P-ISSN 2708-6453	Pakistan Languages and Humanities Review	Apr-June 2024, Vol. 8, No. 2
O-ISSN 2708-6461	https://doi.org/10.47205/plhr.2024(8-II)72	[807-814]

Pakistan Languages and Humanities Review
www.plhr.org.pk

RESEARCH PAPER

A Longitudinal Study of the Acquisition of Pahari Consonants by a School aged speech-delayed child from age 4-10 to 5-8

[1]Atique-ur-Rehman Abbasi* and [2]Prof. Dr. Ayesha Sohail

1. Ph. D Scholar, Department of English, The University of Azad Jammu and Kashmir, Muzaffarabad, AJ &K, Pakistan
2. †Professor, Department of English, The University of Azad Jammu and Kashmir, Muzaffarabad, AJ&K, Pakistan

***Corresponding Author** | atique.fm@gmail.com

ABSTRACT

The key objective of this study is to track the acquisition of Pahari consonants by a speech-delayed child over 10 months from his age 4-10 to 5-8. The child based in rural Azad Jammu and Kashmir (AJK), past the age of early speech-language assessment as well as intervention, and presented with severe speech delay is recruited in this study at the age of 4-10. His spontaneous speech data, audio-recorded at the ages of 4-10, 5-3 and 5-8, is analyzed under the Production Accuracy Analysis adapted from Alqattan (2015). The results reveal that the child follows a normal but severely delayed course of speech development in terms of consonant acquisition. His early phonemic repertoire consist largely of stops and nasals, while he is found most deficient in the coronal consonants. The insights from this study might be of interest to the field of speech-language pathology to better serve the children speaking the lesser-known Pahari language. To prevent speech delay from persisting into the school age, early intervention is recommended.

KEYWORDS Consonant Acquisition, Delayed Phonology, Pahari Language, Production Accuracy, Speech Delay, Speech Development

Introduction

It is not uncommon to encounter numerous challenges while reporting on the language development of the speech-delayed children speaking lesser-known or less-researched languages like Pahari (an Indo-Aryan language spoken in Azad Jammu and Kashmir [AJK]). These challenges mainly stem from the absence of the adult norms or normative child data for comparison, which not only poses practical hurdles in diagnosis and treatment, but also mars any attempts to take the relational course of analysis that builds upon the one-on-one comparison of the child's sounds with the adult standards (Dyson 1988). Therefore, the more practical and plausible option in the examination of a disordered/aberrant language development of a lesser-known language speaking child is to undertake the independent analysis that comprises of profiling the child's phonetic inventory and (optionally) the description of the supra-segmentals (D. Ingram, 1981; Steol-Gammon & Dunn, 1985). The current study follows this later approach of independent analysis in investigating the speech of a child presenting severe speech delay at the school going age of 4-10.

This paper is part of an ongoing linguistic ethnographic study of speech-delayed 7 year old Pahari speaking child and his socio-cultural milieu in the rural AJK. The child (pseudonym FW) is the only born child - that too in the eleventh year of the parents' marriage - to a middle class family of rural AJK. At the time of his birth, FW's gestational age was 34 weeks with an unremarkable medical history and normal hearing. The

linguistic ethnographic project escorted him at the physical age of 4-8 following which his speech and language (SLP) as well as psychological exams revealed severe speech delay of unknown origin. Parental reports revealed that his first discernible word emerged at the age of 3-5. He did not receive any speech and language therapy intervention. At his current age of 7 years, he still lacks age-appropriate speech. The current report is based on 10 month longitudinal data collected at the interval of 5 months as; 4-10, 5-3 and 5-8.

Literature Review

Since the institutionalization of "clinical linguistics" (Crystal, 1981) in the late 20th century, the studies have focused on the age of acquisition of phonemes and the error patterns associated with the atypical language development (Chang, 2004; Culbertson & Tanner, 2001; E. Ingram, 1973; Templin, 1957). Most of the studies on the atypical speech have historically been the English-language dominated. Although the scope of scholarship on speech disorders has been expanded to the Pakistani context (Noor et al., 2021; Sharif, 2015), there remain many a mile to be covered with regard to the children speaking the not-well documented and scarcely researched Pahari language of AJK.

