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Developing Urdu Stories to Address Articulation Errors in Children

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Abstract

The recent study centered on the development and standardization of Urdu stories as an intervention tool to address articulation errors. A mixed method design was employed, consisting of two phases. Phase I utilized qualitative methods, focused on story development and content validation, while Phase II used quantitative method and involved standardization and data analysis. Stories were developed by compiling age appropriate vocabulary from PTB (Punjab Textbook Board) books for the targeted sounds /g/, /k/, /ch^h/, /k^h/ and /p^h/ at initial, middle and final position of the word in Urdu language. Additionally, pictures of the stories were developed. For content validation, even speech and language pathologists and three Urdu language experts were consulted. The feedback obtained from these experts was then integrated into the stories and pictures to finalize them. Content validity was assessed through I-CVI, with scores ranging from 0.8 to 1, indicating high level of agreement among experts. In the second phase the finalized stories were applied on the sample of 200 typically developing Urdu speaking children within the age range of 3 to 7 years. Sample was selected through purposive sampling. The Cronbach's alpha value ranging from 0.93-0.98>0.78 indicated high internal consistency. The mean score of Item's difficulty lie within the range of 3.00 to 5.00. Results revealed that the developed stories were reliable and age appropriate and can be used as an intervention tool to address articulation errors in Urdu-speaking children.

***Keywords*:** articulation errors, intervention tool, Urdu stories, typically developing children

Introduction

Articulation refers to the precise and clear pronunciation of all speech sounds within words. Three primary components make up articulation: the sound quality of a spoken speech sound, the location of the speech organs during the pronunciation of a particular speech sound, and the capacity to identify diseased speech sounds and distinguish them from other speech

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sounds (Otasevic et al., 2021). Articulation errors in children are becoming more prevalent in the present era. These errors directly impact a child's ability to communicate effectively, as well as their social and academic lives. The development of speech sounds usually begins at a young age and is a complex and dynamic process that progresses over infancy (Thomas et al., 2020). Articulation is defined as the physiological movements modifying airflow to produce speech sounds, using the vocal tract above the larynx (Macchi et al., 2024).

Articulation is the process of coordinating several anatomical components, such as the lips, tongue, teeth, palate, and vocal folds, to create a diverse variety of speech sounds that serve as the basis of language (Palumbo et al., 2024). By eighteen months of age, a toddler's speech is 25% intelligible for parents or caregivers, according to the American Speech, Language, and Hearing Association. The average level of intelligibility is predicted to rise between 50% and 75% by the time a child reaches the age of two (Hustad et al., 2021).

Articulation Disorder is defined by difficulty in physically producing speech sounds, which may result in distortions, replacements, omissions, or additions that can impair intelligibility. It could result from neurological, developmental, physical, or other factors. Children with articulation errors have difficulties in social, emotional, and intellectual domains of life because these errors impair speech intelligibility (Altoeriqi & Aljutaily, 2023).

Traditional articulation therapy employs a thorough strategy that involves teaching auditory discrimination, voice training for sound acquisition, stabilization exercises to combine sounds into syllables, words, phrases, and sentences, and maintenance of these learned sounds. The proper positioning and technique of articulators are repeatedly practiced via auditory drilling until the desired sound is produced. After then, it's used in a range of communication scenarios (Khan et al., 2021).

A crucial element of articulation therapy, which aims to improve speech sounds via repetition and practice, is auditory drilling (Furlong et al., 2021). Storytelling has long been recognized as a useful technique for children's language development, cognitive engagement, socio-emotional learning, and development (Denissen et al., 2022).

As per the studies, a powerful phenomenon is obtained in the scenario when intervention is implemented in the factor considering linguistic and cultural peculiarities and a child is talked to his/her native language (Nayeb et al., 2020).

Bandura's (1977) social learning theory serves as the foundation for this investigation that in his views people learn by means of observation, imitation and practice of examples. Observation of behaviours among the children and other people through social communication helps the children to learn behaviours. Being both a linguistic and a social model, the regular accounts of which a fragment of this work will afford the children the opportunities of acquiring the right intonation in the significant and repeated context. The availability of the correct forms of the targeted sounds during the background display of the culturally familiar stories will enable the children not only to hear but they will also be able to connect to the background of the stories and social norms, which will increase the level of learning and memory to increase.

