaning is highly cohesive—that is, when there is a clear and tightly aligned correspondence between syntactic structure and semantic function—density is lower, as the structure becomes more cognitively accessible or "transparent," even if it involves multiple propositions.

Accordingly, clausal density does not refer solely to the number of propositions within a structure, but also to the degree of coordination between form and meaning required for its processing. The notion of density is thus directly linked to semantic–syntactic integration, since denser structures require speakers to articulate complex conceptual relations through specific grammatical resources. This requirement is particularly relevant in child language development, as the progressive mastery of such integrations may reflect advances in the organization and increasing sophistication of discourse.

We contend that the notion of conceptual subordination provides a useful framework for describing the linguistic behavior of children with DLD as they increase the complexity of their discourse. Identifying the level at which these differences operate—whether conceptual or formal—will allow for a more precise characterization of the DLD profile. Furthermore, we maintain that this analysis will shed light on the different levels at which Spanish encodes propositional meanings through syntactic complexity, thereby reflecting varying degrees of semantic–syntactic integration. In this context, the goal of this study is to describe the extent to which Spanish-speaking children with TD and DLD can conceptually construct and linguistically encode instances of subordination in Spanish.

Based on this background, we examine three phenomena: (i) potential differences between children with DLD and TD in eliciting conceptual linkages between events or SoAs; (ii) possible variations in the encoding of conceptual subordination—namely, prototypical, alternative, and non-target forms—produced by both groups; and (iii) the potential relationship between the encoding strategies selected by children in both populations and the degree of semantic density associated with such linkages.

Accordingly, we formulated two hypotheses and one research question:

[H1] There is a statistically significant difference in the estimated proportion of conceptual linkages produced orally by children with TD and children with DLD.

[H2] There is a statistically significant difference between the two populations in the proportion of prototypical, alternative, and non-target forms used to encode linkages.

[RQ] What is the relationship between the encoding forms selected by children in both populations and the degree of density conveyed by the conceptual linkages between two SoAs?

METHODOLOGY

This study employed a descriptive research design, using a cross-sectional, comparative approach.

Participants

Sampling was purposive. Expert criteria were consulted to select participants who met specific characteristics relevant to the study's objectives (Briones, 1986). The final sample consisted of 40 school-aged children from the Valparaíso Region, divided into two groups: children with DLD (N = 15) and TD children (N = 25).

Participant selection in the TD group was based on the absence of prior cognitive, linguistic, and audiological diagnoses. This was corroborated through the Coloured Progressive Matrices Test (Raven et al., 2005) and a hearing screening. The classroom teacher provided qualitative information to validate linguistic performance, confirming that there were no observable or reported language difficulties among these students. Although no specific standardized language assessments were administered to this group, the background information supports their inclusion as a control group.

Participants in the DLD group were selected following the criteria established by Chilean regulations for diagnosis (Decree No. 170, Ministry of Education [MINEDUC], 2009). The diagnosis was confirmed through specific assessments of language, cognitive abilities, and auditory functioning. Linguistic skills were measured using the Toronto Exploratory Test of Spanish Grammar (Pavez, 2012), which evaluates receptive and expressive grammatical development in Spanish-speaking children, and the TEPROSIF-R (Pavez et al., 2009), which assesses speech errors and simplification processes associated with phonological development, identifying patterns that affect the clarity and quality of expressive language. Cognitive skills were assessed using the Progressive Matrices Test (Raven et al., 2005), which measures nonverbal intelligence, to ensure that children with DLD presented age-appropriate cognitive development. Finally, hearing was assessed through pure-tone audiometry and immittance testing. Both cognitive and hearing assessments were conducted to ensure that the participant's abilities were within normal ranges.

Additionally, participants were matched by age and socioeconomic background. The age variable was controlled through educational level, as all participants were enrolled in the 5th grade of primary education. At this grade, children are typically between 10 and 11 years old. Hence, the study included children aged 10 to 10 years 11 months (M = 10.6; SD = 0.11). There are three reasons behind selecting this age range: (i) participants had completed initial literacy instruction, consolidating specific patterns within the linguistic system (Nippold, 2004, 2006); (ii) this educational level involves significant curricular changes, including subject diversification, the introduction of multiple classroom teachers, and the beginning of a more academically demanding cycle; and (iii) according to Decree No. 170 (2009), children diagnosed with DLD at this stage

are considered to have overcome the special educational needs associated with their disorder and therefore no longer receive speech-language therapy or other forms of psychoeducational support.