With respect to the age of acquisition, there is a broader universal agreement that the consonant acquisition is completed by the child's age 5 when he is able to use most of the consonants correctly (McLeod, 2018). It is also roughly agreed that the earliest consonants to emerge are the stops, followed by nasals and non-pulmonic consonants such as click while the approximants, fricatives and affricates are later to emerge (Grunwell, 1981, 1987; D. Ingram, 1981; McLeod, 2018). Attempts were also made to describe the acquisition of Urdu consonants, for instance, by Sharif (2015), Ali (2017) and Mumtaz (2017). These studies also share the findings that stops and nasals were among the foremost consonants to emerge. Most of the studies cited here are related to the normal aspects of consonant acquisition. There is a general lack of attention to the atypical speech development in the context of AJK. To say the least of studies on speech disorders, there has virtually been no study to-date on the development of Pahari consonants at all. In this backdrop, the current study is an attempt towards narrowing this gap by reporting on the consonant development of a case of severely delayed speech.

Material and Methods

The linguistic ethnographic project employed a mixed method convergent parallel design by spontaneously collecting and analyzing the phonological (as well as morpho-syntactic) and ethnographic data. Some its findings have already been reported in Abbasi and Sohail (2023). For the part concerning the current paper, the child's spontaneous speech was audio-recorded in the naturally occurring interaction using a high-fidelity audio recorder at the child's ages 4-10, 5-3 and 5-8. Since, the recordings were based on the ongoing interaction, the recording apparatus was not fixed. The researcher held the recorder in his pocket so as to avoid the observer's paradox. The recorded speech samples were stored on the researcher's personal computer. Each audio file was named according to the nature of interaction, child's age and date of recording. The speech samples were processed in ELAN Linguistic Annotator Version 6.2 to make free transcription. The transcripts were reviewed by a linguistic and a Pahari native speaker for their accuracy. Following this, the word list was exported into an MS Excel file and the consonants were separated as the target (intended) and the production (those produced by the child).

The acquisition of consonants was analyzed using the Production Accuracy Analysis adapted from Alqattan (2015). The minimum qualification for a consonant to be included for analysis was set to no less than 9 occurrences. The consonants not meeting

this qualification were not considered for analysis. The production accuracy scores were calculated by dividing the accurate productions of each phoneme by its target occurrences and multiplying the quotient with 100 as below:

$$\text{PA of a phoneme} = \frac{\text{Correct occurrences of the given phoneme}}{\text{Total target occurrences of the given phoneme}} \text{ x100}$$

(Where PA =production accuracy)

The resultant score determined the production accuracy of the phoneme on the scale below (adapted from Amayreh and Dyson (1998)

Table 1
Production accuracy scale [adapted from Amayreh and Dyson (1998)]

Score	Production accuracy
80% and above	Mastery level accuracy
50% to 79%	Customary production
Below 50%	Phoneme not acquired

Results and discussion

The production accuracy (PA) of stops is given in table (2). At his age 4-10, the child exhibited mastery level PA in the stops /b/, /g/, /ɖ/ and /k/, while he produced /p/ and /ʈ/ with the customary level PA. However, the consonants /kʰ/, /pʰ/, tʰ/ and /ʈʰ/ did not meet the criterion for inclusion. Yet, the retroflex stops /ʈ/ and /ɖ/ were not acquired at the age 4-10.

At the age 5-3, the stop /k/ retained the mastery level PA. The stop /b/, however, declined to customary level PA. Most of the stops including /p/, /pʰ/, /ʈ/, /ʈʰ/, /ɖ/, /ʈʰ/, /ɖ/, /kʰ/ and /g/ did not meet the criterion. Nonetheless, the retroflex stop /ʈ/ still exhibited PA scores indicating its awaited acquisition.