Moreover, the continuation of the given model will be presented in the Sociocultural Theory, which was elaborated by Vygotsky. The children will have the potential of attaining the best in the ideals of being nurtured by the one who knows better, and helping and supporting them in the course of action in the form of his theory of Zone of the Proximal Development (ZPD). The accounts on the articulation therapies lie in this domain where the children practice along the way, as they do, as they play, and as they engage in bridging the gap that exists between the potential and the present state of competency.

In conclusion, the primary objective of the present study is to develop Urdu language stories aimed at addressing articulation errors in children.

Literature Review

Speech Sound Disorders (SSDs) are among the most common communication disorders in children, and are likely to affect the speech intelligibility, academic performance and literacy development. To successfully treat the SSDs, it would not suffice to simply sensitize the SSDs to the phonological and articulatory patterns by the speech-language pathologists (SLPs), but to include therein the appropriate, culturally and linguistically specific intervention material. The question of the popularity of SSDs and the application of the evidence-based approach of intervention,

the topicality of the story as the natural form of the treatment-instrument, especially, of the speakers of the Urdu People is presented in this literature review.

Hessling and Schuele (2020) found that after scaffolded practice of story grammar elements (e.g., setting, problem, resolution), children with specific language impairments showed measurable improvements in both story-retelling and personal narrative generation. The Story Champs program is a structured narrative intervention. This study adds to the body of research on narrative intervention by assessing how school-age children with specific language impairment (SLI) respond to the standard treatment protocol Story Champs (Spencer & Petersen, 2020) in terms of their story generations. This study had a multiple baseline across behaviors, single-case design that was replicated among participants, and it involved four second-grade boys with SLI, ages 8 to 9. Eight stages were covered in each one-on-one intervention session, which was divided into two segments: creating personal stories and retelling stories. Based on each participant's baseline needs, three distinct narrative grammar components were addressed one after the other over the intervention's weeks. Each twice-weekly session started with the administration of the dependent variable probe (personal narrative production), and each participant's unique story grammar components were graded using a 4-point rubric (dependent variable). Each participant's functional relationship—that is, the repetition of an impact across three story grammar elements—was assessed in this single-case research design study. Two individuals showed a functional relationship between the Story Champs intervention and the dependent measure. The effectiveness of the personally delivered Story Champs intervention for kids with SLI is suggested by the results.

A research study conducted by Naz et al. (2023) examined that articulation disorders in children can impede communication and social interaction. Traditional Articulation Therapy (TAT) and the Picture Articulation Test (PAT) are two contrasting approaches employed to address these disorders. While TAT is a conventional method focusing on sensory-perceptual training and sound stabilization, PAT uses visual aids to assess and encourage correct speech sound production. The study aimed to evaluate and compare the efficacy of TAT and PAT in treating substitution errors in children with articulation disorders. Employing a randomized sampling technique, the study included 10 children with functional

articulation disorders, aged 8 to 18 years, from both genders. Exclusion criteria included organic articulation disorders. At REX Medical Center in Lahore, participants were split into two groups and received treatment for six months at two sessions each week, each lasting thirty to forty minutes. The Articulation Assessment Test and the Articulation Severity Rating Scale were used for evaluations both before and after the intervention. SPSS 24 was used for data analysis, and paired and independent sample t-tests were used. From before to after the intervention, TAT demonstrated a substantial decrease in replacement error scores for all three categories of errors (initial, middle, and final), with significant p-values suggesting progress ($p < 0.05$). With p-values over the significance level, PAT did not show a discernible decrease in error scores. In children with articulation difficulties, TAT was found to be more successful than PAT at reducing substitute mistakes. The results support the use of TAT in clinical settings while acknowledging the possibility of combining more modern technology with more conventional approaches to improve therapeutic results.

Rinaldi et al. (2021) did a comprehensive assessment of research publications published since 1980 that evaluate the effectiveness of narrative-based language intervention for children with language impairment in preschool and school. With the exception of non-experimental case studies, the author manually searched additional sources and conducted a thorough search of internet databases for studies employing all types of study designs. Effect sizes were used to translate the study results into a common measure.

Nine studies were found to meet the inclusion criteria after the review. Most studies found that both story macrostructure and microstructure had moderate to large effect sizes. Even though the studies' findings were generally encouraging, each one had a small sample size, little experimental control, and significant differences in the methods and supplies employed. When evaluating the findings of these research, clinicians should use caution. The evidence supporting narrative intervention is still in its infancy and requires more research.