The socioeconomic level variable was controlled through the type of school the participants attended. Students were recruited from three types of schools in the Valparaíso Region: (i) a fully state-subsidized school; (ii) a partially state-subsidized (shared funding) school; and (iii) a private fee-paying school. The three schools were matched according to the "performance category," all of which were classified as *Medium* under Law 20.529 (Decree No. 170, 2009).

All participants were native Spanish speakers. Parents or legal guardians signed a voluntary informed consent form, previously approved by an accredited Bioethics Committee. Children also provided voluntary assent by signing an assent form. To ensure full confidentiality, all participant data were anonymized.

Data Collection Instrument

An elicitation instrument targeting subordination in Spanish was designed, validated, and administered to collect the linguistic data. This instrument, entitled the Subordinate Clause Production Test (PPCS, *Prueba de Producción de Cláusulas Subordinadas*), explores the ability to produce different types of conceptual subordination orally. The PPCS consists of 50 items assessing interclausal relations—complement, adverbial, and relative clauses—and their respective subtypes, thereby allowing for the measurement of 16 subordination forms. Each item includes both a visual stimulus (an image) and a verbal stimulus (a target word). The image depicts two linked events or SoAs, while the word is intended to prompt the specific type of relation to be evaluated. Table 1 presents the types of clausal relations assessed by the PPCS, together with their corresponding verbal stimuli.

The PPCS underwent construct and content validation through an acceptability judgment task and expert review. First, the acceptability judgment aimed to validate the stimuli and their possible responses in Spanish, ensuring the adequacy of the linguistic input. The typification criterion used to analyze the results was the maximum score (P = 3). This score was assigned to words/sentences that accurately described the image and corresponded to Chilean Spanish. Constructions receiving lower scores were classified as unacceptable. Out of 624 possible sentences presented to 44 native Spanish speakers, 237 were classified as acceptable and 387 as unacceptable. This set of sentences constituted the matrix of possible responses upon which the PPCS instrument was based for analyzing participants' productions. This first validation stage was complemented by expert review.

Three judges were convened for the expert review, in accordance with Klaus's criterion (Krippendorff, 2004), which suggests a minimum of two evaluators. The selection criteria for these specialists were: (i) independence and (ii) active involvement in research. The experts were asked to evaluate the PPCS according to three criteria: coherence, completeness, and adequacy. A Likert scale was applied—strongly agree (3), agree (2), or disagree (1)—and experts were also asked to justify their responses with relevant qualitative comments. Three dimensions of the instrument were evaluated: goals, theoretical grounding, and stimulus quality.

The results indicated that 90% of the items received the maximum score (3). Statistical analysis using the Friedman test confirmed agreement among experts in two of the three criteria. Consequently, the PPCS was revised and improved with respect to the adequacy criterion (Alvarado, 2020).

Table 1. Types of relationships between clauses and verbal stimuli. Total items in the PPCS.

Relationship	Type	Verbal Stimuli				No. Items
COMPLETIVE	PHASAL	*Empezaron (they started)*	*Comenzaron (they began)*	*Terminó (he/she finished)*	*Dejó de (he/she stopped)*	4
	MODAL	*Debería (he/she Should)*	*Tiene que (he/she must)*	*Podría (he/she could)*	*Puede (he/she can)*	4
	MANIPULATIVE	*Mandó (he/she instructed)*		*Ordenó (he/she demanded)*		2
	DESIDERATIVE	*Quiere (he/she wants)*	*Espera (he/she waits)*	*Tiene ganas de (he/she feels like)*		3

