JHWCR JOURNAL OF HEALTH, WELLNESS AND COMMUNITY RESEARCH 3007-0570

DOI: https://doi.org/10.61919/wed33x49

Original Article

Comparison of Language Development in Typical and Atypical Childern Age 5 to 8 Years

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"Cite this Article" Received: 13 November 2025; **Accepted**: 20 December 2025; **Published**: 15 January 2026

Author Contributions: Concept: HR, FM; Design: WM, HR, FM, MSH; Data Collection: HR, RI, TA; Analysis: WM, FM, RI, MSH; Drafting: HR, RI, TA, FM, MSH. **Ethical Approval**: University of Lahore, Lahore, Pakistan. **Informed Consent**: Written informed consent was obtained from all participants; **Conflict of Interest**: The authors declare no conflict of interest. **Funding**: No external funding; **Data Availability**: Available from the corresponding author on reasonable request; **Acknowledgments**: NA

ABSTRACT

Background: Language development is influenced by biological, environmental, educational, and developmental factors. Standardized assessment may help identify receptive and expressive language difficulties during the early school years. Objective: To compare language development among typically and atypically developing children aged 5–8 years using the Clinical Evaluation of Language Fundamentals–Fifth Edition. Methods: This analytical cross-sectional study included 380 children recruited through convenience sampling from selected schools in Lahore, Pakistan, between October 2022 and March 2023. Language performance was assessed using CELF-5-related receptive–expressive and language content–structure measures. Frequencies and percentages were calculated across age and score categories. Results: The sample included 190 children aged 5 years, 109 aged 6 years, 72 aged 7 years, and 9 aged 8 years. For receptive–expressive language, 219 children (57.6%) scored within the 0–10 category, 112 (29.5%) within 11–21, and 49 (12.9%) within 22–29. For language content–structure, the corresponding frequencies were 207 (54.5%), 116 (30.5%), and 57 (15.0%). The available tables did not provide developmental-group-specific results. Conclusion: Lower score categories were the most frequently observed across both language indices. However, the reported aggregate data were insufficient to establish statistically valid differences between typical and atypical children. Keywords: Language Development; Receptive Language; Expressive Language; Atypical Development; Typical Development; CELF-5; School-Aged Children.

INTRODUCTION

Language development is a complex process through which children acquire the ability to understand, produce, and use spoken language for communication, learning, and social participation. This process is influenced by the interaction of biological capacities, environmental exposure, linguistic experience, and the frequency and quality of social communication. Although children possess an inherent capacity for language acquisition, the developmental course and level of proficiency attained may vary according to the linguistic environment, socioeconomic context, educational opportunities, and individual developmental characteristics (1,2).

During early childhood, language development progresses from vocalization and early word production to increasingly complex vocabulary, sentence formation, grammatical organization, and pragmatic communication. Vocabulary and morphosyntactic abilities are particularly important because they support later academic learning, reading comprehension, classroom participation, and social interaction (3–5). Typically developing children generally acquire these skills in a predictable developmental

sequence. However, children with atypical development may demonstrate delayed, uneven, or qualitatively different patterns of receptive and expressive language acquisition (6–8).

Atypical speech and language development may involve difficulties in phonology, semantics, morphology, syntax, or pragmatics. These difficulties can occur independently or alongside broader developmental, neurological, sensory, or cognitive conditions (9,10). Speech and language difficulties during childhood may negatively affect communication, educational achievement, emotional well-being, peer relationships, and overall participation in daily activities. Early identification is therefore important because persistent language difficulties may become more pronounced as academic and social communication demands increase (11).

School-aged children require increasingly advanced language skills to understand instructions, follow classroom discussions, formulate coherent sentences, recall verbal information, comprehend spoken passages, and communicate effectively with teachers and peers. Differences between typically and atypically developing children may therefore become particularly evident during the early school years. Assessment during this period can help identify specific areas of language strength and difficulty and may support timely referral, individualized educational planning, and speech-language intervention.

The Clinical Evaluation of Language Fundamentals–Fifth Edition (CELF-5) is a standardized assessment battery designed to evaluate receptive and expressive language abilities among individuals aged 5–21 years. It includes subtests assessing sentence comprehension, linguistic concepts, word structure, word classes, following directions, formulated sentences, recalling sentences, understanding spoken paragraphs, and pragmatic language abilities (12–16). The instrument can be used to identify patterns of language performance, determine areas requiring further assessment, and support clinical and educational decision-making. Its interpretation nevertheless requires consideration of the child's linguistic, educational, cultural, and developmental background.

Despite the importance of language assessment during the early school years, limited comparative evidence is available regarding receptive and expressive language performance among typically and atypically developing children in local school settings. Comparing the language abilities of these groups may clarify the extent and pattern of language differences and help inform screening and intervention services. Therefore, this study aimed to compare language development among typically and atypically developing children aged 5–8 years using the CELF-5.