The research conducted by Loudermill et al. (2021) deals with the problems of an integrated intervention, the concept of which implies the integrated development of speech and literacy skills in the schoolchildren who turned out to be carriers of SSDs. In their study, they mention that the difference in linguistic-phonological processing in such children is mixed

and there is a necessity in providing their models of service delivery that would, in an integrative form be through the integration of phonological awareness, morphological awareness, and speech production. These authors also explicate that SLPs will also be in a position to enhance the intelligibility of speech as well as reading development, since these people are incorporating the literacy practice into the speech sessions. This conforms with the prevailing trends of the therapies, which are geared towards developing mobile and wide-ranging plans of treatment as opposed to the emphasis on the production of speech.

Another powerful study was carried out in Pakistan as Aslam et al. (2020) attempted to determine the prevalence of SSDs in children living in the province of Punjab. The problem of impaired speech sound based on the evaluation of the children analyzed was obtained as 1.3 percent of with the prevailing percentage of the occurrence was among the male children whose age is between 61 to 72 months. The most common type of errors was the substitution. However, despite the rates that are actually very low, the figures indicate the need to implement the early screening practice and culture-specified intervention procedures. Many will find it interesting in this study that TAAPU assessment instrument is being developed specifically based on the basis of the Urdu speaking children. Nonetheless, we may observe the occurrence of the fact that the crevice still exists even in case of the available diagnostic resources when it comes to the Urdu language therapeutic procedures in general and the ones in quack concerning the special in the special.

The international research will facilitate the representation of how the narrative based intervention appears effective in treating the speech sound disorders. According to Spencer and Petersen (2020), it can be assumed that the most advantageous option is created by the assumption that the majority of narrative intervention is the multifunctional and efficient instrument of therapy that not only makes a contribution to better outcomes related to speech but also ensures the vocabulary growth, inferring skills, grammar of stories and social improvisations. Their finding expressed the result of ten planning and implementation of such interventions and one of the strategies that may be applied in the spread of communication, linguistic, and pragmatic materials is the use of storytelling.

Similarly, Freeman (2016) examined oral storytelling as a form of the special intervention among children with SSDs. Having regarded the

perspectives of using some sounds in her research, the five oral phonemic stories were created with the aim to cover the given sound by using techniques like repetition, refrain, and onomatopoeia, just to name a few. Children ought to have been in a position to make their choices and pronounce target sound pieces of speech in a natural and attractive environment using such stories.

Following this trend, Thomas et al. (2020) fitted talking together story books with speech sound intervention in the context of early childhood development in the educational premises of the early education institutes. In their studies, they defined that there was a positive result in the production of speech sound in five out of the six children whom they used to conduct their studies and noted impressive improvements. The fact that the grouping of the children according to the pattern of the error in the combination with the model peers disclosed that the set of the focused sounds (i.e. initial blends, final consonants and velars) could be taught in the system which was based on the story. The plan also boasts of an immense potential of being used in the classroom and during the treatment duration especially in benign cases whereby the details must be inspirational, statistical and should be rather easy to put into effect.

On one aspect of therapeutic approach, Cabbage and DeVeney (2020) have enjoyed the scope of exercisable modes of interventions, which the clinicians can implement, as far as treating SSDs is concerned. They compared motor-based system of articulatory technique and phonologically-based technique of cycles, minimal pairs and numerous oppositions. The second thing that they state in their review is that definite approach to treatment must be thought of as personal with regard to the child and his / her pattern of missteps and needs. Another claim was that nowadays no such studies of this kind are being conducted, which could substantiate some of the most prevalent practices, hence giving rise to the fact that evidence-based approach to decision-making in the sphere of the therapy is noteworthy.

In line with the correlated theory, Kairien th (2017), explained how a child with articulation disorder, brought with a very high degree of impunctuation will be treated using the motor learning approach. This study argued on application of the balanced therapy programs by taking into consideration speech and also non-speech motor activities. Based on its discoveries, it has been said that the motor learning ways have been found

very useful when applied on a basis of the indicated disorder and its degree of severity. Such use of the techniques would allow the combining of the exactness of the speech sound with the prolonged studying sounds.

The strength of the study by Ahmadi et al. (2019) is that the authors have managed to develop such an assessment tool that would help them to define how much the realisation of articulation is among the children who speak Persian. The one that they had put to test (a story based speech assessment tool) was quite reliable and reflected construct validity. The research design will also offer a feasible framework in the establishment of other tools similar to the one in use but creative and effective even when the tool is to be designed in order to be employed in another language such as Urdu although it is clear that the particular tool would be aimed at Persian. There is also the assessment and plan of treatment that is related with the use of culturally appropriate storytelling.