	PERCEPTION	*Escucha (he/she listens)*	*Siente (he/she feels)*	*Ve (he/she sees)*	*Huele (he/she smells)*	4
	KNOWLEDGE	*Sabe (he/she knows)*	*Comprende (he/she comprehends)*	*Se dio cuenta (he/she realized)*	*Entiende (he/she understands)*	4
	PROPOSITIONAL	*Cree (he/she believes)*	*Sospecha (he/she suspects)*	*Piensa (he/she thinks)*	*Imagina (he/she imagines)*	4
	ENUNCIATIVE	*Dijo (he/she said)*	*Escribió (he/she wrote)*	*Declaró (he/she declared)*	*Anunciaron (they announced)*	4
ADVERBIAL	CAUSE	*Por*	*A causa de (because of)*	*Debido a (due to)*	*Porque (because)*	4
	FINALITY	*Para (to)*	*A fin de (in order to)*	*Con el fin de (aiming to)*	*Para que (so that)*	4
	TEMPORAL S	*Mientras (while)*		*Cuando (when)*		2
	TEMPORAL P	*Después de (after)*		*Luego de (following)*		2
	TEMPORAL A	*Antes de (before)*		*Previo a (prior to)*		2
	CONDITION	*Siempre y cuando (as long as)*		*Si (if)*		2
RELATIVE	SUBJECT	*Description 1*		*Description 2*		2
	DIRECT O.	*Description 1*	*Description 2*		*Description 3*	3
Items Total						**50**

Data Collection Procedure

The task required participants to orally produce a complex sentence based on a situation depicted in an image, prompted by a keyword. For example, Image 1 (corresponding to item 11) assesses desiderative complement relations using the verbal stimulus *"quiere*" ("wants"). In this case, the intended response would be a structure such as: *La mamá quiere que el bebé se calle* (“The mother wants the baby to be quiet”).

Image 1. Item 11 of the Subordinate Clause Production Test (PPCS).

Assessment was conducted in the participants’ schools during regular school hours, in spaces provided by the institutions, such as the School Integration Program (PIE) classroom or the library. The test was presented digitally and administered individually by a trained evaluator, following a standardized protocol to ensure consistent administration. Each session lasted approximately 15 minutes per participant. Sessions were audio-recorded, and the oral productions were subsequently transcribed for analysis. In cases where segments of the transcription were unclear or inaudible, a second transcriber reviewed the recording to avoid omissions of elicited material.

Table 2. Analysis Categories to identify encoding types for conceptual links between SoAs.

	Encoding Type	Description	Example
1.	Prototypical	Establishes the conceptual link in a prototypical form, according to the construction possibilities for Spanish: a. Construction with finite and non-finite forms. b. Nominalization of the dependent clause with an eventive noun. c. Omission of elements that can be inferred (e.g., elision of the grammatical subject, use of deixis, pronominalization). d. Lexical substitution: hyponymy, metonymy. e. Enrichment of the prototypical construction (adds SoAs).	*a. El carabinero ordenó transitar por la otra calle (the policeman instructed walking on the other street) [DT10]* *b. Terminó la lectura ([he/she] finished the reading) [DT08]* *c. El niño ríe porque le están haciendo cosquillas (the boy laughs because they are tickling him) [TDL01]* *d. El policía ordenó que el auto (conductor) parara (doblara) (the policeman demanded that the car/driver stopped/turned) [TDL03]* *e. El perro dejó de comer porque no había comida (the dog stopped eating because there was no more food) [DT01]*
2.	Alternative	Establishes a conceptual link in an alternative form to the expected one, according to the construction possibilities for Spanish: a. Change of structure: co-subordination, relative O/S, another form of clausal relation, direct/indirect style. b. Omission of participants in some SoAs that cannot be recovered. c. Omission of elements that cannot be recovered. d. Interpretative valuation of some SoAs or of the linking.	*a. La abuela le está diciendo: te podrías caer (the grandma is telling him/her: you could fall) [DT02]* Direct style. *b. Debería hacer sus cosas antes de estar pegado al celular (he/she should do his/her things before being stuck to the phone) [DT02]* Omits participant (mom). *c. El señor se cayó* (~~con un plátano~~) *a causa de pisar la cáscara de plátano* (~~ir mirando el celular~~) (*the man fell down* ~~with a banana~~ *because he stepped on the banana peel* ~~looking at the cellphone~~) *[TDL03]* *La abuela le dijo al niño: podría ser ágil para poder sostenerte (the grandmother told the boy: I could be agile so I could hold you) [DT01]*
3.	Prototypical / Alternative with Deviations	They establish the conceptual link, according to Spanish construction possibilities, in a prototypical or alternative form, but with grammar errors: f. Inter-clause discordance (verb forms, TMA). g. Incorporation of lexical (nuclei) and functional (connectives, prepositions) elements into the clausal relation. h. Substitution of lexical (nuclei) and functional (connectives, prepositions) elements in the clausal relation. i. Elision of lexical (nuclei) and functional (connectives, prepositions) elements in the clausal relation.	*a. Él le estaba rezando a los leones para que él no muera (he was praying to the lions so he doesn't die) [DT10]* *b. El niño con sin gorro come una manzana, pero con gorro comió un plátano (the boy with without a hat eats an apple, but with a hat ate a banana) [TDL13]* *c. Tiene ganas de que comer otra cosa (he/she wants to of eating something else) [TDL13]* *d. La pelota* ~~*[con]*~~ *que los niños están jugando es roja (the ball* ~~*with which*~~ *the kids are playing is red) [DT10]*
4.	Erroneous	Does not establish the expected conceptual link: a. The produced sequence does not correspond to the presented stimulus. b. Construction of an independent clause. c. Agrammatical construction. d. Incomplete clausal relation. e. Misuse of the verbal stimulus (e.g., lexical change, misunderstanding of the verbal stimulus).	*a. Cuando yo juego, me divierto (when I play, I have fun) [DT10]* *b. Declaró a los ladrones (declared to the thieves) [TDL02]* *c. Con el fin que no se va a tapar más el baño (in order to the toilet will not get clogged anymore) [TDL02]* *d. Después de llover (after raining) [TDL 02]* *e. Hice un previo a (I made a prior to) [TDL02]*

