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# Impact of Structural and Pragmatic Language Skills on Emotion Regulation and Social Relationships in School-Age Children

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## Abstract

This study examines the relationship between structural and pragmatic language skills, emotion regulation, and social relationships in children from socioeconomically disadvantaged backgrounds. The sample comprised 40 participants (mean age = 9 years; SD = 3.6). Language and social-emotional skills were measured using parent-reported questionnaires and standardised direct assessment tests. A quantitative, non-experimental, cross-sectional design was employed for both descriptive and inferential analyses. Results indicate that only pragmatic language skills, as reported by parents, are significantly associated with better emotion regulation and social relationships. In contrast, pragmatic skills (directly assessed using a standardised test) and structural language skills (parent-reported and directly assessed) show no significant associations with socio-emotional skills. No significant sex differences were found across the variables analysed. These findings underscore the importance of language's pragmatic component in emotional and social development. The study supports the need for interventions that foster pragmatic skills to improve children's emotional well-being and social interactions in educational settings.

## Keywords

Pragmatics, structural language, emotion regulation, social relationships

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# Impacto de las Habilidades Estructurales y Pragmáticas del Lenguaje en la Regulación Emocional y las Relaciones Sociales en Niños y Niñas en Edad Escolar

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## Resumen

El presente estudio investiga la relación entre las habilidades lingüísticas estructurales y pragmáticas, la regulación emocional y las relaciones sociales en niños y niñas de un contexto socioeconómicamente desfavorecido. La muestra estuvo compuesta por 40 participantes (9 años de edad promedio), se midieron las habilidades lingüísticas y socioemocionales mediante cuestionarios heteroinformados y pruebas de evaluación directa estandarizadas. Los resultados mostraron que solo las habilidades pragmáticas del lenguaje, evaluadas a través de un cuestionario heteroinformado por las familias, están significativamente relacionadas con una mejor regulación emocional y relaciones sociales, mientras que la valoración directa de las habilidades pragmáticas evaluadas con un test estandarizado y las habilidades lingüísticas estructurales (evaluación heteroinformada y directa) no presentaron una asociación significativa con las habilidades socioemocionales. No se encontraron diferencias significativas entre sexos en ninguna de las variables analizadas. Estos hallazgos subrayan la importancia del componente pragmático del lenguaje en el desarrollo emocional y social en estos contextos. El estudio plantea la necesidad de intervenciones que promuevan el desarrollo de habilidades pragmáticas para mejorar el bienestar emocional y las interacciones sociales en entornos educativos.

## Palabras clave

Pragmática, lenguaje estructural, regulación emocional, relaciones sociales

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In recent decades, emotional education has gained increasing prominence in school settings. Since the turn of the 21st century, this trend has become particularly evident, as the role of the teacher has shifted from a purely instructional focus to one centred on students' learning, with emotional support as a core component. A report by the International Commission on Education for the Twenty-first Century, presented to UNESCO and entitled *Learning: The Treasure Within* (Delors et al., 1996), marked a paradigm shift in educational guidelines by recognising socio-emotional education as a vital complement to cognitive development and a key means of preventing risk behaviours, preparing students for life, and promoting social harmony. The report describes four pillars that underpin 21st-century education: learning to know, learning to do, learning to be, and learning to live together (Collell & Escudé, 2003). Socio-emotional education has been prioritised in recent educational reforms led by the Spanish government, and the new education law (Government of Spain, 2020) places particular emphasis on emotional and values-based learning, highlighting its integration across most subjects as an essential competence for academic success.

The growing interest in emotional education stems from the need to teach children to recognise and properly manage their own and others' emotions, in order to support their personal, professional and social development. These abilities fall under the umbrella of emotional competence, which is defined as an individual's capacity to identify, understand, express and regulate emotions adaptively across a range of personal and social contexts (Saarni, 1999; Salovey & Mayer, 1990). This construct comprises four main components: (1) emotion awareness: the ability to recognise one's own and others' emotions; (2) emotion understanding: the ability to interpret the causes and consequences of emotions; (3) emotion expression: the ability to convey emotions appropriately; and (4) emotion regulation, the ability to manage emotions in order to meet environmental demands and achieve personal and social goals (Garner, 2010).

Emotion regulation plays a crucial role within the broader construct of emotional competence. It refers to the processes by which individuals influence which emotions they experience, when they experience them, and how they express them (Gross, 1998). This ability involves two main strategies: cognitive reappraisal, which entails reinterpreting a situation to reduce its emotional impact; and emotional suppression, which involves inhibiting the outward expression of an already elicited emotion (Gross, 2002). Tools such as Shields and Cicchetti's (1997) Emotion Regulation Checklist (ERC) are used to assess emotion regulation in children. This instrument enables parents and teachers to evaluate children's ability to regulate their emotions in everyday situations. The ERC captures dimensions such as emotional lability and appropriate emotion regulation, offering a comprehensive assessment of emotional management.

## Background

### The Relationship Between Language and Emotion Regulation

The relationship between language and emotions is a crucial factor in understanding the development of emotional competence. Language not only facilitates the communication of emotional states, but also plays a key role in their regulation. Through language, children can name and categorise their emotions, which enhances their ability to manage them and adapt socially (Eisenberg et al., 2016; Lindquist, 2017). The ability to verbalise emotions has been linked to improved stress management and greater emotional competence, as language enables individuals to reinterpret and reframe emotional experiences in more adaptive ways (Barrett et al., 2001; Gross & Thompson, 2007). Language also serves as a fundamental tool for emotion self-regulation, permitting more effective management of internal and social conflicts. Several studies have demonstrated that robust language development facilitates the verbalisation and cognitive processing of emotional experiences, leading to more effective handling of emotionally charged situations (Cartin, 2009; Roben et al., 2013). The interaction between language and emotions is therefore reciprocal and essential to an individual's overall development, influencing both social competence and emotional well-being (Monopoli & Kingston, 2012).