MATERIALS AND METHODS

An analytical cross-sectional study was conducted in selected schools in Lahore, Pakistan, over six months from October 2022 to March 2023. The study population comprised children aged 5–8 years who were enrolled in the participating schools and categorized as having typical or atypical development according to the developmental classification used during recruitment. A total of 380 children participated in the study. Participants were selected through a non-probability convenience sampling technique according to their accessibility and eligibility during the study period.

Children between 5 and 8 years of age belonging to either the typical- or atypical-development category were eligible for inclusion. Children who did not complete the required language assessment or whose assessment records were insufficient for scoring and analysis were excluded from the final evaluation. Each eligible child was assessed individually in the school setting to minimize distraction and facilitate standardized administration of the language tasks.

Language development was assessed using the Clinical Evaluation of Language Fundamentals–Fifth Edition. The CELF-5 is a standardized language-assessment battery designed for individuals aged 5–21 years and evaluates multiple receptive and expressive language domains (12–16). The assessment components relevant to the study included sentence comprehension, linguistic concepts, word structure, word classes, following directions, formulated sentences, recalling sentences, understanding spoken

paragraphs, and pragmatic language abilities. Administration required approximately 45 minutes for each participant.

The assessment was administered using standardized instructions, and participant responses were scored according to the scoring framework of the instrument. The principal study outcomes were receptive and expressive language performance and language content and structural abilities. Scores were organized according to the predefined score ranges used in the study and examined across children aged 5, 6, 7, and 8 years. The distributions of language scores were subsequently compared between the typical- and atypical-development categories.

The collected data were entered, cleaned, and analysed using IBM SPSS Statistics version 25.0. Frequencies and percentages were used to summarize categorical variables, including age categories, developmental classification, and language-score ranges. Language-performance distributions were examined across age groups and developmental categories. Pearson's chi-square test was used to evaluate associations between categorical variables, while Fisher's exact test was considered when expected cell frequencies were small. Statistical significance was established at a p-value of less than 0.05, and p-values greater than or equal to 0.05 were interpreted as not statistically significant.

RESULTS

A total of 380 children aged 5–8 years were included in the analysis. The sample comprised 190 children aged 5 years (50.0%), 109 aged 6 years (28.7%), 72 aged 7 years (18.9%), and 9 aged 8 years (2.4%). The available results described the distributions of the manuscript-defined receptive–expressive language and language content–structure score categories across the four age groups.

Table 1. Distribution of Receptive–Expressive Language Scores According to Age (N = 380)

Age, years	0–10, n (%)	11–21, n (%)	22–29, n (%)	Total, n (%)
5	96 (50.5)	73 (38.4)	21 (11.1)	190 (50.0)
6	78 (71.6)	16 (14.7)	15 (13.8)	109 (28.7)
7	42 (58.3)	18 (25.0)	12 (16.7)	72 (18.9)
8	3 (33.3)	5 (55.6)	1 (11.1)	9 (2.4)
Overall	219 (57.6)	112 (29.5)	49 (12.9)	380 (100.0)

Most children were classified in the receptive–expressive score range of 0–10, accounting for 219 of 380 participants (57.6%). A further 112 children (29.5%) had scores of 11–21, while 49 (12.9%) had scores of 22–29. Among children aged 5 years, 96 of 190 (50.5%) were in the 0–10 range and 73 (38.4%) were in the 11–21 range. The proportion in the 0–10 category was highest among children aged 6 years, at 71.6%, compared with 58.3% among those aged 7 years. Children aged 7 years had the highest proportion in the 22–29 category at 16.7%, although the absolute number was 12. Results for children aged 8 years were based on only nine observations, of whom five (55.6%) were classified in the 11–21 score range.

Table 2. Distribution of Language Content–Structure Scores According to Age (N = 380)

Age, years	0–10, n (%)	11–21, n (%)	22–29, n (%)	Total, n (%)
5	81 (42.6)	80 (42.1)	29 (15.3)	190 (50.0)
6	68 (62.4)	23 (21.1)	18 (16.5)	109 (28.7)
7	52 (72.2)	11 (15.3)	9 (12.5)	72 (18.9)
8	6 (66.7)	2 (22.2)	1 (11.1)	9 (2.4)
Overall	207 (54.5)	116 (30.5)	57 (15.0)	380 (100.0)

For language content–structure scores, 207 of 380 children (54.5%) were classified in the 0–10 category, 116 (30.5%) in the 11–21 category, and 57 (15.0%) in the 22–29 category. The distributions among 5-year-old children were nearly equal between the 0–10 category, comprising 81 of 190 participants (42.6%), and the 11–21 category, comprising 80 (42.1%). The proportion classified in the 0–10 category increased to 62.4% among children aged 6 years and 72.2% among those aged 7 years. The 22–29 category accounted for 15.3% of 5-year-olds, 16.5% of 6-year-olds, and 12.5% of 7-year-olds. Among the nine children aged 8 years, six (66.7%) were in the 0–10 category.

