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Article

Relationship of Urdu Oral Narrative and Phonological Awareness of Typically Developing Children

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ABSTRACT

Background: Phonological awareness is essential for early literacy, yet its specific relationship with oral narrative skills and the influence of environmental factors are underexplored in Urdu-speaking children. There is a pressing need for context-specific evidence linking these constructs within local educational and sociocultural frameworks. **Objective**: This study investigated the association between Urdu oral narrative abilities and phonological awareness in typically developing children aged 5.0–7.11 years and identified the role of demographic and familial predictors in shaping these outcomes. **Methods**: A cross-sectional observational study recruited 156 children from public and private schools in Lahore, Pakistan, using purposive sampling. Children with average intelligence and normal language development were included; those with neurodevelopmental or medical conditions were excluded. Data were collected through validated oral narrative and phonological awareness assessments, along with detailed demographic questionnaires. Analyses were performed using SPSS, employing Pearson correlation and hierarchical regression to identify significant associations and predictors. Ethical approval was obtained in accordance with the Helsinki Declaration. **Results**: Oral narrative ability was strongly associated with phonological awareness ($r = 0.80$, $p < 0.001$). Key predictors included maternal education, family income, story-listening habits, private school attendance, and academic achievement. Children exposed to enriched linguistic and literacy environments consistently demonstrated higher phonological awareness. **Conclusion**: Findings support a robust, theory-driven model wherein oral narrative and phonological awareness co-develop under the influence of stage theory, auditory processing, ecological, and emergent literacy frameworks. Early exposure to storytelling and literacy-rich activities fosters both skills, offering actionable insights for assessment, intervention, and curriculum planning across clinical, educational, and policy domains.

Keywords: Phonological Awareness, Oral Narrative, Literacy, Early Childhood Education, Urdu, Speech-Language Pathology, Socioeconomic Factors

INTRODUCTION

Phonological awareness is widely recognized as a foundational metalinguistic skill that enables children to identify, discriminate, and manipulate the sound structures of their language, including rhymes, syllables, and phonemes (1). Its development is crucial to the acquisition of reading and writing abilities, serving as a robust predictor of literacy success in diverse linguistic and cultural contexts (2). Alongside, oral narrative competence—the ability to organize and verbally express stories—reflects a child's integrated cognitive, social, and linguistic development, encompassing both receptive and expressive language skills (3). Oral narrative tasks capture essential elements of language ability in children and offer sensitive markers for detecting language impairments, with mounting evidence supporting their predictive value for later academic and literacy outcomes (4,5). The intricate and reciprocal relationship between oral narrative skills, phonological awareness, and early print knowledge has emerged as a central theme in literacy research, forming the theoretical and empirical basis for contemporary early childhood education (6). The evolution of theoretical frameworks around phonological awareness and oral narrative has deepened our understanding of how these capacities develop and interact. Stage theory, for instance, posits that phonological awareness unfolds through a sequence of hierarchical levels, starting from larger units such as syllables and rhymes and progressing to the explicit manipulation of phonemes—suggesting that assessments and interventions should be developmentally attuned, focusing initially on broader sound structures before introducing more complex tasks (7). Auditory processing theories argue that deficits in the discrimination of rapid auditory cues or subtle

speech sound contrasts can constrain phonological awareness development, thus emphasizing the value of targeted auditory training activities like rhythmic clapping or syllable-tapping (8). Emergent literacy theory further asserts that literacy emerges through naturalistic exposure to oral language, storytelling, and print-rich environments long before the commencement of formal education, highlighting the centrality of home and community experiences in shaping early literacy trajectories (9). From a systems perspective, dynamic and ecological models foreground the interplay between child-level factors (e.g., cognitive skills, language proficiency, motivation) and environmental influences (e.g., family practices, socioeconomic resources, school quality, and community support), proposing that effective assessment and intervention must be sensitive to the cultural, social, and linguistic ecology of each learner (10,11).

Empirical investigations provide compelling evidence in support of these theoretical perspectives. Studies in morphologically complex languages such as Arabic, Persian, and Punjabi reveal that the developmental sequence of phonological awareness mirrors stage theory predictions, with children acquiring syllable and rhyme awareness before mastering the finer distinctions required for phoneme segmentation and manipulation (12,13). Several standardized and culturally adapted assessment tools, validated in these languages, consistently demonstrate high reliability and sensitivity in capturing the progression of phonological awareness, as well as its significant association with oral narrative abilities and reading outcomes (14,15). Importantly, reciprocal relationships have been observed between letter-sound knowledge and phonological awareness, with early proficiency in one domain promoting gains in the other and jointly predicting reading acquisition and later achievement (16,17). A strong and consistent body of literature underscores the pivotal role of the home literacy environment, where maternal education, family income, shared reading routines, and the frequency and quality of literacy-related activities substantially enhance both oral narrative and phonological awareness development (18,19,20). For example, shared book reading and parent-child conversations foster not only narrative skills but also metalinguistic awareness, while socioeconomic status can amplify or attenuate these effects depending on access to resources and parental literacy (21). Notably, girls have sometimes been observed to outperform boys in early literacy tasks, an effect variously attributed to both biological predispositions and socialization patterns (22).