A distinction between structural language and pragmatic communication is often drawn when describing language and communication skills. Structural language skills include phonology (the sounds of language), semantics (vocabulary), syntax and morphosyntax (grammar), narrative discourse, and the processing of verbal auditory information (Olswang & Bain, 1988). Pragmatic skills refer to the ability to use language effectively and appropriately in different social contexts. These encompass not only conversation and other forms of verbal interaction, but also the management of non-verbal aspects such as the appropriate use of gestures, turn-taking in conversation and eye contact—all of which support fluent and contextually relevant communication (Bishop, 1997). While navigating these specific aspects of language and communication, children must also be able to express their own thoughts (expressive language) and understand the language of others (receptive language) in both social and learning contexts (Bloom & Lahey, 1978). Thus, three interrelated domains—form, content and use—combine to shape language and constitute essential components of communication. Difficulties in any of these areas can result in issues such as limited vocabulary, expressive deficits, phonological challenges, comprehension problems, and pragmatic language impairments (Helland et al., 2014).

Emotion regulation and language development are closely linked, since language provides vital tools for expressing and managing emotions. According to Vallotton and Ayoub (2011), as children gain greater control over their language skills, they become better able to verbalise their emotions, which in turn enhances their ability to regulate those emotions more effectively. This linguistic capacity is essential for preventing impulsive reactions and navigating complex emotional situations appropriately. Harper Browne and Shapiro (2016) also emphasise that children with well-developed language skills tend to use more effective emotion regulation strategies, contributing to greater social and emotional competence. In a study involving 210 school-aged children, Beck et al. (2012) found strong correlations between language

proficiency and emotional competence, demonstrating that higher levels of receptive vocabulary and literacy are directly associated with a greater capacity to understand and regulate emotions. Language therefore enables not only the expression of emotions but also their effective regulation, supporting social and emotional well-being from the earliest stages of childhood development.

In addition to structural language, the development of socio-emotional skills relies on pragmatics. The ability to accurately interpret social contexts and the intentions of others facilitates effective communication and appropriate emotion regulation. McKown et al. (2009) found that pragmatic skills, together with the ability to interpret non-verbal cues, are directly associated with competence in social interactions. When combined with emotion self-regulation, these abilities predict children's social success and are particularly important in preventing behavioural problems and fostering social integration within the school environment (Calkins & Keane, 2009). Pragmatic language skills involve using social and contextual cues to grasp a speaker's intended meaning and to achieve social goals through effective communication with other people (Coplan & Weeks, 2009). As such, communicative and pragmatic abilities are considered key contributors to social competence in childhood.

### **The Relationship Between Language and Social Skills**

In the same way that language is essential for emotion regulation, it is also key to engaging in social interaction and deploying social skills. Children who can use language to express their emotions and behave appropriately within a given context are more likely to build satisfying interpersonal relationships and form lasting friendships (Im-Bolter & Cohen, 2007). Conversely, the inability to solve problems through language can become a social barrier, as peers tend to avoid those who exhibit aggressive behaviour or poor emotion control (Wolters et al., 2013). Consistent with this pattern, children with language difficulties may resort to less adaptive responses, such as aggression or disruptive behaviour, which in turn limits their opportunities to acquire valuable social skills (Bakopoulou & Dockrell, 2016).

Research has shown that students with well-developed pragmatic skills exhibit fewer behavioural problems and greater social adjustment (Bornstein et al., 2013; Fagan & Iglesias, 2000). However, difficulties in pragmatic language can lead to misunderstandings, affecting children's ability to integrate socially and develop healthy relationships (Helland et al., 2014). These challenges are often overlooked by adults, who may misinterpret pragmatic deficits as solely emotional or behavioural problems (Rondal et al., 2000).

For children from disadvantaged backgrounds, the interplay between language and social skills is fundamental to their overall development. Research has shown that low socioeconomic and educational levels within families, along with language barriers, can significantly delay the development of both social and language skills in children (Hurt & Betancourt, 2016; Meir & Armon-Lotem, 2017). Such delays may result in problems with social interaction, difficulties in forming friendships and resolving conflicts, and problematic behaviours in school settings (Aro et al., 2012; Law et al., 2014). Furthermore, Law and Sivyer (2003) emphasise that nurturing language skills not only enhances social competence, but also helps to prevent behavioural issues associated with social exclusion. Given the essential role of one's social environment in the construction of language, it is important to investigate how children develop

in emotionally rich contexts, as these are key to forming thoughts and, by extension, developing oral language properly. The present study examines the relationship between the social and pragmatic dimensions of language and their influence on emotional development.

Several recent systematic reviews and meta-analyses have examined the relationship between language proficiency and emotional competence. For instance, Kim et al. (2019) discovered that greater language development during childhood is linked to improved emotion self-regulation and social adjustment. Similarly, Wieczorek et al. (2024) demonstrated that even among children with atypical language development, modest enhancements in language proficiency can yield significant gains in social competence. Conversely, language difficulties during childhood have been found to predict social competence challenges later in life (Yew & O’Kearney, 2013), underscoring the pivotal role of language in emotional development.

### **Emotional Competence in Boys vs Girls**

Another point of interest in the study of emotional competence is the examination of sex differences. Previous research has produced mixed findings, with some studies reporting differences in emotional skills between boys and girls. For example, Fujiki et al. (2002) found that girls displayed significantly higher levels of emotion regulation than boys. Similarly, Reyna and Brussino (2015) observed differences in social behaviour (including social skills and behavioural problems) and emotion regulation, though these differences only reached significance from the age of five. Girls exhibited greater social skills and fewer behavioural issues, while boys displayed higher levels of negative emotionality and poorer regulation of both negative and positive emotions. However, other studies have reported no significant sex differences in emotion regulation (Aguilera et al., 2021; Qasem et al., 2022; Rydell et al., 2003). This variability highlights the need for further research to identify consistent patterns that could inform targeted intervention strategies and support healthy, equitable emotional development in both boys and girls.