Data Analysis Procedure

The corpus consisted of 2,000 interclausal relations (DLD = 750; TD = 1,250). Four encoding categories were identified: prototypical, alternative, non-target (deviant), and erroneous forms. Table 2 describes this categorization, with excerpts from participants' answers.

The first three categories—prototypical, alternative, and non-target forms—indicate the presence of linkage (PL), whereas the erroneous category indicates its absence (AL). Conceptual and operational definitions of the descriptive variables measured were established accordingly (see Table 3).

Table 3. Conceptual and Operational Definition of Variables

	Conceptual Definition	Operational Definition
Conceptual Linkage	Semantic-syntactic relationship between two SoA that is coded between a dependent clause and an independent one.	Linkage Presence (LP) Linkage Absence (LA)
Type of Clause Encoding	Morphosyntactic structure used to encode a conceptual link between SoAs.	Prototypical (P) Alternative (A) Prototypical Deviated (PD) Alternative Deviated (AD) Erroneous (E)

To minimize bias in identifying linkages and the type of encoding, the corpus was analyzed by two expert annotators. They independently evaluated data collected through the PPCS from 14 participants (DLD = 7; TD = 7). Interrater reliability was calculated using Cohen's Kappa (Cohen et al., 2001; Landis & Koch, 1977), yielding a value of $\kappa = .45$, which indicates moderate agreement. Although this value may appear limited, it is important to consider that the high intragroup variability, typical of the populations assessed, influences annotation (Fleiss et al., 2003). The literature suggests that heterogeneity in clinical samples may affect Kappa coefficients, supporting the interpretation that the complexity and diversity of the data justify this moderate level of agreement (Campo-Arias & Herazo, 2010). Therefore, the value, despite being moderate, is considered acceptable and sufficient to ensure the stability and validity of the results.

Finally, six groups of clausal relations were established according to their distribution along the deranking hierarchy proposed by Cristofaro (2005). This was done to organize clausal relations into parameterized groups based on their semantic–syntactic characteristics. Each group was categorized according to the degree of density (< a >) associated with each type of linkage. The conceptual and operational definition of this distribution is detailed in Table 4. The 16 forms of conceptual relations assessed by the PPCS were organized into the density categor*y*, as presented in Table 5.

Table 4. Conceptual and Operational Definition of the Category 'Density'

Category	Conceptual Definition	Operational Definition
Density	The degree of semantic-syntactic integration that denotes a conceptual link between two SoAs.	The greater the semantic-syntactic integration, the lower the density: Density 1 < Density 2 < Density 3 < Density 4 < Density 5 < Density 6

To test the study's hypotheses, both descriptive and inferential statistical analyses were conducted using proportion tests in R (version 3.3.0).