At the age 5-8, a healthy improvement to the mastery level PA in the scores of the stops /p/, /ʈ/, /ɖ/, /kʰ/ and /g/ was observed. However, the PA of /b/ and /k/ indicated decline to customary level as compared to the earlier data elicitation ages. Since the stops /ʈʰ/, /ʈʰ/ and /pʰ/ did not meet the criterion, no definitive remarks can be made on them. However, the stops /ʈ/ and /ɖ/ consistently demonstrated PA scores below 50% and thus were not acquired till the age 5-8.

Table 2
Acquisition of stops

Age	Mastery PA	Customary PA	Did not meet criterion	Not acquired
4-10	b, g, ɖ, k	p, ʈ	kʰ, pʰ, ʈʰ, ʈʰ	ʈ, ɖ
5-3	k	b	p, pʰ, ʈ, ʈʰ, ɖ, ʈʰ, ɖ, kʰ, g	ʈ
5-8	p, ʈ, ɖ, kʰ, g	b, k	ʈʰ, ʈʰ, pʰ	ʈ, ɖ

PA = Production accuracy

The PA of nasals in given in table (3). At the age 4-10, the child exhibited mastery PA in the nasal /n/ and the customary PA in /m/. However, both the nasal consonants exhibited decline in the PA scores at the age 5-3: /n/ indicating decline to customary PA and /m/ indicating lack of acquisition. Interesting PA scores were exhibited at the age 5-8 in such that the nasal /m/ which formerly showed customary level production improved

to mastery level, while /n/ formerly showing mastery level PA declined to customary level accuracy. The nasal /ŋ/ did not meet the criterion at any of the data elicitation phases.

Table 3
Acquisition of nasals

Age	Mastery PA	Customary PA	Did not meet criterion	Not acquired
4-10	n	m	ŋ	
5-3		n	ŋ	m
5-8	m	n	ŋ	

The PA scores of fricatives is given in table (4). At the age 4-10, the fricative /ʃ/ was acquired with mastery production while /ɦ/ exhibited customary production. The fricatives /f/, /v/, /x/ and /ɣ/ did not meet the criterion. On the other hand, the fricatives /s/ and /z/ were not acquired at 4-10. At the age 5-3, the fricative /ʃ/ exhibited a decline in PA scores to customary level. Most of the fricatives including /f/, /v/, /z/, /x/, /ɣ/ and /ɦ/ did not meet the criterion. The fricative /s/, however, continued to exhibit PA score indicating it was not acquired at age 5-8. At the age 5-8, the consonant /ɦ/ exhibited improvement to mastery level PA. The fricative /v/, which formerly did not meet the criterion, exhibited customary level accuracy at age 5-3. The fricatives /f/, /z/, /ʃ/, /x/ and /ɣ/ did not meet the criterion. Nevertheless, /s/ consistently exhibited scores below 50% indicating it was not acquired at all.

Table 4
Acquisition of fricatives

Age	Mastery PA	Customary PA	Did not meet criterion	Not acquired
4-10	ʃ	ɦ	f, v, x, ɣ	s, z
5-3		ʃ	f, v, z, x, ɣ, ɦ	s
5-8	ɦ	v	f, z, ʃ, x, ɣ	s

The acquisition of affricates is given in table (5). At age 4-10, the affricate /ʤ/ exhibited customary production, while /ʧʰ/ was not acquired. On the other hand, /ʧ/ did not meet the criterion. At the age 5-3, the affricate /ʧ/ was not acquired while /ʧʰ/ and /ʤ/ did not meet the criterion. At the age 5-8, the affricate /ʤ/ retained the customary PA while /ʧ/ showed improvement of PA score to customary level. The PA score of the affricate /ʧʰ/ still indicated that it was not acquired.