In this regard, authors such as Ahufinger and Aguilera (2022) discuss the impact of sexist stereotypes on language acquisition and teaching, as well as on the differing ways in which boys and girls express their emotions. They also consider how these dynamics influence society more broadly. Sexist stereotypes are rooted in the persistent belief that girls are emotional, empathetic and other-oriented, whereas boys are seen as rational, emotionally detached and focused on their own goals and challenges (Brody, 2010). These assumptions shape both the experience and expression of emotion, with particularly strong effects on the latter. Various studies suggest that men and women experience emotions at similar levels, though they differ in the types of emotions they express (Niedenthal & Ric, 2017). In this context, it is imperative to examine how differences in emotion expression are acquired through gender stereotype-based socialisation, rather than derived from innate or biological factors linked to sex. Investigating these dynamics not only contributes to the academic understanding of emotional development, but also carries practical implications for advancing gender equality in educational and social settings.

### **The Present Study**

This study examines the relationship between two dimensions in school-aged children from socioeconomically disadvantaged backgrounds: (1) structural (lexical and morphosyntactic) and pragmatic language skills, and (2) emotion regulation and social relationships. The aim is to determine the specific contribution of structural and pragmatic language skills to emotion regulation and social functioning in this group of students.

The research questions examine the extent to which children's language skills influence their ability to regulate emotions and navigate social situations. The study will assess whether language proficiency can predict emotional and social skills, and whether more advanced language development is associated with better emotion regulation and social competence. Sex differences in language skills, emotion regulation and social competence will also be explored to shed light on potential divergences in emotional and language development between boys and girls.

Two central hypotheses are proposed. First, it is hypothesised that language skills will account for a significant proportion of the variability in emotion regulation and social skills, such that children with stronger structural and pragmatic language abilities will demonstrate greater emotional and social competence. This implies that children with more developed language skills are also likely to have a greater capacity for regulating emotions and engaging in social relationships. Based on previous literature, the pragmatic component is expected to play a more significant role than structural components in relation to socio-emotional outcomes. Second, given the mixed findings reported in prior studies, no directional hypothesis is proposed regarding potential sex differences in the development of language skills, emotion regulation or social relationships.

### **Method**

The study employed a quantitative, non-experimental, cross-sectional design with both descriptive and inferential aims. This allowed for analysis of the relationship between language-related and socio-emotional variables at a single point in time without manipulating the conditions.

#### **Participants and Study Context**

The sample included 40 participants (21 boys and 19 girls) with a mean age of 9 years and 9 months ( $SD = 3.6$ ; range = 9 years 4 months to 10 years 3 months). All participants were enrolled in a public school classified as a "maximum complexity" institution according to Resolution ENS/906/2014 of 23 April (published in the Official Gazette of the Government of Catalonia [DOGC] No. 6613 on 30 April 2014) by the Catalan Ministry of Education. This classification considers factors such as families' educational and occupational levels, their socioeconomic status, and the presence of students with specific educational needs or from newly arrived families.

The school is located in the town of Santa Margarida de Montbui, which experienced significant immigration, mainly from Andalusia and Extremadura, between the 1960s and 1980s. Recent decades have seen a new wave of immigration, predominantly from North Africa, particularly Morocco. Consequently, most students come from Spanish-speaking or Arabic-speaking families, with only a few using Catalan as their primary home language. Nevertheless, Catalan is the language of instruction in the school. Of the students in the sample, 80% held Spanish nationality, 2.5% were of Dominican nationality with dual Spanish citizenship, 15% were Moroccan, 2.5% were Romanian and 2.5% were Portuguese.

To take part in the study, participants were required to meet the following inclusion criteria: (a) be enrolled at the participating school; (b) be aged 9 or 10; and (c) have an adequate level of comprehension and expression in both Catalan and Spanish. The sample consisted of typically developing children, with the exception of one boy diagnosed with dyslexia and attention deficit hyperactivity disorder (ADHD), and one girl diagnosed with dyslexia. Both were included in the study.

Some participants had not been born in Catalonia, but were included in the study because they had been enrolled at the school from an early age, and their proficiency in Catalan and Spanish was considered to be within the normal range. Proficiency in the languages of instruction was assessed according to three criteria: reports from family members regarding language use at home; confirmation from classroom teachers that the child could follow lessons with the group; and verification by the study examiner that the child could complete the tasks without any comprehension or expression difficulties.

Data on the educational attainment and employment status of the children's mothers and fathers are presented in Table 1. The languages spoken at home and the percentage use of each are detailed in Table 2. Regarding mother-child language interaction, 42.5% communicated exclusively in Spanish, 17.5% in both Spanish and Arabic, 30% in Arabic, 2.5% in Catalan and Spanish, 2.5% in Pulaar, 2.5% in Portuguese, and 2.5% in Romanian. As for father-child interaction, 35.8% used Spanish, 23.1% Spanish and Arabic, 28.2% Arabic, 2.6% Pulaar, 2.6% Portuguese, 2.6% Romanian, and 5.1% Catalan and Spanish. The predominant language among students was Spanish (70%), followed by Spanish and Arabic (15%), Arabic (7.5%), Catalan and Spanish (2.5%), Spanish and Pulaar (2.5%), and Spanish, Catalan and Arabic (2.5%).