RESULTS

The goal of this study was to describe how children with TD and those with DLD recognize and encode instances of conceptual subordination in Spanish. To this end, three dimensions of subordination were examined: (i) conceptual linkage productivity, (ii) clausal encoding forms, and (iii) density of interclausal relations. The results of the analyses are presented below.

Table 5. Distribution of Clause Relations According to the Degree of Density of the Linkages

Density	Clausal Relation	Example
D1	Completive relations: Factual and Modal	FACTUAL*: Finally, the baby stopped [crying].* MODAL: *He cannot [walk properly].*
D2	Completive relations: Desiderative, Manipulative, and Final Adverbial	DESIDERATIVE: *I want to [work less].* MANIPULATIVE: *Nora made [her grandson be quiet].* FINAL: *I bought you medicine [so you get better].*
D3	Completive relations of perception	PERCEPTION: *I heard [that the children were singing].*
D4	Adverbial relations of anteriority, posteriority, simultaneity, and relative S.	ANT.: *[Before leaving], I called you.* POST.: *[After I arrived], you notified me.* SIMULT.: *[While we were eating], we watched TV.* REL S: *My friend [who studies Art] is having a birthday.*
D5	Adverbial relations: Conditional, Causal, and Relative DO	CONDIC.: *[If he doesn't hurry], he will be late.* CAUSE: *It wasn't [because he was sick].* REL do: *The ball [that Martín wants] is sold out.*
D6	Completive relations: Knowledge, Propositional Attitude, Enunciative, and Relative IO and OB	KNOW.: The *teacher realized [that her students were learning].* PROP ACT: *I think [that Josefa is going to win the competition].* ENUNC.: *The teacher said [that everyone had passed].* REL IO: *The teacher [to whom I sent the work] hasn't responded.* REL OB: *This is the car [that I drive].*

Productivity of Conceptual Linkage between SoAs

The proportion of conceptual linkages produced by both groups was measured to address the first hypothesis. Of the total linkage instances targeted by the instrument (PL = Presence of Linkage; AL = Absence of Linkage), the TD group achieved 76% productivity, whereas the DLD group reached 73%. This finding indicates that the performance of both groups was highly similar, with only a 3% difference. Inferential statistical analysis confirmed that this differen ce was not statistically significant (p = .199, see Table 6). Consequently, hypothesis [H1] is not supported in the present study.

Forms of Encoding for Conceptual Linkage between SoAs

To examine the second hypothesis, the team analyzed the proportion of encoding forms produced by both groups. We considered three categories: prototypical, alternative, and non-target (deviant) forms. The analysis of estimated produced linkage (PL) proportions shows that TD children generated 69% prototypical forms, 27% alternative forms, and 4% non-target forms. In contrast, children with DLD produced 63% prototypical forms, 32% alternative forms, and 6% non-target forms.

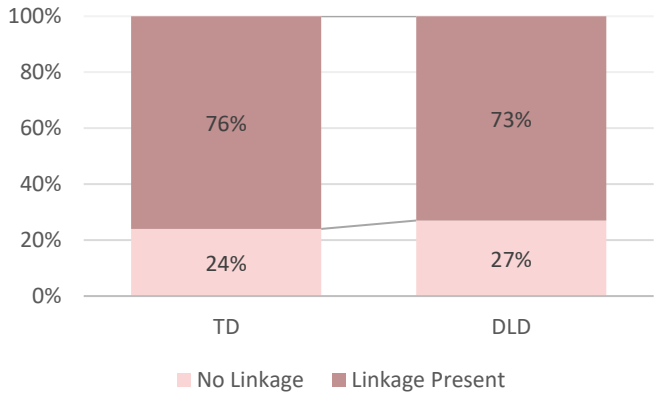

Chart 1. Percentage of Conceptual Linkages Between SoAs by Group.

Table 6. Estimated Proportion and P-Value of Conceptual Linkages Between SoAs by Group

Group	TD	DLD	P-Value
PV	0.7592	0.73254	0.1994

Both groups exhibited a similar overall pattern: prototypical forms were more frequent than alternative and non-target forms

in both populations (see Chart 2). However, the DLD group produced fewer prototypical forms than the TD group, and slightly more alternative and non-target forms than their neurotypical peers, although these differences were small.