Research on special populations and in multilingual contexts further elucidates the factors shaping phonological and narrative development. Children with speech sound disorders, phonological disorders, or language impairments consistently exhibit lower phonological awareness skills, confirming the clinical utility of early screening and the urgent need for intervention programs targeting these domains (23). Conversely, bilingual children—including Urdu-English speakers—often demonstrate heightened metalinguistic awareness and phonological flexibility, which may confer cognitive and academic advantages even when initial reading performance does not differ significantly from monolingual peers (24,25). Socio-cultural dimensions such as ethnicity, number of siblings, and community storytelling traditions also modulate the trajectory of literacy development, reinforcing the importance of culturally responsive assessment practices and interventions (26).

Despite these insights, research specifically addressing the relationship between Urdu oral narrative skills and phonological awareness in Pakistani children is notably scarce. Most indigenous studies in Pakistan have focused on narrative development or have drawn from research in related languages such as Arabic and Persian, which, while linguistically and orthographically similar to Urdu, do not capture the unique challenges posed by Urdu's morphologically rich and syllabic structure (27,28). Crucially, there is a lack of empirically validated, culturally adapted phonological awareness assessment tools for Urdu, and little systematic investigation of how demographic factors—such as type of school, family system, parental education, and home literacy practices—influence literacy development in this context. This gap in the literature is significant, given that Urdu-speaking children may face distinctive developmental, educational, and socio-cultural barriers that affect their acquisition of foundational literacy skills.

This study, therefore, is designed to address these knowledge gaps by examining the relationship between Urdu oral narrative ability and phonological awareness among typically developing children aged 5.0–7.11 years in Pakistan, with particular attention to demographic and environmental variables that may mediate or moderate this relationship. Utilizing a rigorous, cross-sectional research design and culturally adapted assessment tools, the study seeks to clarify the extent to which oral narrative skills predict phonological awareness in this population, and to identify which familial and school-related factors most strongly contribute to literacy outcomes.

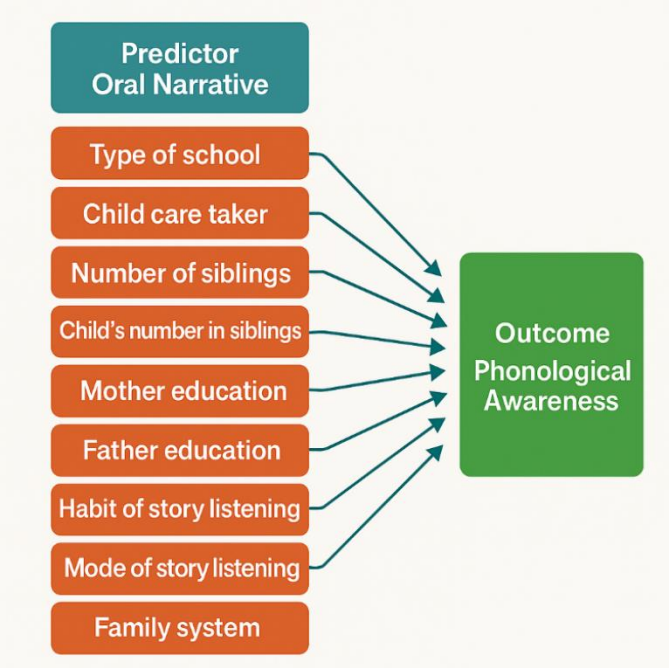

Figure 1 Predictors of Phonological Awareness in Children

By situating its inquiry at the intersection of established theoretical models, robust empirical findings, and the pressing need for indigenous research in Urdu, the present study aims to

inform evidence-based assessment, early intervention, and educational policy for Urdu-speaking children, particularly those at heightened risk for language and literacy disorders. The central hypotheses posit that Urdu oral narrative skills and relevant demographic variables will be positively associated with, and will significantly predict, phonological awareness in typically developing children.

This is presented as figure (1) showing hypothesized relationships between oral narrative ability and multiple demographic and environmental predictors—including type of school, child care taker, number of siblings, child's position among siblings, maternal and paternal education, habit of story listening, mode of story listening, and family system—on the outcome variable of phonological awareness. The arrows depict direct associations, highlighting the integrated role of linguistic, educational, and familial factors in influencing the development of phonological awareness during early childhood.

MATERIALS AND METHODS

The present study employed a cross-sectional observational design to investigate the relationship between Urdu oral narrative ability and phonological awareness among typically developing children, informed by the theoretical and empirical context established in the introduction (1–28). This design was chosen to enable the assessment of associations and predictive relationships across multiple demographic variables and cognitive-linguistic measures within a defined population at a single point in time. The research was conducted in Lahore, Pakistan, specifically targeting schools located in the Shadman area. Data collection took place over a period of seventy-five days, from January to March 2023. The sampling frame included both government and private primary schools within the specified locality, ensuring representation of various socioeconomic backgrounds and educational environments.