Across both reported indices, the 0–10 score category contained the largest number of observations. It represented 57.6% of receptive–expressive scores and 54.5% of language content–structure scores. The corresponding proportions in the 22–29 category were 12.9% and 15.0%, respectively. These findings describe age-specific score distributions but do not establish whether language performance differed between typically and atypically developing children because developmental classification was not included in the reported tables.

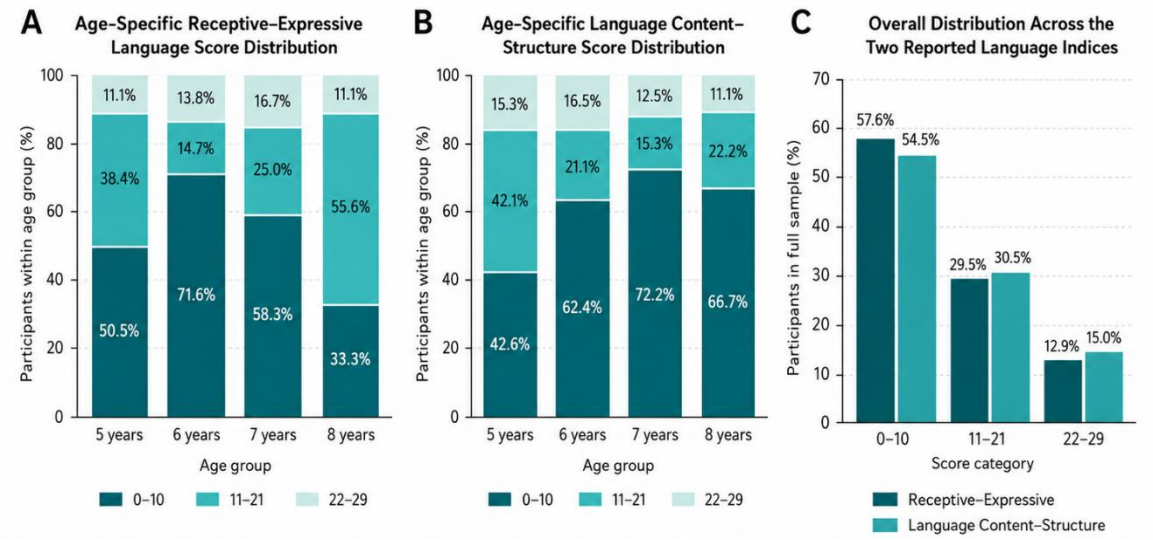

Figure 1 presents the distribution of manuscript-defined language score categories among children aged 5–8 years. In Panel A, the 0–10 receptive–expressive score category was most frequent among children aged 6 years (71.6%), followed by those aged 7 years (58.3%), 5 years (50.5%), and 8 years (33.3%). The 11–21 category was highest among 8-year-old children (55.6%), whereas the 22–29 category remained comparatively uncommon across all age groups, ranging from 11.1% to 16.7%. Panel B shows a similar predominance of the 0–10 category for language content–structure scores, particularly among children aged 7 years (72.2%) and 8 years (66.7%). Overall, as shown in Panel C, the 0–10 category accounted for 57.6% of receptive–expressive scores and 54.5% of language content–structure scores. The 11–21 category represented 29.5% and 30.5%, respectively, while the 22–29 category accounted for 12.9% and 15.0%. These findings indicate that the lowest reported score category was the most common across both language indices, although the figure does not permit direct comparison between typical and atypical developmental groups.

DISCUSSION

The present study described receptive–expressive language and language content–structure score distributions among 380 children aged 5–8 years. Across the complete sample, the 0–10 score category contained the largest proportion of observations for both reported language indices. This category accounted for 57.6% of receptive–expressive scores and 54.5% of language content–structure scores. By comparison, 12.9% of participants were classified in the 22–29 receptive–expressive category and 15.0% in the corresponding language content–structure category. These distributions indicate that lower score categories were common in the assessed sample, although their clinical meaning cannot be established without confirmation of the score type, normative interpretation, and developmental-group classification.

Language acquisition is influenced by interacting biological, cognitive, linguistic, social, and environmental factors. Variation in language exposure, caregiver interaction, educational opportunities, socioeconomic circumstances, and individual developmental characteristics may contribute to differences in receptive and expressive language performance (1,2). Children with atypical development may demonstrate delayed or uneven patterns of vocabulary, morphosyntax, sentence comprehension, verbal memory, and pragmatic communication, depending on the nature and severity of their developmental condition (6–11). The high frequency of observations in the lowest reported score category may therefore reflect a combination of developmental, linguistic, educational, and cultural influences rather than a single underlying mechanism.