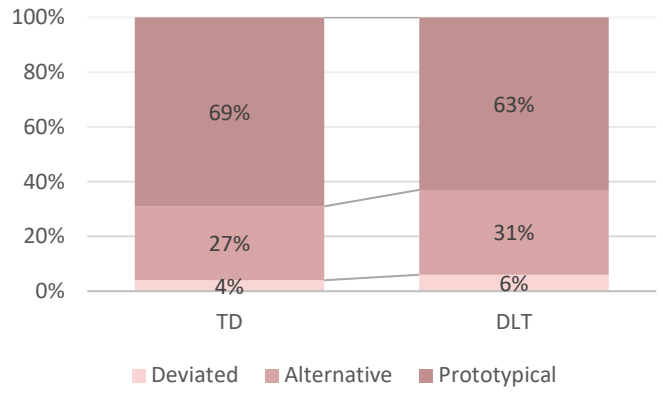

Chart 2. Encoding type percentage by group.

Inferential analysis revealed a statistically significant difference in prototypical encoding (p = .016), with the TD group outperforming the DLD group. No significant differences were found for alternative or non-target forms. These results partially support hypothesis [H2], indicating that the two groups differ specifically in the use of prototypical forms to encode conceptual linkages.

Table 7. Estimated Proportion of Encoding Form and P-Value

	DT	TDL	*p-value*
Prototypical	0.6933614	0.6276978	**0.01058**
Alternative	0.2708114	0.3165468	0.06685
Deviation	0.0358271	0.0557554	0.08834

Relationship between Density and Encoding Forms

Within the functional-typological framework, the morphosyntactic properties that characterize complement, adverbial, and relative relations derive from—and reciprocally reflect—their semantic properties. From this theoretical standpoint, we examined the relationship between the encoding forms selected by children in both populations and the density of conceptual linkages between two SoAs. Only prototypical forms were considered for this analysis, as they were predominant in both groups.

Chart 3 shows that the most frequently produced prototypical forms in both groups were the relationships with D1 (TD = 80%; DLD = 75%), corresponding to phasal and modal complement clauses; D3 (TD = 81%; DLD = 63%), which are perception complement clauses; and D6 (TD = 77%; DLD = 73%), being knowledge and propositional attitude complement clauses, as well as causal adverbial clauses.

Less frequent were D2 (TD = 62%; DLD = 57%), corresponding to manipulative and desiderative complement clauses, and purposive adverbial clauses; D4 (TD = 56%; DLD = 55%), which are temporal adverbial clauses and subject relative clauses; and D5 (TD = 54%; DLD = 40%), representing manner and conditional adverbial clauses, and object relative clauses.

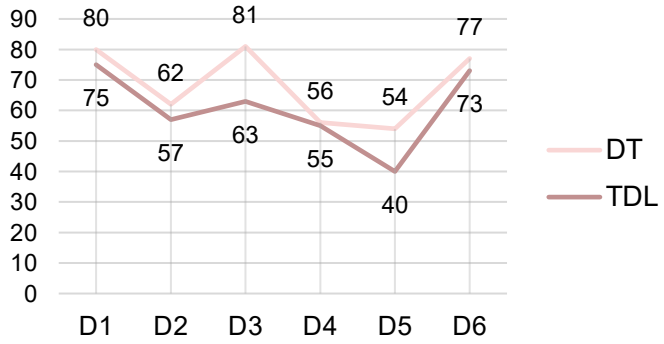

Chart 3. Proportion of Prototypical Forms by Density in Both Groups. [DT = TD; TDL = DLD].

DISCUSSION

The results indicate no significant differences between the TD and DLD groups in the ability to establish conceptual linkages. However, discrepancies are observed in the most representative canonical Spanish encoding forms used by participants. Significant distinctions emerged between prototypical versus deviant forms, as well as alternative forms. Additionally, it was found that encoding complexity depends not only on population characteristics but also on the semantic density of conceptual linkages.

These findings allow for two relevant observations. Firstly, delayed language development in the participants appears to be associated with a predominance of prototypical forms. The age-

related increase of these forms requires further investigation (Crespo Allende et al., 2024). Secondly, although children with DLD tend to produce prototypical forms less frequently and rely slightly more on alternative forms than their neurotypical peers, the observed differences are small. Consequently, this trend should be interpreted cautiously, avoiding categorical conclusions and recognizing that the magnitude of group contrasts may be influenced by individual and contextual variations within the samples (Leonard, 2014). This pattern aligns with what Tuller et al. (2012) describe as "avoidance strategies," a compensatory behavior in response to more complex or challenging structures.