Table 5
Acquisition of affricates

Age	Mastery PA	Customary PA	Did not meet criterion	Not acquired
4-10		ʤ	ʧ	ʧʰ
5-3			ʧʰ, ʤ	ʧ
5-8		ʧ, ʤ		ʧʰ

The acquisition of approximants is given in table (6). At the age 4-10, the lateral /l/ exhibited customary PA while the trill /r/ and retroflex /ɽ/ were not acquired. On the other hand, the glide /j/ did not meet the criterion. At the age 5-3, /r/ and /ɽ / continued to exhibit PA scores short of acquisition level accuracy while /l/ and /j/ did not meet the criterion. At the age 5-8, however, an overall improvement in the PA scores for all the approximants was noted. /l/ and /j/ were promoted to the mastery level PA, while /r/ and /ɽ / improved to the customary level PA.

Table 6
Acquisition of the approximants

Age	Mastery PA	Customary PA	Did not meet criterion	Not acquired
4-10		l	j	r, ɽ

5-3			l, j		r, ɽ
5-8	l, j	r, ɽ			

The author chose to categorize the consonants as obstruents and sonorants in order to understand the broader picture of their acquisition. The obstruents were further separated as the coronal, palatal, non-coronal and affricates, while the sonorants were categorized as nasals and liquids. The acquisition of the consonants is summarized in table (7).

Table 7
Summary of consonant acquisition

		Obstruents				Sonorants	
		Coronal	**Palatal**	**Non-coronal**	**Affricates**	**Nasals**	**Liquids**
Acquired	**4-10**	ɖ̪	ʃ	b, g, k		n	
	5-3			k			
	5-8	ʈ̪, ɖ̪	j	p, k^h, g, ɦ		m*	l
Not acquired		ʈ, ɖ, s, z			ʧ, ʧʰ	m	r, ɽ
Undecided		ʈ̪ʰ, ʈʰ		p^h, f, v, x, ɣ	ʤ	ŋ	

* = this consonant demonstrated unstable acquisition

During the contact period (4-10 to 5-8), the child acquired the coronal obstruents /ɖ̪/ and /ʈ̪/ while /ʈ/, /ɖ/, /s/ and /z/ remained un-acquired. Both the palatal obstruents /ʃ/ and /j/ were acquired during the contact. The non-coronal obstruents /b/, /g/, /k/, /p/, /k^h/ and /ɦ/ were acquired during the reported period while none of the included non-coronal obstruents fell in the not-acquired category. On the other hand, none of the affricates was acquired during the contact. The finding suggest that the child struggled the most with the Pahari coronal obstruents produced with the tip of the tongue, that is, the retroflex /ʈ/ and /ɖ/ and the sibilants /s/ and /z/.

Among the sonorants, the child acquired the nasals /n/ and the lateral glide /l/ while /m/ demonstrated an unstable accuracy as it exhibited scores below 50% at the age 5-3. On the other hand, the sonorants /r/ and /ɽ/ were not acquired during the reporting period, which corroborates the earlier claim that the consonants produced with the tongue tip are the most challenging for the child. No definite findings were available for the aspirated coronal obstruents /ʈ̪ʰ/ and /ʈʰ/, the non-coronal obstruents /p^h/, /f/, /v/, /x/ and /ɣ/, the affricate /ʤ/ and the nasal /ŋ/.

At large, these findings of production accuracy agree with those of (Grunwell, 1981, 1987; D. Ingram, 1981; Steol-Gammon & Dunn, 1985) in that the earlier phonemic inventories largely consist of the stops, nasals and glides. However, the current child's speech development differs from them with respect to the age of acquisition. All of the cited studies are based on the typical speech development data and thus their findings are for the younger children aged less than three years. The speech-delayed subject of the current study seems to follow the normal but delayed course of language development in agreement with (Weiss & Paul, 2010).