Another most significant gap that the systematic review conducted by Ambreen and To (2021) identified is the absence of resources on the Urdu speeches therapy. They have even gone ahead and surveyed some studies that were conducted regarding phonological development in individual speaking Urdu and have made a complete summary that the literature is very limited and published and reviewed articles are minimal and few studies have been conducted which have concentrated on the development of vowels and clusters of the consonants. Available researches tended to concentrate on learning and process of consonants more immensely. This limited gauging of the total information limits the selection of SLPs making evidence based intervention plan to work on Urdu population. The review shows the lack, not only in terms of the completion of the main works, but also in the creation of the materials, which might be examined up to the phonological principles of the Urdu language.

When this has been totaled up that brings out very strongly that the most effective kind of intervention is speech-language which is integrally-speech language and person as language interventionist and responsive. The potential way out of the criticism of the issue of the speech treatment presents itself to be story-telling and specifically concerning the changes in phonic needs of the children and its corresponding and culturally responsive setting. Regardless of the fact whether or not it was demonstrated that the tools in English language as well as the models were previously shown to be useful in most of the countries, it is possible to trace and observe how

quickly they have to be adjusted in order to fit in the context of the relevancy and locality of the group of the children of Urdu speaking language.

Framework for the Present Study

In the contemporary research study, the stories will be tried to be invented in the Urdu language, with the help of which it is most probably possible to rectify the articulation errors of children within them. It will have recourse to the principles of Motor learning, narrative based therapy and phonological awareness that will be presented in the form of target phonemes, repetition and material that is pertinent to the culture in order to bring out these stories. This approach not only fills a critical gap inavailable resources for Urdu-speaking children with SSDs but also provides a structured, enjoyable, and evidence-based method for speech intervention.

Method

The present study used a mixed method design and it is consisted of 2 phases. Phase I was characterized by qualitative methods, focused on story development and content validation while phase II used quantitative method and involved standardization and data analysis. Following the Delphi process, the development of the stories was started. The procedure for the development of stories was as follows: Various Punjab Textbook Board (PTB) textbooks and educational resources designed for children in Urdu medium schools were carefully reviewed in order to develop stories. Following the compilation of vocabulary, an initial version of age-appropriate stories in the Urdu language was developed, focusing on the sounds /g/, /k/, /ch^{h}/, /k^{h}/ and /p^{h}/. Stories were developed for each of the three positions of targeted sounds (initial, middle and final).

Picture representations of stories were also developed. The developed stories and pictures were shown to the experts for the goal of obtaining feedback and content validation. In order to fulfill that objective,7 Speech and Language Pathologists and 3 Urdu language experts were selected. A study conducted on the subject of ABC of Content Validation and Content Validity Index Calculation established the content validation results (Yusoff, 2019).

The psychometric properties of the stories were measured by developing a 5-point Likert type checklist to assess the relevance of the story, intelligibility of the individual sound, production of clusters and syllables, syntax, engagement in the story and age appropriateness of the

stories (Kyriazos & Stalikas, 2018). Children (3–7 years old; *M* = 3.00; *SD* = 1.42), both boys and girls, were chosen from the designated schools to participate in the application of developed stories. Purposive sampling was used to select the children. Children who could comprehend and speak Urdu and who were typically developing were chosen for recruitment. Before the administration of the stories, the participants were given a short description of the research. Each participant was requested to read the stories. Every participant had an individual session in a quiet, peaceful classroom. Each story was rated by using the developed checklist. The quantitative data obtained by the checklist was then analyzed by IBM SPSS Statistics 22 for analysis. To evaluate the stories' internal consistency, Cronbach's alpha was computed. The percentage of children between the ages of 3 and 7 who correctly identified the target sound in each story was computed based on the item difficulty. Then the item discrimination was computed to assess how well each story distinguished children's ability to articulate targeted sound.

Result

Table 1 shows the I-CVI scores of developed Urdu stories according to experts rating to assess the relevance, clarity, simplicity, and ambiguity. The results indicate that the I-CVI values of 14 stories exceed the cut-off value of 0.78 showing the high level of agreement among experts regarding the relevance, clarity, and simplicity of the stories, with I-CVI scores ranging from 0.8 to 1 across these dimensions.