Participant selection followed stringent eligibility criteria to minimize selection bias and enhance the internal validity of the findings. Children were included if they were aged between 5.0 and 7.11 years, spoke Urdu as their primary language, demonstrated average or above-average cognitive ability as determined by the Slosson Intelligence Test, and exhibited typical language development as measured by the Test of Narrative Retell (TNR) (24,29). Exclusion criteria comprised any known hearing, speech, or language impairment, major physical or neurological conditions such as cerebral palsy or epilepsy, and any documented developmental disorder. Recruitment was accomplished via purposive sampling; school principals received detailed information about the study, and informational letters were distributed to parents. Written informed consent was obtained from parents or legal guardians before inclusion of their children in the study. Assent was secured from each participant prior to their engagement with study tasks, and all procedures strictly respected the voluntary nature of participation, with the right to withdraw at any point upheld.

A total sample of 156 participants was determined using G*Power software, based on a medium expected effect size, an alpha level of 0.03, and a statistical power of 0.95, thus ensuring sufficient sensitivity to detect relevant effects. The sample was divided equally across three age bands—5.0–5.11, 6.0–6.11, and 7.0–7.11 years—each group comprising 52 children. Data collection occurred in designated rooms within participating schools to provide a quiet and standardized testing environment. All assessments were conducted individually, with each child allocated approximately 20 minutes for completion of the protocol.

Study variables were carefully defined and operationalized to ensure clarity and reproducibility. The primary outcome variable, phonological awareness, was assessed using a culturally adapted Urdu version of a standardized phonological awareness test (30). The instrument comprised items measuring rhyme identification and production, oddity detection, syllable and phoneme blending, segmentation, and manipulation tasks (substitution, deletion, and addition), as well as letter-to-sound relationships. Each subtest was scored dichotomously (0 or 1), and composite scores were calculated for analytic purposes. Oral narrative ability, the principal predictor variable, was measured through a story generation task utilizing a series of sequenced picture stimuli depicting a familiar fable. Narrative samples were analyzed using established story grammar analysis criteria (15).

Demographic variables, including gender, type of school, mother and father education, family system, family income, habit and mode of story listening, number of siblings, child's birth order, and grade in school, were documented using a structured demographic questionnaire. Inclusion criteria were validated through administration of the Slosson Intelligence Test for cognitive screening (cutoff IQ: 89–109 for average, 110–119 for above average) and the TNR for narrative language skills (cutoff score: 24). Both instruments have previously demonstrated robust reliability and cultural adaptability in similar populations (24,31). To mitigate potential sources of bias, several procedural and analytic safeguards were implemented. Assessment tools were selected for their cultural validity and reliability in the Urdu-speaking context. All researchers administering assessments received standardized training and conducted regular calibration meetings. Data were double-entered and cross-checked to minimize transcription errors, and missing data were handled using pairwise deletion in the case of incomplete subtest responses.

Internal consistency of the phonological awareness measure was evaluated using Cronbach's alpha, and potential confounding variables—such as socioeconomic status, parental education, and school type—were included in statistical models as covariates. All statistical analyses were performed using SPSS version 23. Descriptive statistics summarized demographic and test variables. Inferential statistics included Pearson product-moment correlation to assess bivariate relationships, hierarchical multiple regression to test predictive hypotheses, and chi-square tests for group comparisons on categorical variables. Adjustments for confounders were applied in regression analyses, and subgroup analyses were conducted by age band. Statistical significance was set at $p < 0.05$ unless otherwise indicated. All analytic decisions, including handling of missing data, inclusion of covariates, and reporting of effect sizes, were specified a priori and documented in a reproducible

codebook. Ethical approval for the study was obtained from the Departmental Doctoral Program Committee of the Centre for Clinical Psychology, University of the Punjab. Permissions for school access and use of standardized tools were secured from all relevant authorities. All data were anonymized at the point of collection, securely stored, and restricted to authorized research personnel to ensure confidentiality and compliance with data protection standards. The complete protocol, analytic code, and data dictionary are available upon request to promote transparency and replicability.