**Table 1**

*Educational Attainment and Employment Status of the Participant's Mothers and Fathers*

<b>Employment status</b>	<b>Mothers (n = 40)</b>	<b>Fathers (n = 39)</b>
Unemployed	50%	7.7%
Employed	50%	92.3%
<b>Educational attainment</b>		
0 No formal education	10%	15.4%
1 Primary education	15%	20.5%
2 Secondary education	35%	28.2%
3 Upper secondary education	15%	5.1%
4 Intermediate vocational qualification	10%	15.4%
5 Advanced vocational qualification	7.5%	10.3%
6 University bachelor's degree	0%	2.6%

Employment status	Mothers (n = 40)	Fathers (n = 39)
7 University master's degree	7.5%	2.6%

**Table 2***Languages Used by the Participants*

No. of participants (n = 40)	Language combinations	Respective % of use
16	Catalan – <b>Spanish</b>	26.6% – <b>73.4%</b>
17	Catalan – <b>Spanish</b> – Arabic	21% – <b>48%</b> – 31%
1	Catalan – <b>Spanish</b> – Arabic – Amazigh	20% – <b>40%</b> – 10% – 30%
2	Catalan – <b>Spanish</b> – Arabic – Berber	25% – <b>40%</b> – 15% – 20%
1	Catalan – <b>Spanish</b> – Berber	30% – <b>50%</b> – 20%
1	Catalan – Spanish – <b>Pulaar</b>	20% – 30% – <b>50%</b>
1	Catalan – <b>Spanish</b> – <b>Portuguese</b>	20% – <b>40%</b> – <b>40%</b>
1	Catalan – <b>Spanish</b> – Romanian	10% – <b>50%</b> – 40%

*Note.* The language that participants identified as being used most frequently in their linguistic repertoire is highlighted in bold.

**Instruments**

Several parent-reported questionnaires (completed by the mother, father or both) were used in this study. The first was an ad-hoc questionnaire designed specifically for the study to collect sociodemographic data. The remaining three were validated questionnaires aimed at assessing the children's structural and pragmatic language abilities, emotion regulation and social skills. In addition, two direct assessment tests were administered to the children to evaluate their structural and pragmatic language proficiency. The instruments (questionnaires and tests) used in this study are described below

**Questionnaires****Sociodemographic Data Questionnaire**

This ad hoc questionnaire collects information on the child's age, nationality, place of birth, the family member(s) who completed the questionnaire, the occupations of the father and mother, the language used in interaction with each parent, the child's dominant language, the number of languages the child speaks and the corresponding percentage of use, as well as any diagnoses the child may have.

**Children's Communication Checklist – Second Edition (CCC-2) (Bishop, 2003)**

The Spanish version of the CCC-2, adapted and validated by Crespo-Eguílaz et al. (2016), was used. This instrument assesses children's communication abilities and difficulties, as well as

their behaviour in everyday situations. It evaluates formal aspects of language (phonology and morphosyntax) and its pragmatic and social use. The checklist comprises 70 statements describing how children communicate. For the purposes of this study, scores from two scales containing 28 items each (56 items in total) were used: (1) Morphosyntax, vocabulary and discourse (structural language); and (2) Language pragmatics. Each item is rated on a 4-point Likert scale: 0 = “less than once a week (or never)”; 1 = “at least once a week, but not every day”; 2 = “once or twice a day”; and 3 = “several times a day (or always)”. Examples of items from the structural language scale include: “Leaves out ‘is’, and so says ‘Daddy going to work’ rather than ‘Daddy’s going to work’ or ‘Daddy is going to work’”. Or might say ‘The boy big’ rather than ‘The boy is big’”; “Mixes up words that sound similar. E.g. might say ‘telephone’ for ‘television’ or ‘magician’ for ‘musician’”. Examples of items from the pragmatic language scale include: “Misses the point of jokes and puns (though may be amused by nonverbal humour such as slapstick)”; “Tells people things they know already”. The checklist has a reliability coefficient of  $\alpha = .93$  (Mendoza & Garzón, 2012).

### **Emotion Regulation Checklist (ERC; Shields & Cicchetti, 1997)**

The Spanish version validated by Lucas-Molina et al. (2022) was used. This version has demonstrated high internal reliability ( $\alpha = .80-.90$ ) and predictive validity in relation to other measures of emotional adjustment ( $r = .60-.80$ ) in Spanish child populations (Lucas-Molina et al., 2022). The checklist assesses various aspects of emotion dysregulation by presenting a series of statements describing typical behaviours. It evaluates multiple dimensions of the emotion regulation process where difficulties may arise: emotional outbursts, interference with daily life, emotional inattention, emotional confusion, and emotional rejection. The instrument includes two subscales—Emotional Lability/Negativity and Emotion Regulation—and a global Emotion Regulation score that combines the two. The first subscale consists of 15 items (11 positively keyed and 4 reverse-coded), and the second includes 8 items (6 positively keyed and 2 reverse-coded). In total, the checklist contains 24 items rated on a 4-point Likert scale (1 = never, 2 = sometimes, 3 = often, 4 = almost always). Higher scores on the global scale indicate stronger emotion regulation abilities. This study used the global emotion regulation score. Examples of items include: “Exhibits wide mood swings”; “Is prone to angry outbursts / tantrums easily”, and “Can modulate excitement [Can control his/her excitement] (for example, doesn’t get ‘carried away’ in high-energy play situations or overly excited in inappropriate contexts)”.

### **Strengths and Difficulties Questionnaire – Spanish Version (SDQ-CAS; Goodman, 1997)**

This questionnaire is designed to screen for behavioural strengths and difficulties in children and adolescents aged 3 to 16. The psychometric properties of the Spanish version, specifically with regard to the reliability of the scores, have been deemed adequate for use with Spanish child and adolescent populations (Ortuño-Sierra et al., 2016). The questionnaire consists of 25 items organised into five subscales of five items each. In the present study, only 5 of the 25

items were used, corresponding to the subscale originally designed to assess social skills (specifically problems with peers). This subscale includes statements related to peer conflict, such as whether the child has friends, is teased by others or prefers to be alone. Each item is scored on a 3-point Likert scale: “Not true” (0 points), “Somewhat true” (1 point) and “Certainly true” (2 points). The maximum score for this subscale is 10 points, with the following categories: normal (0–2 points), borderline (3 points) and abnormal (4–10 points). The five items used in this study were: (1) “Rather solitary, prefers to play alone”; (2) “Has at least one good friend”; (3) “Generally liked by other children”; (4) “Picked on or bullied by other children”; and (5) “Gets along better with adults than with other children”.