Table 1

Item Level Content Validity Index (I-CVI) for Experts Ratings (N=10)

No	I-CVI of Relevance	I-CVI of Clarity	I-CVI of Simplicity	I-CVI of Ambiguity
g initial	1	1	0.9	0.9
g middle	1	1	1	1
g final	0.9	1	1	1
ch^h initial	1	0.9	1	1
ch^h middle	0.8	0.9	0.8	0.8
ch^h final	1	0.9	1	0.9
k initial	0.9	1	1	1
k middle	1	1	1	1
k final	1	1	1	1
k^h initial	0.9	1	1	1

No	I-CVI of Relevance	I-CVI of Clarity	I-CVI of Simplicity	I-CVI of Ambiguity
k^h middle	0.9	1	0.9	0.9
k^h final	0.9	0.9	0.9	1
p^h initial	1	1	0.9	1
p^h middle	0.8	0.8	0.9	0.8

Note. I-CVI= Item Level Content Validity Index

Table 2 shows the reliability analysis of all the stories at their initial middle and final position in the present study. The Cronbach's Alpha for stories lie within the range of .93 to .98 (>0.7) which indicated high internal consistency. This high reliability implies strong internal consistency among the stories, ensuring they address the underlying articulation error effectively.

Table 2

Psychometric Properties for Stories (N=200)

	M	*SD*	Range	Cronbach's alpha
g initial	34.46	4.62	24-40	0.97
g middle	34.34	4.70	24-40	0.93
g final	33.70	4.90	22-40	0.94
ch^h initial	29.47	4.94	17-40	0.97
ch^h middle	29.52	4.72	17-40	0.97
ch^h final	29.39	4.79	19-40	0.97
k initial	34.07	4.10	26-40	0.96
k middle	34.04	4.07	26-40	0.96
k final	33.66	4.27	26-40	0.96
K^h initial	29.51	5.09	17-40	0.97
K^h middle	29.32	5.18	17-40	0.98
K^h final	29.21	5.40	17-40	0.98
P^h initial	24.54	4.61	16-36	0.98
P^h middle	24.89	4.77	16-36	0.98

Table 3 demonstrate the item difficulty index of all three levels of stories across the age groups ranges 3 to 7 years on the basis of relevance of story and intelligibility of individual sound.

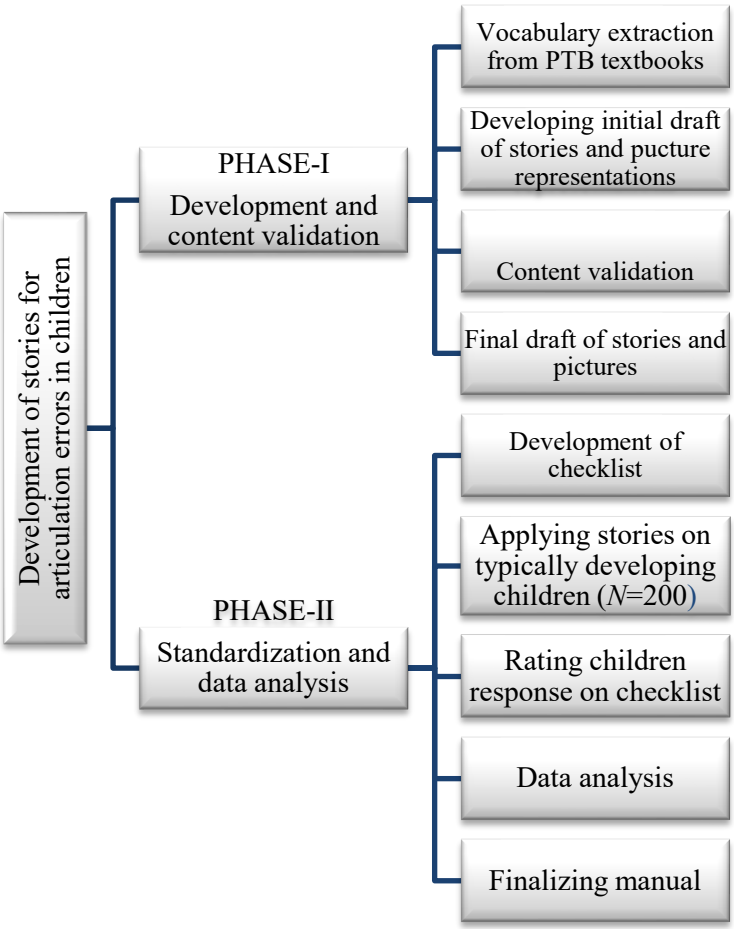
Table 3

Item Difficulty Index for Stories (N=200)