RESULTS

The demographic and educational profile of the sample is detailed in Table 1. Each age group (5.0–5.11, 6.0–6.11, and 7.0–7.11 years) comprised 52 children, with gender and school type perfectly balanced: 50% boys and 50% girls, as well as 50% from private and 50% from government schools in each band (p = 1.000 for both).However, significant differences between-group differences were found for several variables. Maternal education shifted notably with age (p = 0.045), with the proportion of mothers holding a master's degree rising from 13.5% at age 5.0–5.11 to 36.5% at age 7.0–7.11. Family system also changed significantly (p = 0.041), with joint family structures increasing from 59.6% at the youngest age band to 76.9% at the oldest. The prevalence of habitual story listening grew with age (from 69.2% at age 5.0–5.11 to 90.4% at age 7.0–7.11, p = 0.008), and academic grade distributions shifted, with the proportion of children earning an 'A' grade peaking at 55.8% in the oldest group (p = 0.027). Other demographic features, including father's education and family income, showed less pronounced changes but trended toward higher socioeconomic indicators in older children. Table 2 presents a detailed correlation matrix of demographic and educational variables with subdomains of phonological awareness and oral narrative performance across age bands. Notable findings include a significant positive association between private school attendance and several phonological awareness subtests, such as rhyme identification (r = .31, p < 0.05), blending (r = .35, p < 0.05), and total phonological awareness (T-PA; r = .48, p < 0.01) at age 5.0–5.11, with similar patterns at older ages. Joint family system correlated with higher phoneme segmentation (r = .29, p < 0.05) and total phonological awareness (r = .39, p < 0.01) at age 5.0–5.11.

Mother's education demonstrated significant associations with syllable segmentation (r = .35, p < 0.05) and manipulation (r = .37, p < 0.01) in the youngest age group and with multiple phonological subtests in older groups (e.g., blending at r = .28, p < 0.05 at 7.0–7.11).

Table 1. Demographic and Key Participant Characteristics by Age Group

Characteristic	5.0–5.11 (n=52)	6.0–6.11 (n=52)	7.0–7.11 (n=52)	p-value (χ^2 test)
Gender				1.000
Boy	26 (50.0%)	26 (50.0%)	26 (50.0%)	
Girl	26 (50.0%)	26 (50.0%)	26 (50.0%)	
Type of School				1.000
Private	26 (50.0%)	26 (50.0%)	26 (50.0%)	
Govt.	26 (50.0%)	26 (50.0%)	26 (50.0%)	
Mother Education				0.045
Matric	7 (13.5%)	5 (9.6%)	4 (7.7%)	
Intermediate	18 (34.6%)	21 (40.4%)	14 (26.9%)	
Bachelors	20 (38.5%)	17 (32.7%)	15 (28.8%)	
Masters	7 (13.5%)	9 (17.3%)	19 (36.5%)	
Father Education				0.296
Intermediate	12 (23.1%)	9 (17.3%)	10 (19.2%)	
Bachelors	30 (57.7%)	29 (55.8%)	28 (53.8%)	
Masters	10 (19.2%)	14 (26.9%)	14 (26.9%)	
Family System				0.041
Joint	31 (59.6%)	34 (65.4%)	40 (76.9%)	
Nuclear	21 (40.4%)	18 (34.6%)	12 (23.1%)	
Family Income				0.061
20,000–40,000	23 (44.2%)	26 (50.0%)	20 (38.5%)	
41,000–60,000	17 (32.7%)	8 (15.4%)	14 (26.9%)	
61,000–80,000	6 (11.5%)	10 (19.2%)	4 (7.7%)	
81,000–100,000	6 (11.5%)	5 (8.5%)	7 (13.5%)	
>100,000	0 (0.0%)	3 (5.8%)	7 (13.5%)	
Story Listening				0.008
No	16 (30.8%)	6 (11.5%)	5 (9.6%)	
Yes	36 (69.2%)	46 (88.5%)	47 (90.4%)	
Grade in School				0.027
Oral	17 (32.7%)	18 (34.6%)	6 (11.5%)	
A	25 (48.1%)	19 (36.5%)	29 (55.8%)	
B	22 (42.3%)	29 (55.8%)	19 (36.5%)	
B-	5 (9.6%)	4 (7.7%)	4 (7.7%)	

Table 2 Correlation Matrix of Demographic and Educational Variables with Phonological Awareness Subtests and Oral Narrative Scores by Age Band (n = 156)