## **Validated Tests for Assessing Children’s Structural and Pragmatic Language Skills**

### **Sentence Repetition Task**

This subtest was taken from the Spanish version of Clinical Evaluation of Language Fundamentals – Fifth Edition (CELF-5; [Wiig et al., 2018](#)). The CELF-5 has been assessed and validated for use with the Spanish population, and this subtest has reliability coefficients of .92 and .90 for 9- and 10-year-olds, respectively. The task involves repeating 26 sentences of increasing complexity, as orally presented by the examiner. It is designed to assess a child’s ability to listen to sentences of increasing length and repeat them without altering their meaning (semantics), content (lexis), or the structure of words (morphology) or sentences (syntax). The task assumes that semantic, lexical, morphological and syntactic competence supports immediate recall (short-term memory). The maximum score is 78, with each sentence scored out of 3 points. A fully correct response receives 3 points, while partially correct or incorrect responses receive 2, 1 or 0 points, depending on the number of errors. For example, if the sentence to be repeated is “I’ll buy a ticket for a friend who likes basketball”, the scoring would be as follows: 3 points for repeating it exactly as presented; 2 points for one error (e.g. leaving out “for”); 1 point for two errors (e.g. leaving out “for” and replacing “basketball” with “football”); and 0 points for three or more errors (e.g. the above plus adding “really” before “likes”).

### **Audiovisual Pragmatic Test (APT; [Pronina et al., 2019](#))**

This test assesses pragmatic and prosodic skills using 47 items depicting everyday situations, accompanied by visual images. It has been designed and adapted for the Catalan context. Students are asked to answer a question about each situation, and the test evaluates the social and contextual appropriateness of their responses. Two points are awarded if the child gives a highly pragmatic response, i.e. if they express the expected speech act in a socially suitable manner. One point is awarded if the child expresses the intended speech act, but the response lacks social appropriateness (e.g. if it includes too much or too little information, or is overly blunt). No points are awarded if the child does not answer or provides a response that does not match the expected speech act. Although the test also assesses aspects of prosodic skills, only

the pragmatic component was used in this study. For example, one item presents the following situation: “Imagine your football coach asks how much money you have in your piggy bank. You don’t think it’s appropriate to tell your coach. What would you say to avoid offending him?” The expected response is to politely decline to provide such personal information. Two points would be awarded for socially appropriate responses such as “I’m not sure” or “It’s personal, I can’t say”, as these demonstrate pragmatically competent management of the communicative situation. A response such as “Why are you asking me that?” would receive 1 point, as it conveys the intended speech act, but in a more direct and less socially nuanced manner. No points would be awarded for responses that do not align with the expected speech act or are inappropriate for the context, such as “I’m not telling you” or “I have loads”, as these do not reflect social appropriateness or the expected level of politeness.

## Procedure

First, informed consent was obtained from the parents of all participants, who were briefed about the confidential nature of their participation and assured that all data would be anonymised when the results were presented. The study was approved by the Research Ethics Committee of the Universitat Oberta de Catalunya.

The questionnaires were distributed online to all families, although printed versions were also made available for those who preferred them. Families were also offered the option of completing the questionnaires during in-person interviews with the examiner at the school, to make the process easier. As Spanish was the predominant home language, the questionnaires were provided in Spanish to minimise potential difficulties in understanding Catalan. The questionnaires were completed by 26 mothers (65%), 4 fathers (10%), and in the remaining cases (25%), both parents completed the questionnaires together.

The children were assessed individually using the two direct assessment tests described above: the APT (Pronina et al., 2019) and the CELF-5 Sentence Repetition Task (Wiig et al., 2018). These individual sessions lasted approximately 35–40 minutes, with 20–25 minutes allocated to the APT and 10–15 minutes to the Sentence Repetition Task. The assessments were conducted in a suitable space within the school and audio-recorded to enable more accurate scoring using a weighted matrix.

Inter-rater reliability was assessed using the intraclass correlation coefficient (ICC). To this end, 32.5% of responses from the APT and the CELF-5 Sentence Repetition Task ( $n = 13$ ) were randomly selected from the full sample. Errors were independently coded by two previously trained evaluators. The ICC for the Sentence Repetition Task was .984, indicating excellent agreement. The ICC for the APT was .63, indicating good agreement (Cicchetti, 1994).

## Statistical Analysis

Two multiple linear regression models were employed to analyse the extent to which structural and pragmatic language skills explain variability in emotion regulation and social relationships. Prior to conducting the regression models, Pearson correlation analyses were performed

between the language and socio-emotional variables. Multiple regression is an appropriate statistical approach for estimating the proportion of variance in criterion variables explained by multiple predictors, as well as identifying the relative weight of each predictor (Keith, 2019). For the correlation and regression analyses, the scores were standardised using Z-scores. Finally, Student's t-tests for independent samples were conducted to examine potential sex differences across the various language and socio-emotional variables. All statistical analyses were performed using JASP software (JASP Team, 2023).

## Results

### Correlations Between Language Variables, Emotion Regulation and Social Relationships

Before conducting the regression analyses, Pearson correlations were calculated between the structural and pragmatic language variables (as assessed through parent-reported instruments and standardised tests) and the dependent variables of emotion regulation (ERC) and social relationships (SDQ-CAS).