Items	3 years	4 years	5 years	6 years	7 years
	M	*M*	*M*	*M*	*M*
G initial relevance	4.60	4.73	4.93	4.88	5.00
G middle relevance	4.62	4.75	4.93	4.85	5.00
G final relevance	4.60	4.75	4.85	4.88	5.00
G initial intelligibility	4.60	4.78	4.85	4.98	5.00
G middle intelligibility	4.60	4.78	4.85	4.95	5.00
G final intelligibility	4.60	4.78	4.78	4.98	5.00
Ch^{h} initial relevance	2.78	2.85	3.50	4.30	4.93
Ch^{h} middle relevance	2.78	2.85	3.50	4.30	4.93
Ch^{h} final relevance	2.78	2.85	3.53	4.30	4.93
Ch^{h} initial intelligibility	3.03	3.08	3.68	4.05	4.88
Ch^{h} middle intelligibility	2.58	2.93	3.40	4.05	4.88
Ch^{h} final intelligibility	2.85	3.00	3.53	4.18	4.88
K middle relevance	4.18	4.83	5.00	5.00	5.00
K final relevance	4.18	4.83	5.00	5.00	5.00
K initial intelligibility	4.23	4.93	5.00	5.00	5.00
K middle intelligibility	4.23	4.93	5.00	5.00	5.00
K final intelligibility	4.25	4.93	5.00	5.00	5.00
K middle relevance	4.18	4.83	5.00	5.00	5.00
K^{h} initial relevance	2.70	3.65	4.80	5.00	5.00
K^{h} middle relevance	2.70	3.45	4.80	5.00	5.00
K^{h} final relevance	2.70	3.45	4.80	5.00	5.00
K^{h} initial intelligibility	2.73	3.55	4.80	5.00	5.00
K^{h} middle intelligibility	2.73	3.45	4.75	5.00	5.00
K^{h} final intelligibility	2.70	3.45	4.75	5.00	5.00
P^{h} initial relevance	1.70	2.55	2.90	4.05	4.70
P^{h} middle relevance	1.70	2.55	2.98	4.05	4.75
P^{h} initial intelligibility	2.00	2.65	2.85	3.45	4.35
P^{h} middle intelligibility	2.00	2.65	2.85	3.40	4.55

Figure 1

Schematic Representation of Method



Discussion

The item-based content validity index was computed for the ratings provided by the experts. Each score has an underlying interpretation value that explains the relevance and clarity of the stories. The results were identified by the study conducted on the topic ABC of Content Validation and Content Validity Index Calculation (Yusoff, 2019). In this study, the items were reviewed. It also used the review scale, and then I-CVI was calculated for each and every item.

During the standardization phase, validation had been carried out, and norms of the stories were developed. The stories were administered to typically developing Urdu-speaking children aged 3 to 7 years. A structured survey examining the phonological development of Urdu-speaking children further supported the determination of appropriate age norms for the stories used in this study (Kyriazos & Stalikas, 2018). They discovered the right age up to which phonological development should occur in the children who speak Urdu in this research work. The results of this study support the use of Urdu stories to address articulation errors. Content validity was established, and standardization was conducted on typically developing Urdu-speaking children aged 3 to 7 years. This age range was selected based on phonological developmental milestones, as discussed in the review by Ambreen and To (2021), which specifically focused on Urdu-speaking children. These pedagogical assumptions were based on the norms of language development, which also assisted in formulating the realistic expectations regarding the ability to acquire sounds, as well as the level of mastery of them in terms of their articulation.

The language professionals made the proposal that there were some of words that were to be substituted so as to enhance the meaning and linguistic etiquette of the narratives. Such refinements not only acted to refine the language but were also considered old enough and culturally correlated. The culturally oriented process expressed through the cyclic development indicates a correlation between the literature results on the presence of language-specific form of the speech-therapy intervention (Ahmadi et al., 2019; Freeman, 2016). Although the language experts of the Urdu language believed in the fact that the story of /g/ at the end of the story was getting clear and pertinent, they also suggested some changes in grammar.