Variable	Age Group	Rhy	Ri1	Rp2	Od3	Blend	Sb4	Pb5	Seg-	Ss6	Ps7	Manip	sp8	Ap9	Dp10	T-PA	Oral-n	Let.s.r
Gender	5–5.11	.12	.18	.01	.03	.05	.16	.16	.28*	.17	.26	.04	.14	.17	.01	.04	.17	.13
	6–6.11	.13	-.27	.01	.19	.19	.35*	.01	.25	.08	.16	-.09	.08	.20	.26	.28	.27*	-.10
	7–7.11	.04	-.06	.11	.26	.26	-.10	.20	.03	-.03	.12	.01	.21	.06	.06	.18	-1.38	.10
Type of School	5–5.11	.29*	.31*	.12	.19	.35*	.34*	.34*	.21	.17	.16	.48**	.33*	.21	.11	.48**	.42**	-.52**
	6–6.11	.01	.01	.18	.34*	.34*	.10	.04	.17	.08	.49	.02	.45**	.02	.32	.29*	.47**	.07
	7–7.11	.14	.06	.11	.18	.18	.04	.07	.31*	.39**	.27	.15	.15	.02	.46**	.34*	.48**	.38**
Family System	5–5.11	.20	.33*	.05	.04	.22	.14	.14	.30*	.18	.29*	.39**	.42**	.13	.20	.39**	.48**	-.48**
	6–6.11	.10	.24	.10	-.03	-.03	.12	-.03	.19	.23	.24	.22	.06	.04	.38**	.27*	.27	-.46**
	7–7.11	.38	-.17	-.12	.24	.24	-.20	.13	.42**	.07	.46**	.21	.17	-.06	.45*	.35*	.29*	-.69**
Mother Ed.	5–5.11	.21	.33*	.11	.01	.08	.06	.06	.35*	.33*	.12	.37**	-.04	.17	.34*	.37**	.34*	-.49**
	6–6.11	-.43**	-.09	.09	-.20	.23	-.07	-.16	.13	-.00	.54**	.00	.36**	-.15	.38**	.19	.41**	-.42**
	7–7.11	.11	.04	-.13	.16	.16	.28*	.09	.43**	.33*	.49**	.12	.07	.29*	.59**	.52**	.42**	-.55**
Father Ed.	5–5.11	.21	-.19	.10	.25	.21	.14	.14	.14	.20	.01	.27	-.01	.07	.15	.27	.21	-.36**
	6–6.11	-.20	-.15	.11	-.01	.18	.18	-.10	.03	.31*	-.24	.33*	-.02	.30	.19	.16	.21	.02
	7–7.11	.32*	.02	-.12	.11	.11	-.00	.19	.24	.32*	.19	.27*	.11	.13	.35*	.32*	.51**	-.39**
Family Income	5–5.11	.30*	.20	.28*	.34*	.36**	.36**	.36**	.11	.06	.11	.49**	.36**	.19	.15	.49**	.42**	-.59**
	6–6.11	.14	.04	-.07	.27*	.27*	.00	-.05	.05	.03	.48**	.11	.34	-.03	.33	.31	.49**	-.17
	7–7.11	.06	.12	.07	.25	.25	.06	.17	.31*	.27	.33*	.13	.18	.17	.43**	.43**	.50**	-.25*
Story Listening Habit	5–5.11	.14	.29*	.11	.07	.30*	.23	.23	.15	.03	.18	.39**	.43**	.27*	.17	.39**	.36**	-.49**
	6–6.11	.05	-.57	.35**	.21*	.03	.06	.01	.17	.12	.46**	.41**	.13	.04	.44**	.42**	.31*	-.62**
	7–7.11	.47**	-.10	-.07	.27	.27	-.12	.18	.40**	.28*	.41**	.32*	.23	.03	.53**	.45**	.26	-.69**
Oral Mode	5–5.11	.05	.16	.10	.03	.33*	.29*	.29*	.15	.12	.12	.21	-.05	-.07	.13	.21	.19	-.12
	6–6.11	.01	.02	-.02	.00	.00	-.12	.03	-.03	-.04	.22	.02	.02	-.04	-.04	-.03	-.12	-.00
	7–7.11	.18	.18	-.09	.09	.09	-.27	.08	-.05	-.21	-.10	.22	.06	-.15	-.18	-.10	-.05	.18
Book Mode	5–5.11	-.25	-.09	-.34	.14	.06	.07	.07	-.04	-.01	-.05	-.02	-.02	.01	.06	-.02	-.13	-.25
	6–6.11	.01	.20	.03	.04	.04	.17	.18	.41**	.16	.30	.14	.12	.22	.46**	.38**	.45*	-.31*
	7–7.11	.19	-.24	.05	.15	.15	-.05	.17	.12	.04	.14	-.01	.11	.08	.14	.18	.03	-.30*
TV/Tab Mode	5–5.11	.22	.16	.19	.18	.20	.22	.22	.05	.11	.02	.10	.43	.39	.05	.10	.18	-.20
	6–6.11	.09	-.05	.13	-.02	-.02	-.03	-.17	.09	-.03	.17	.02	-.02	-.14	-.07	-.07	-.25	-.12
	7–7.11	-.01	.19	-.02	-.11	-.11	.13	-.10	.10	.28	.15	.08	-.06	.02	.25	.11	-.27*	-.17
Grade A	5–5.11	.35**	.35*	.19	.25	.21	.08	.08	.26	.25	.17	.40**	.29*	.08	.27*	.40**	.43**	-.41**
	6–6.11	-.21	.17	.10	-.14	.09	.09	-.19	.04	.47**	.31	.17	.17	-.08	.50**	.27	-.32**	-.49**
	7–7.11	.10	.20	.02	.31	.31	-.04	.20	.35*	.14	.39	-.08	.26	.11	.42**	.40**	.06	-.49**
Grade B	5–5.11	.10	.17	-.03	-.17	.08	.15	.15	.15	.09	.14	.25	.23	.21	.04	.25	.20	-.24
	6–6.11	-.05	.05	.20	-.03	-.03	-.09	.24	.00	-.36	-.14	.00	.02	.11	-.30*	-.06	.32*	.16
	7–7.11	.19	.27	-.06	-.22	-.22	-.05	-.08	-.16	.04	-.18	.30	-.18	-.10	-.14	-.18	.21	.14
Grade B-	5–5.11	-.32*	-.39**	-.08	.03	-.21	-.20	-.20	-.32*	-.25	-.25	-.50**	-.42*	-.27*	-.20	-.50**	-.47**	.50**
	6–6.11	-.21	-.27	-.12	-.09	-.09	.10	-.09	-.09	-.17	-.29*	-.31*	-.35*	-.05	-.33*	-.36**	.41**	.58**
	7–7.11	-.55	.04	.06	-.18	-.18	.17	-.22	-.35	-.36	-.40	-.39	-.16	-.02	-.53**	-.42**	.24	.65**
Oral Narrative	5–5.11	.29*	.12*	.43**	.20*	.46**	.45**	.38**	.28*	.47**	.45**	.65**	.80**	.16*	.48**	.80**	1	-.66**
	6–6.11	.25	-.15*	.42**	.42**	.23	.10	-.29*	.15	.53**	.46*	.15*	.46**	.19	.56**	.67**	1	-.76**
	7–7.11	.05	.32*	.26	.26	.31*	.13	.40**	.32*	.43**	.31*	.04	.28*	.34*	.53**	.58**	1	-.45**
Let-s.r	5–5.11	-.12	-.14	-.16	-.04	-.30*	-.34*	-.29*	-.29*	-.14	-.03	-.18	-.45**	-.20	-.39*	-.45**	-.66**	1
	6–6.11	-.27	-.33	-.06	.17	.17	-.07	.17	-.20	-.45**	-.38**	-.38**	-.04	.08	-.60**	-.29*	-.76**	1
	7–7.11	.65**	-.41**	.03	.10	-.35**	-.35**	-.16	-.16	-.58**	-.31*	-.62**	-.30*	-.25	-.71**	-.67**	-.45**	1