The receptive–expressive language distributions varied across age categories. Half of the children aged 5 years were classified in the 0–10 category, compared with 71.6% of those aged 6 years and 58.3% of those aged 7 years. In contrast, the proportion in the 22–29 category was 11.1% among 5-year-olds, 13.8% among 6-year-olds, and 16.7% among 7-year-olds. These findings did not demonstrate a consistent age-related progression across the reported score bands. Interpretation is limited because the score categories were not defined as raw, scaled, composite, or severity scores, and the age groups were markedly unequal in size. In particular, only nine children were aged 8 years, making percentages in this group unstable and unsuitable for broad inference.

A similar pattern was observed for the language content–structure index. The proportion classified in the 0–10 category increased from 42.6% among children aged 5 years to 62.4% among those aged 6 years and 72.2% among those aged 7 years. The nearly equal distribution of 5-year-old children between the 0–10 and 11–21 categories suggests greater dispersion in this age group. However, the absence of standard scores, normative classifications, measures of central tendency, and age-adjusted comparisons prevents determination of whether these variations represent meaningful developmental differences or differences in the composition of the sampled children.

The CELF-5 is intended to assess several dimensions of language, including sentence comprehension, word structure, word relationships, following directions, sentence formulation, sentence recall, listening comprehension, and pragmatic performance (12–16). Its use may support the identification of relative language strengths and weaknesses when standardized administration and age-appropriate normative interpretation are applied. Nevertheless, performance on a language-dependent standardized test may be influenced by the language of administration, familiarity with test content, educational exposure, bilingualism, and cultural context. The manuscript acknowledged that the instrument had not been culturally adapted, which represents an important threat to measurement validity in a multilingual Pakistani population.

Previous literature has demonstrated that language development may differ across typical and atypical developmental populations. Children with developmental language difficulties may show persistent weaknesses in morphosyntactic processing, vocabulary acquisition, verbal memory, and literacy-related abilities (7,8,10,17). Studies of children with Williams syndrome, autism spectrum conditions, and other atypical developmental profiles have also shown that structural and pragmatic language abilities may develop unevenly rather than following a uniform pattern of global delay (18–20). These findings support the importance of evaluating specific language domains rather than describing children broadly as having appropriate or inappropriate language development.

The results reported in the present manuscript cannot establish whether typical and atypical children differed significantly because the available tables were not stratified by developmental classification. The original interpretation that a p-value greater than 0.05 represented statistical significance was also incorrect. A direct comparison would require separate score distributions or continuous CELF-5 scores for the typical and atypical groups, clearly defined group denominators, appropriate between-group statistical tests, exact p-values, confidence intervals, and measures of effect size. Age-adjusted analyses would also be important because half of the sample consisted of 5-year-old children, whereas only 2.4% were aged 8 years.

The study had several strengths. It addressed an important area of child communication and included a comparatively large school-based sample assessed over a defined six-month period. It also attempted to examine more than one language domain across multiple early school-age categories. However, the convenience-sampling method limited representativeness and increased the risk of selection bias. The developmental classifications were not operationally defined, diagnostic subgroups were not presented, and relevant characteristics such as sex, primary language, school type, socioeconomic background, hearing status, cognitive status, and previous speech-language intervention were not reported. The extreme imbalance in age-group sizes further restricted age-based interpretation.

Additional limitations included the absence of group-specific results, unclear score definitions, lack of culturally adapted normative interpretation, and insufficient information regarding examiner training and assessment language. Because the study was cross-sectional, it described language performance at one time point and could not establish developmental trajectories or causal relationships. Future analyses should use verified participant-level data, distinguish typical and atypical developmental groups, report actual CELF-5 subtest and composite scores, adjust for relevant confounders, and evaluate the cultural and linguistic appropriateness of the assessment process.

The findings nevertheless highlight the importance of systematic language assessment during the early school years. Children with low or atypical language scores may require further individualized evaluation rather than classification based solely on aggregate score bands. Clinically appropriate interpretation should integrate standardized assessment findings with developmental history, hearing status, educational performance, language exposure, caregiver concerns, and direct observation by qualified speech-language professionals.

CONCLUSION

The study found that the 0–10 score category was the most frequently observed category for both receptive–expressive language and language content–structure performance among children aged 5–8 years. The reported distributions varied across age groups, but no consistent developmental pattern could be established from the available categorical data. Because the results were not separated according to typical and atypical developmental status, the study did not provide sufficient evidence to determine the magnitude or statistical significance of differences between these groups. Group-specific, age-adjusted analysis using clearly defined CELF-5 scores is required to support a valid comparative conclusion.

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