Conclusion

This longitudinal study on the speech development of a Pahari speaking school-aged child from his age 4-10 to 5-8 suggests that his speech development presents an immature and ongoing phonological development system. Although much later in the chronological age, the child roughly takes to the normal order of the emergence of the consonants. This report concludes that the child struggled the most with the coronal

sibilants /s/ and /z/ and the Pahari-specific coronal retroflex stops /ʈ/ and /ɖ/. The attempts to remediate his speech difficulties must be directed towards modeling and drilling these coronal consonants. This report does not account for the distribution of the consonants in the word positions. The future studies might analyze the word initial, medial and final acquisition of the Pahari consonants. Cohort studies of the typical language development also hold promise in expanding scholarship on the lesser known Pahari language.

Recommendations

The extent of delay exhibited in the speech development in this study mandates timely assessment and intervention. It is therefore recommended that the awareness on the milestones and red-flags regarding child speech development must be promoted among the masses. Further, an early assessment and remediation of speech delay is recommended so as to prevent it from persisting into the child's school going age.

References

Abbasi, A. U. R., & Sohail, A. (2023). An independent analysis of the phonological abilities of a Pahari speaking child with delayed language development. *Kashmir Journal of Language Research*, *26*(2), 121-159.

Ali, Z. (2017). *Acquisition of Urdu consonants in 5;01–6;12 years old typically developing children.* [Unpublished master's thesis] Centre for Clinical Psychology, University of the Punjab.

Alqattan, S. (2015). *Early phonological acquisition by Kuwaiti Arabic children* (Unpublished doctoral dissertation). School of Education Communication and Language Sciences, Newcastle University, UK.

Amayreh, M. M., & Dyson, A. T. (1998). The acquisition of Arabic consonants. *Journal of Speech, Language and Hearing Research*, *41*, 642-653.

Chang, J. Y. (2004, jan). Case study on a profound speech-delayed subject: A behavioral approach and its implications. *Asia Pacific Journal of Speech, Language and Hearing*, *9*(1), 48–53.

Crystal, D. (1981). *Clinical linguistics*. Vienna and New York: Springer.

Culbertson, W., & Tanner, D. (2001). Clinical comparisons: Phonological processes and their relationship to traditional speech sound acquisition norms. *The Transdisciplinary Journal*, *11*, 15-25.

Dyson, A. T. (1988). Phonetic inventories of 2- and 3-year-old children. *Journal of Speech and Hearing Disorders*, *53*, 89-93.

Grunwell, P. (1981). The development of phonology: A descriptive profile. *First Language*, *3*, 161-191.

Grunwell, P. (1987). *Clinical phonology (2nd ed.).* London, UK: CroomHelm.

Ingram, D. (1981). *Procedures for the phonological analysis of children's language* (Vol. 2). University Park Press.

Ingram, E. (1973). Applied linguistics and the teaching of English. In H. Fraser & W. O'Donnell (Eds.), (p. 21-36). Longman Group Limited.

Mcleod, S. & Crowe, K. (2018). Children's consonant acquisition in 27 languages: A cross-linguistic review. *American Journal of Speech-Language Pathology*, *27*(4), 1-26.

Mumtaz, R. (2017). *Acquisition of Urdu consonants in typically developing 2–3 years old children* [Unpublished master's thesis], Centre for Clinical Psychology, University of the Punjab.

Noor, H., Iqbal, M. Z., Ch, F. R., Hamid, S., Nawaz, I., & Shams, J. A. (2021). A survey of linguistic considerations of assessment of communication disorders by speech language therapists/pathologists in Pakistan. *International Journal of Innovation, Creativity and Change*, *15*(6), 912-933.

Sharif, H. (2015). Urdu consonant acquisition by children. *Journal of research in social sciences*, *3*(2), 121-140.

Steol-Gammon, C., & Dunn, C. (1985). *Normal and disordered phonology in children*. Austin: Proed.

Templin, M. C. (1957). *Certain language skills in children: Their development and interrelationships*. Minneapolis: University of Minnesota Press.

Weiss, D., & Paul, R. (2010). The handbook of language and speech disorders. In J. S. Damico, N. MÃŒller, & M. J. Ball (Eds.), (p. 178-209). United Kingdom: Blackwell Publishing Ltd.