*Abbreviations: Rhy, rhyming; Ri1, rhyme identification; Rp2, rhyme production; Od3, oddity; Blend, blending; Sb4, syllable blending; Pb5, phoneme blending; Seg-, segmentation; Ss6, syllable segmentation; Ps7, phoneme segmentation; Manip, manipulation; sp8, substitution of phoneme; Ap9, addition of phoneme; Dp10, deletion of phoneme; T-PA, total phonological awareness; Oral-n, oral narrative; Let.s.r, letter to sound relation. *p < 0.05, **p < 0.01.*

Family income was positively correlated with total phonological awareness across all ages, most strongly at 5.0–5.11 ($r = .49$, $p < 0.01$). Story listening habits were strongly associated with manipulation ($r = .39$, $p < 0.01$), substitution ($r = .43$, $p < 0.01$), and T-PA ($r = .39$, $p < 0.01$) at 5.0–5.11, with significant correlations sustained into older age groups. Of particular note, oral narrative scores were robustly correlated with total phonological awareness at all ages, with $r = .80$ ($p < 0.01$) at 5.0–5.11, $r = .67$ ($p < 0.01$) at 6.0–6.11, and $r = .58$ ($p < 0.01$) at 7.0–7.11, indicating a consistently strong association across development.

Hierarchical multiple regression analyses (Table 3) provide deeper insight into the predictors of total phonological awareness. For the youngest age band (5.0–5.11), Model 1 accounted for 42% of the variance in T-PA ($\Delta R^2 = .42$, $p < 0.01$), with type of school ($\beta = .18$, $p = 0.018$), family income ($\beta = .28$, $p = 0.041$), story listening ($\beta = .36$, $p = 0.003$), and mother's education ($\beta = .35$, $p = 0.050$) as significant contributors.

Model 2, which added letter-sound relation and oral narrative, increased the variance explained to 72%. In this model, oral narrative emerged as the strongest predictor ($\beta = .80$, $p < 0.01$), while letter-sound relation trended negative but was not statistically significant ($\beta = -.13$, $p = 0.070$). At age 6.0–6.11, the combined models explained 60% of variance in T-PA, with story listening ($\beta = .19$, $p = 0.016$), family income ($\beta = .36$, $p = 0.005$), and oral narrative ($\beta = .64$, $p < 0.01$) as significant predictors. For the oldest group (7.0–7.11), the model explained 68% of variance, with grade 'A' ($\beta = .38$, $p < 0.01$), family income ($\beta = .36$, $p = 0.008$), and oral narrative ($\beta = .29$, $p = 0.024$) all contributing significantly, and letter-sound relation becoming significant ($\beta = -.48$, $p = 0.033$). These results underscore the prominent, independent effect of oral narrative skills on phonological awareness development at all ages, alongside the influential roles of socioeconomic and educational factors, especially as children advance through early school years.