The results revealed a significant positive correlation between emotion regulation and pragmatic language skills, as measured by the CCC-2 ( $r = .651$ ,  $p < .001$ ). By contrast, structural language skills (as assessed by the CCC-2 and the CELF-5 Sentence Repetition Task) and pragmatic skills (as measured by the APT) did not show statistically significant correlations with emotion regulation. Full correlations between variables, along with the means and standard deviations for each, are presented in Table 3.

**Table 3**

*Correlations Between Language Variables and Emotion Regulation*

Variable	Mean	SD	Sentence Repetition Task (CELF-5)	Structural Language (CCC-2)	Pragmatic Skills (APT)	Pragmatic Skills (CCC-2)
Emotion Regulation (ERC)	70.20	5.60	0.271	0.468*	0.302	0.651*
Sentence Repetition Task (CELF-5)	6.20	3.00		0.078	0.537**	0.064
Structural Language (CCC-2)	28.90	10.30			0.197	0.687**
Pragmatic Skills (APT)	74.10	7.50				0.093

Variable	Mean	SD	Sentence Repetition Task (CELF-5)	Structural Language (CCC-2)	Pragmatic Skills (APT)	Pragmatic Skills (CCC-2)
Pragmatic Skills (CCC-2)	26.80	9.50				

*Note.* The mean and standard deviation (SD) are presented as scaled scores, but the correlational analyses were conducted using Z-scores; Emotion Regulation (ERC) = Emotion Regulation Checklist (Shields & Cicchetti, 1997); Sentence Repetition Task (CELF-5) = Clinical Evaluation of Language Fundamentals – Fifth Edition, in Spanish (Wiig et al., 2018); Structural Language (CCC-2) = Children’s Communication Checklist – Second Edition (Bishop, 2003), adapted and validated for Spanish by Crespo-Eguilaz et al. (2016); Pragmatic Skills (APT) = Audiovisual Pragmatic Test (Pronina et al., 2019); Pragmatic Skills (CCC-2) = Children’s Communication Checklist – Second Edition (Bishop, 2003), adapted and validated for Spanish by Crespo-Eguilaz et al. (2016).

A single significant correlation was also observed in relation to social relationships: pragmatic skills (as measured by the CCC-2) were negatively associated with reported social difficulties ( $r = -.505, p < .001$ ), indicating that higher pragmatic competence is linked to fewer difficulties in peer interactions. No other language-related variables showed significant correlations with social relationships. Full correlations between variables, along with the means and standard deviations for each, are presented in Table 4.

**Table 4**

*Correlations Between Language Variables and Social Skills*

Variable	Mean	SD	Sentence Repetition Task (CELF-5)	Structural Language (CCC-2)	Pragmatic Skills (APT)	Pragmatic Skills (CCC-2)
Social Relationships (SDQ-CAS)	1.70	1.90	-0.024	-0.301	-0.065	-0.505**
Sentence Repetition Task (CELF-5)	6.20	3.00		0.078	0.537**	0.064
Structural Language (CCC-2)	28.90	10.30			0.197	0.687**
Pragmatic Skills (APT)	74.10	7.50				0.093

Variable	Mean	SD	Sentence Repetition Task (CELF-5)	Structural Language (CCC-2)	Pragmatic Skills (APT)	Pragmatic Skills (CCC-2)
Pragmatic Skills (CCC-2)	26.80	9.50				

*Note.* The mean and standard deviation (SD) are presented as scaled scores, but the correlational analyses were conducted using Z-scores; Social Relationships (SDQ-CAS) = Strengths and Difficulties Questionnaire – Spanish Version (Goodman, 1997); Sentence Repetition Task (CELF-5) = Clinical Evaluation of Language Fundamentals – Fifth Edition, in Spanish (Wiig et al., 2018); Structural Language (CCC-2) = Children’s Communication Checklist – Second Edition (Bishop, 2003), adapted and validated for Spanish by Crespo-Eguílaz et al. (2016); Pragmatic Skills (APT) = Audiovisual Pragmatic Test (Pronina et al., 2019); Pragmatic Skills (CCC-2) = Children’s Communication Checklist – Second Edition (Bishop, 2003), adapted and validated for Spanish by Crespo-Eguílaz et al. (2016).

### Regressions Between Language Variables, Emotion Regulation and Social Relationships

Although some predictor variables did not show significant bivariate associations with the dependent variables, they were included in the multiple regression models due to their theoretical relevance to emotional and social development, and their potential to reveal distinct effects when controlling for other variables statistically.

It was confirmed that multicollinearity did not compromise the validity of the results for both models, with all variance inflation factors (VIFs) reported below the critical threshold of 5: Sentence Repetition Task (CELF-5) (VIF = 1.41), Pragmatic Skills (APT) (VIF = 1.47), Structural Language (CCC-2) (VIF = 1.97) and Pragmatic Skills (CCC-2) (VIF = 1.91).

In the first model, Emotion Regulation (ERC) served as the dependent variable. Four independent variables were included: two representing structural language skills (Structural Language [CCC-2] and Sentence Repetition Task [CELF-5]) and two representing pragmatic skills (Pragmatic Skills [CCC-2] and Pragmatic Skills [APT]).

The model was statistically significant ( $F(4, 35) = 8.62, p < .001$ ) and accounted for a considerable proportion of the variance in emotion regulation, with a coefficient of determination  $R^2$  of .496 and an adjusted  $R^2$  of .439. These results indicate that the set of language variables explained approximately 50% of the variability observed in participants’ emotion regulation abilities. Of these language variables, only pragmatic skills, as assessed by the CCC-2, showed a significant association with emotion regulation ( $\beta = 0.635, p < .001$ ). This suggests that greater competence in the pragmatic use of language, as perceived by the child’s family, is associated with higher levels of emotion regulation. The other predictor variables did not show statistically significant effects: Sentence Repetition Task (CELF-5) ( $\beta = 0.140, p = .332$ ), Pragmatic Skills (APT) ( $\beta = 0.170, p = .250$ ) and Structural Language (CCC-2) ( $\beta = -0.073, p = .942$ ).