Regarding the relationship between density and encoding, the selection of prototypical forms in both groups is partially mediated by the degree of integration of semantic-syntactic linkage. We proposed that higher density is associated with lower integration, leading to morphosyntactically more flexible encoding. Such flexibility may manifest, for example, in changes in verb form (finite/nonfinite) between SoAs across participants, or in the alternation of certain temporal, aspectual, and modal categories.

Accordingly, we expected that the predominance of prototypical forms would be higher in D1 and gradually decrease at higher-density levels, leading to a greater number of alternative and deviant forms. These expectations were not fully met, as the anticipated downward trajectory was not entirely observed. While both groups exhibited a similar trajectory in prototypical encoding for relations D1, D2, D4, and D5, this was not the case for D3 or D6. In D3, prototypical form use increased in both populations, with a notably greater increase in the TD group. Conversely, prototypical form use in D6 remained high for both populations, with a slight advantage for TD.

Although no significant differences were found in this analysis, a descriptive analysis suggests areas for future research. It appears that children with DLD face greater difficulty in eliciting prototypical forms in specific linkage structures—particularly perception, conditional adverbials, and direct-object relative linkages—compared to their TD peers. However, given the lack of statistical significance, this observation should be interpreted with caution and regarded as preliminary.

This behavior may be explained by the fact that the density of these forms not only entails lower semantic integration but also a reduction in grammatical constraints, thereby placing greater demands on the speaker. In this sense, it can be argued that the syntactic encoding of these structures requires a more complex coordination of linguistic resources. This difficulty could lead children with DLD to avoid using prototypical or canonical forms, unlike the patterns observed in the TD group. This interpretation is consistent with previous research (Jensen De López et al., 2014; Tuller et al., 2012) and aligns with findings that indicate specific grammatical difficulties in Spanish-speaking children with DLD (Crespo Allende, Alfaro-Faccio, et al., 2020; Crespo Allende, Alvarado, et al., 2020).

The findings of this study have relevant implications for both speech-language therapy practice and psycholinguistic research. First, language intervention should not only target the production of grammatically correct structures but also identify and redirect compensatory strategies (such as alternative forms) toward more representative subordinated structures. This underscores the importance of working with both prototypical structures and more advanced variants, fostering greater linguistic flexibility in response to communicative demands.

Secondly, we must recognize that subordinate constructions correspond to different types of propositional linkages, which vary in complexity. Therefore, approaching them requires integrating both formal configuration and semantic-pragmatic dimensions, as these properties influence how children comprehend, organize, and express complex meanings.

Finally, the study of conceptual subordination in child language development has led to a novel application of functional-typological theory. Originally designed for cross-linguistic comparison, the present study employed it to analyze intralinguistic development. Further exploration of this research line could substantially advance this area by empirically evaluating the psychological reality of Cristofaro's (2005) construct, thereby enriching the description of child language development.

CONCLUSION

The results of this study indicate no significant differences between the TD and DLD groups in conceptual subordination production. However, differences are observed in clausal encoding strategies. Both groups produced proportionally more prototypical forms, although children with DLD exhibited a higher proportion of alternative or deviant forms compared to their TD peers. While this difference was not statistically significant, a descriptive analysis of the data suggests a relevant pattern. Given the small sample size and relatively high variability, the statistical power to detect differences was limited. Therefore, this observation should be interpreted with caution and

regarded as a preliminary indication that warrants further research with larger samples or complementary methodologies. Future studies could confirm or refute potential real differences.

The difficulty children with DLD experience in using subordination is primarily linguistic rather than conceptual. In other words, the challenge lies in managing the Spanish grammar resources required to link two SoAs. Thus, the inconsistency observed in DLD around subordination does not appear to stem from a limitation in establishing conceptual linkages between two SoAs, but rather from difficulties in selecting and using prototypical morphosyntactic forms for their encoding. Moreover, we found that encoding complexity is not consistent across all combinations and depends on the semantic characteristics of the relationships, rather than solely on the particularities of the studied groups.

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