Table 3. Hierarchical Multiple Regression Analysis Predicting Phonological Awareness (T-PA) by Age Group

Predictor	5.0–5.11 (ΔR^2, β, p)	6.0–6.11 (ΔR^2, β, p)	7.0–7.11 (ΔR^2, β, p)	95% CI for β
Model 1	.42**, .37*, <.01	.37*, .23*, <.05	.53**, .14**, <.01	
Type of School	.18**, β=.18, 0.018	.18, β=.18, 0.022	.18, β=.18, 0.021	(0.09, 0.30)
Family System	.09, β=.09, 0.092	.06, β=.06, 0.143	–.01, β=–.01, 0.789	(–0.12, 0.11)
Family Income	.25, β=.28, 0.041	.28, β=.36*, 0.005	.36*, β=.36, 0.008	(0.16, 0.42)
Story Listening	.16, β=.36**, 0.003	.36**, β=.19, 0.016	.19, β=.19, 0.044	(0.11, 0.36)
Mother Education	.08, β=.35, 0.050	–.35, β=–.35, 0.048	.35*, β=.35*, 0.012	(0.15, 0.51)
Grade 'A'	.18, β=.07, 0.198	.07, β=.07, 0.178	.38**, β=.38**, <.01	(0.21, 0.55)
Model 2	.31**, .23**, <.01	.23**, .14**, <.01	.14**, .14**, <.01	
Letter-Sound Relation	–.13, β=–.13, 0.070	.01, β=.01, 0.792	–.48*, β=–.48*, 0.033	(–0.70, –0.14)
Oral Narrative	.80**, β=.80**, <.01	.64**, β=.64**, <.01	.29*, β=.29*, 0.024	(0.12, 0.42)
Total R^2	.72	.60	.68	

**Note: β = standardized regression coefficient; CI = confidence interval; ΔR^2 = change in explained variance. *p<0.05, *p<0.01.*

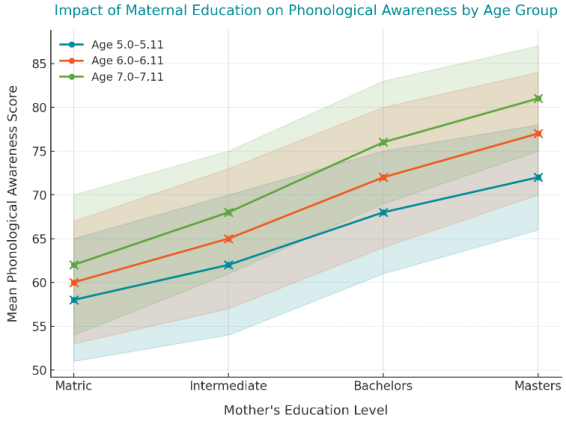

Figure 2 Impact of Maternal Education on Phonological Awareness

The quantitative results demonstrate that while core demographics such as gender and school type remained stable, key predictors—including oral narrative ability, maternal education, family income, story-listening habits, and academic achievement—exerted significant, age-dependent influences on children's phonological awareness. The strength of these relationships, as evidenced by large effect sizes and consistently significant regression coefficients, highlights the interplay between cognitive-linguistic skills and environmental exposures in shaping literacy readiness and development in young Urdu-speaking children. The visualization demonstrates (Figure 2) how maternal education is associated with progressive increases in mean phonological awareness scores across all age groups. Children whose mothers held a master's degree consistently achieved the highest average scores in phonological awareness, with notable increments evident from matric to postgraduate levels. The trend lines for each age band show that while overall phonological awareness scores improve with age, the positive effect of maternal education is present at each developmental stage, and the magnitude of difference between education levels is largest among older children. Shaded regions denote the standard deviation for each group, indicating overlap in variability but a clear upward shift in group means. These findings highlight a clinically relevant interaction: maternal education may serve as a modifiable target for interventions, and its benefits become more pronounced as children advance in age, supporting the prioritization of family-focused literacy and educational outreach strategies in speech-language development programs.

DISCUSSION

The present study provides robust evidence supporting the significant association between Urdu oral narrative skills and phonological awareness in typically developing children, with

findings that reinforce and extend the existing body of knowledge on early language and literacy development (1–4). Consistent with previous studies in Western contexts, the data reveal that strong oral narrative abilities are closely linked to higher phonological awareness, emphasizing the foundational role of narrative competence in literacy acquisition (2,5). Notably, this investigation advances the field by confirming these relationships in an Urdu-speaking population, addressing a prominent gap in indigenous research and thereby enhancing the cross-linguistic generalizability of literacy development models (6,7). The integration of theoretical frameworks such as stage theory, emergent literacy theory, and ecological systems theory underscores the interplay between cognitive, social, and environmental determinants, highlighting how exposure to oral language, print-rich environments, and quality parent-child interactions drive phonological awareness (8–11).