In the second model, Social Relationships (SDQ-CAS) served as the dependent variable. Four independent variables were included: two representing structural language skills (Structural Language [CCC-2] and Sentence Repetition Task [CELF-5]) and two representing pragmatic language skills (Pragmatic Skills [CCC-2] and Pragmatic Skills [APT]).

The regression model was statistically significant ( $F(4, 35) = 3.08, p = .028$ ), with a coefficient of determination  $R^2$  of .261. This indicates that the set of language variables accounted for 26.1% of the variance in social relationship difficulties. The adjusted  $R^2$  value was .176, suggesting that the model retained a reasonable proportion of explained variance after adjusting for the number of predictors. Of the language variables examined, only pragmatic skills, as assessed by the CCC-2 (Bishop, 2003), made a statistically significant contribution to the model ( $\beta = -0.113, p = 0.008$ ). This indicates that higher pragmatic competence, as reported by families, is associated with fewer social relationship difficulties, even when controlling for the effects of other language variables. By contrast, structural language skills assessed via the CCC-2 ( $\beta = 0.018, p = .638$ ), sentence repetition from the CELF-5 ( $\beta = 0.019, p = .864$ ) and pragmatic skills assessed with the APT ( $\beta = -0.012, p = .792$ ) showed no significant association with social skills.

### Sex Differences in Language and Socio-Emotional Variables

The final aim was to examine whether sex-based differences existed in structural and pragmatic language, emotion regulation and social skills. Student's t-tests for independent samples revealed no significant differences between boys and girls in any of the analysed language or socio-emotional variables (see Table 5).

**Table 5**

*Comparison of Pragmatic Skills, Structural Language, Emotion Regulation and Social Relationships Between Boys and Girls*

Variable	Boys = 21		Girls = 19		Comparison	
	Mean	SD	Mean	SD	t	p
Pragmatic Skills (APT)	72.86	8.685	75.32	5.012	-1.081	.286
Sentence Repetition Task (CELF-5)	5.90	2.879	6.58	3.097	-.713	.480
Structural Language (CCC-2)	27.90	10.348	29.95	10.255	-.626	.535
Pragmatic Skills (CCC-2)	26.90	10.972	26.74	8.102	.055	.957
Emotion Regulation (ERC)	69.05	6.453	71.42	4.834	-1.305	.200
Social Relationships (SDQ-CAS)	2.05	2.202	1.32	1.493	1.217	.223

*Note.* Pragmatic Skills (APT) = Audiovisual Pragmatic Test (Pronina et al., 2019); Sentence Repetition Task (CELF-5) = Clinical Evaluation of Language Fundamentals – Fifth Edition, in Spanish (Wiig et al., 2018); Structural Language (CCC-2) = Children's Communication Checklist – Second Edition (Bishop, 2003), adapted

and validated for Spanish by Crespo-Eguílaz et al. (2016); Pragmatic Skills (CCC-2) = Children's Communication Checklist – Second Edition (Bishop, 2003), adapted and validated for Spanish by Crespo-Eguílaz et al. (2016); Emotion Regulation (ERC) = Emotion Regulation Checklist (Shields & Cicchetti, 1997); Social Relationships (SDQ-CAS) = Strengths and Difficulties Questionnaire – Spanish Version (Goodman, 1997).

## Discussion and Conclusions

The primary aim of this study was to examine the influence of structural and pragmatic language skills on emotion regulation and social relationships in school-aged children. It was hypothesised that language skills (both structural and pragmatic) would account for a significant proportion of the variability in these socio-emotional variables. Drawing on previous research, it was further anticipated that pragmatic skills would contribute more substantially to this variability than structural skills. Additionally, the study sought to explore potential sex differences in these abilities, though no directional hypothesis was proposed due to the mixed findings reported in the existing literature.

The main findings of this study partially support the first hypothesis. A significant association was found between language skills, specifically pragmatic skills as assessed by the CCC-2 (Bishop, 2003), and both emotion regulation and social relationships. However, structural language skills, as measured by the CCC-2 and the CELF-5 Sentence Repetition Task (Wiig et al., 2018), were not found to be significantly related to the socio-emotional variables. These results underscore the importance of the pragmatic component of language in emotional and social development, which is consistent with previous studies that have highlighted the crucial role of these skills in emotion regulation and social interaction (Coplan & Weeks, 2009; McKown et al., 2009). In contrast, direct assessment of pragmatic skills using the APT (Pronina et al., 2019) did not account for significant variability. This suggests that the parent-reported CCC-2 may better capture the use of pragmatic language in everyday contexts, providing a more comprehensive picture of pragmatic behaviour.

The greater contribution of pragmatic language skills to emotion regulation and social relationships may be explained by the nature of these abilities. Pragmatic language involves a higher level of integration between social and emotional factors, enabling better adaptation in complex interactional contexts (Wilson & Carston, 2007). These skills help children to interpret the intentions and emotions of others, and to adjust their communication according to the demands of the environment (Bishop, 1997). The lack of significant variability in socio-emotional skills when the APT was used to directly assess pragmatics could be attributed to the nature of the task. As it is a test conducted in a controlled setting, it may not accurately reflect the use of pragmatic language in more natural and less structured contexts, where these skills are particularly important for social interaction (Helland et al., 2014). Furthermore, the APT only assesses expressive pragmatics and thus does not capture pragmatic comprehension. In contrast, the CCC-2 includes items addressing both expressive and receptive pragmatic abilities, which may explain the differing results between the two pragmatic measures. Exploring the contribution of specific receptive pragmatic skills to the development of emotion regulation and social relationships in childhood through direct assessment remains a valuable avenue for future research. However, this poses a challenge, as direct assessment tools targeting

pragmatic components are currently scarce (Andrés-Roqueta et al., 2024). Another important point about the APT is that a certain level of linguistic competence is required to respond appropriately. The task involves understanding oral questions and producing contextually appropriate verbal responses, which can be challenging for children with structural language difficulties. This linguistic demand may have influenced the results, limiting the test's ability to capture the use of pragmatic language in more spontaneous or everyday contexts.