A particularly salient contribution of this research is its detailed analysis of maternal education, family income, and story-listening habits as significant predictors of phonological awareness, echoing findings from longitudinal studies in other languages but offering new insights within the Pakistani context (12,13). The observed gradient, where higher maternal education correlates with enhanced phonological awareness across all age bands, aligns with prior research indicating that maternal literacy fosters a home environment conducive to language growth (14,15). Furthermore, the strong predictive value of narrative skills—especially in younger children—parallels evidence from Arabic, English, and bilingual studies, supporting the notion that narrative-based interventions can accelerate early literacy outcomes (3,16,17). The positive associations with family income and private schooling reinforce socioeconomic theories asserting that resource-rich environments afford children greater linguistic stimulation and educational opportunities, ultimately fostering superior literacy trajectories (9,13,18). However, some findings diverge from established paradigms. The relative lack of predictive power of father's education and the nuanced effects of family system suggest context-dependent pathways, possibly influenced by cultural norms around caregiving, gender roles, and the division of educational responsibilities within families in South Asia (19). The present study's rigorous methodological approach, including the use of validated instruments, standardized screening, and careful control for confounders, strengthens the credibility of these results, yet some limitations must be acknowledged.

The cross-sectional design precludes inferences of causality and limits the exploration of developmental trajectories over time. Additionally, the use of purposive sampling from a single urban locality and the exclusion of children with atypical development may constrain the generalizability of findings to broader or rural populations. Despite robust internal consistency, the moderate sample size, while adequately powered for key analyses, may reduce sensitivity for detecting subtler subgroup effects (20). Clinical and theoretical implications from these findings are multifaceted. The documented strong relationship between narrative skills and phonological awareness supports early, integrative intervention strategies, particularly those leveraging storytelling, book reading, and interactive language games in both home and school settings (8,10,21). The clear influence of maternal education and family income highlights the need for equity-driven policies and family-centered programs targeting disadvantaged communities. Interventions tailored to promote narrative competence and phonological processing in Urdu—especially those that engage mothers and foster rich oral language experiences—could yield substantial benefits in literacy outcomes and school readiness. Notwithstanding these strengths, future research should employ longitudinal designs to clarify causal relationships and developmental change, include more diverse and rural samples to enhance external validity, and consider additional familial and community-level influences such as paternal involvement, sibling dynamics, and neighborhood literacy resources. Mixed-methods approaches incorporating qualitative insights could further elucidate the mechanisms underlying observed associations, while intervention studies could test the efficacy of narrative- and phonological-awareness-based curricula in diverse educational settings. By systematically addressing these avenues, subsequent investigations can build on the current study's contributions, advancing a nuanced, culturally relevant science of early literacy for Urdu-speaking and other multilingual populations (21,22).

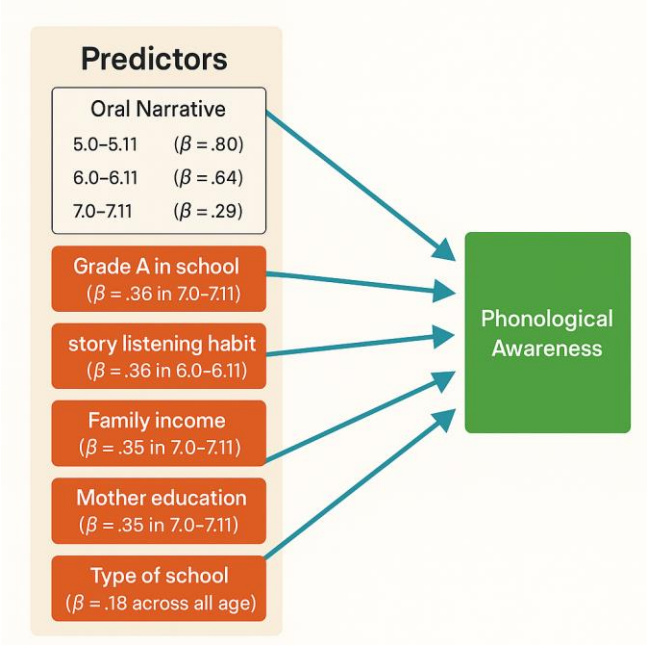

Figure 3 Conceptual Model Illustrating Key Predictors of Phonological Awareness in Typically Developing Children.

The illustration presents a visually structured conceptual model depicting the relationship between key predictors. The left side features prominent predictor variables—including oral narrative skills (with detailed beta coefficients for ages 5.0–5.11, 6.0–6.11, and 7.0–7.11), grade A in school, story listening habit, family income, mother education, and type of school—each displayed in distinct, color-coded boxes for easy differentiation.

CONCLUSION

This study demonstrates a significant, positive relationship between Urdu oral narrative skills and phonological awareness among typically developing children aged 5 to 7.11 years,

confirming that stronger narrative abilities and enriched literacy environments—including maternal education, family income, and story-listening habits—robustly predict early phonological awareness. These findings underscore the essential role of narrative competence and demographic factors in literacy development, supporting early screening and integrative, narrative-based interventions within both educational and clinical settings. Clinically, the results advocate for incorporating structured narrative and phonological awareness activities into early childhood programs to promote foundational literacy, especially for children at risk of language or learning difficulties. For research, this study highlights the need for further longitudinal and intervention studies across diverse populations to optimize evidence-based strategies for fostering early language and literacy skills, ultimately improving educational trajectories and lifelong communicative health.

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