In the present study, structural language skills did not significantly contribute to the variability observed in socio-emotional outcomes. This contrasts with previous research that has identified significant associations between structural language development and socio-emotional variables. For example, Pons et al. (2003) demonstrated that structural language abilities—such as vocabulary and morphosyntax—facilitate emotional understanding, as language proficiency allows children to verbalise and manage their emotions more effectively. Similarly, Beck et al. (2012) found that difficulties with structural language may be linked to emotion regulation problems, given that children with more limited vocabularies tend to find it harder to express their emotions appropriately. Along the same lines, Aguilera et al. (2021) reported that expressive vocabulary predicted emotion regulation in school-aged children, both with and without language difficulties, though this association was not observed in adolescents. This finding suggests that vocabulary development during primary education has a significant impact on the ability to regulate emotions later in childhood.

It is necessary to reflect on how structural language variables were assessed in this study, particularly through the Sentence Repetition Task from the CELF-5. This task focuses on verbal memory and a child's ability to reproduce grammatical structures they have previously heard. Successful completion requires well-developed semantic, lexical, morphological and syntactic competence to support immediate recall. However, it is possible that this direct assessment did not fully capture the breadth of structural language skills, potentially limiting our understanding of their impact on social interaction and emotion regulation. This suggests that more specific measures are needed for each individual component of structural language (morphology, grammar, syntax and vocabulary) in order to determine their respective contributions to socio-emotional skills more precisely and with greater detail. Furthermore, the Sentence Repetition Task may not adequately reflect the complexity of structural language use in everyday socio-emotional contexts. To address this, the study also employed the parent-reported CCC-2, which assesses structural language skills in more naturalistic, day-to-day contexts. However, this measure also failed to demonstrate a significant contribution to children's socio-emotional skills.

Another factor to consider in this analysis is the impact of the sample's socioeconomically disadvantaged background. Several studies have shown that children raised in socioeconomically constrained environments are more susceptible to delays in the development of language and social skills (Hurt & Betancourt, 2016). The findings of this study seem to indicate that, in such contexts, structural language skills may play a less prominent role in emotional development than pragmatic skills. This could be because structural language development depends more heavily on rich and formal language input, whereas pragmatic skills are shaped through everyday social interactions, which can occur even in less advantaged settings.

No significant sex differences were observed in any of the variables analysed. This finding is consistent with previous research, which has similarly failed to identify systematic differences between boys and girls in language and socio-emotional abilities (Aguilera et al., 2021; Rydell et al., 2003). However, some studies have reported that girls tend to demonstrate greater competence in emotion regulation (Fujiki et al., 2002; Reyna & Brussino, 2015). The absence of sex differences in the present study may be influenced by the participants' age, as sex-related differences in emotion regulation are thought to become more pronounced during adolescence, when gender socialisation plays a more prominent role (Niedenthal & Ric, 2017).

This study has several limitations that warrant consideration. First, the small sample size and the specific context from which it was drawn restrict the generalisability of the findings. Future research should involve larger samples from diverse regions and sociocultural backgrounds to allow for comparisons across different settings. Such studies should also incorporate a combination of direct assessments targeting specific language components, together with informant-reported measures, to yield a more comprehensive understanding of both pragmatic and structural language skills.

The study yielded several key insights: (1) pragmatic language skills play an important role in children's emotion regulation and social relationships; (2) structural language skills do not appear to contribute significantly to these processes; and (3) the absence of significant sex differences suggests that contextual factors may be more influential than biological sex in shaping these abilities. These findings have important implications for the design of educational interventions that foster pragmatic language development in the classroom, particularly in socioeconomically disadvantaged settings.

Overall, this study underscores the need to integrate pragmatic development objectives into educational practice, particularly during primary school. Future research should examine interventions that target pragmatic competence and its potential to enhance children's emotion regulation and social relationships. Such interventions might focus on skills such as perspective-taking, communicative inference, and context-appropriate language use. Strategies including the use of literature with rich pragmatic content, role-playing exercises, and guided, dialogue-based classroom activities may serve as viable pedagogical tools for these aims.

Ultimately, this study paves the way for more in-depth research into how different assessment methods and socioeconomic contexts influence the development of language and socio-emotional skills. It would also be valuable to investigate how educational environments can support the simultaneous development of these abilities throughout childhood, with the goal of enhancing children's emotional well-being and social relationships.

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### **Notes**

<sup>1</sup>Resolution ENS/906/20<sup>14</sup> of 23 April, published in the Official Gazette of the Government of Catalonia (DOGC) No. 6613 of 30 April 2014, determines which schools and teaching posts are to be considered as having special difficulty. The list of schools classified as having maximum complexity was compiled based on an updated set of data concerning students enrolled in compulsory education, using the following contextual indicators: low level of parental or guardian education; low-skilled employment of parents or guardians; significant number of parents or guardians receiving minimum integration income; high percentage of parents or guardians who are unemployed; high proportion of students with specific educational needs; and high percentage of newly arrived students.

### **Author Contributions**

“Conceptualization, M.C. and N.A.; methodology, N.A. and M.C; software, M.C.; validation, N.A. and M.C.; formal analysis, M.C. and N.A.; investigation, M.C. and N.A.; resources, N.A.; editing, N.A.; visualization, N.A.; supervision, N.A.; project administration, N.A.; funding acquisition, N.A. All authors have read and agreed to the published version of the manuscript.”

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