It was suggested to replace کیin the line جنگ جنگل میں ناگ اور لال بیگ کی لگ گئیwith میںas ,جنگل میں ناگ اور لاگ بیگ میں جنگ لگ گئی some more changes were suggested as to replace سےwith پرin the sentence لال بیگ ناگ ناگ جھگڑنےin the sentence لڑنےwith کیreplace اس حرکت سے آگ بگولا ہوا، اور لال بیگ لڑنے لگ گئے. The story of /k/ at initial position was found relevant and clear but some changes were suggested by experts. the sentence was changed from کرن اور کوکب کا کمرہ کونے میں ہےto کرن اور کوکب کا کمرہ کائنات was removed in the sentence ہےThe word گھر کے ایک کونے میں ہے. was added کےلئے The word،کرن اور کوکب کے گھر کے پاس کتا دیکھ کر ڈر گئی ہے. in the sentence .The کرن اور کوکب کی امی نے کائنات کو کھانے میں کیک اور کیلا دیا.

story of کat final position was fount relevant and clear but some changes were made on the suggestion of Urdu language expert. It was suggested that to replace گئےwith گئیںin the sentence ۔فلک اور پلک پکنک منانے پارک میں گئیں it was suggested to replace کوwith میںin the sentence پھر فلک اور پلک شام میں گھر آ گئیں. A minor revision was suggested by the experts in the story with /ch^h/ middle position. Expert suggested to replace کو بولاwith سے کہاin the sentence .بچھو نے کچھوے اور مچھلی سے بولا کو وہ دل چھوٹا نہ کریں The story with /k^h/ at final position was found relevant but with some revision. On the expert suggestion سکھی اور مکھیwas replaced with سکھ اور مکھin the whole story.

The absence of /ph/ story in the last position with the aid and consent of professional and supervisors is confirmed with the aid of the phonological facts such as less pronunciations and ease of /ph/ in Urdu language at the last position. The presence/absence of the words, and the presence/absence of repetition of words were facts, which also were actual limitations in the design of phonemic intervention using stories as the primary focus. It is in line with Cabbage and DeVeney (2020) when they prioritized the necessity to ensure that the choice of the content of intervention work was due on its evidence and the possibility of further implementation.

In the standardization phase, rules were set for the stories after the validation process. The stories were administered to typically developing Urdu-speaking children aged 3 to 7 years. Setting age standards for the stories in the current study was made easier by the thorough assessment of phonological development in Urdu-speaking children conducted by Ambreen and To (2021). In this study, the ideal age for phonological development in children who speak Urdu is determined. The findings of this study supported the effectiveness and appropriateness of the developed stories.

The study's findings support the usage of /g/ story for children at the beginning, middle, and end of sentences. Typically growing children learn the /g/ sound between the ages of two and three. All age groups of children were found to articulate the /g/ sound intelligibly.

The story of /g/ at initial position was found relevant for the targeted sample as the story begins by taking into account of day to day routine of children This familiarity enhanced their connection to the story and likely contributed to their sustained interest and engagement throughout the story.

The story of a little girl with her mother in the fields of carrot, cauliflower, sugarcane and wheat made the story simpler and related to real life. Also the pictorial representation of the story showed culturally appropriate characters, further reinforcing the children's sense of connectedness, as the visuals aligned with their everyday realities. The story's overall language was suitable for the age ranges it was intended for.

The results for the /g/ story at the middle position showed that children found the story highly engaging and age-appropriate. The story depicted the unsual friendship between a crocodile, kangaroo and rabbit that captured the children's imagination and maintained their curiosity and interest. Overall vocabulary was appropriate for the targeted age group.

The results for the /g/ story in the final position indicated that the story was engaging and age-appropriate for the children. The narrative, which depicted a battle between a cockroach and a snake, captured their interest and maintained their involvement throughout. The results of the study support the use of the /ch/ story targeting the initial, medial, and final positions of words for children. The acquisition of the /chh/ sound among typically developing children generally occurs around 4 to 5 years of age. The study found that the intelligibility of the /chh/ sound in children aged 3 years was limited, as their articulation of the sound was often unclear. In contrast, children aged 4 to 7 years demonstrated the ability to produce the /chh/ sound intelligibly across all word positions.

The story of / ch^h / sound at initial position was found to be relevant for the entire target population. It began with elements drawn from the daily routines of children, which increased their connection to the narrative and sustained their engagement. The story featured a little boy enjoying rain, jumping in the puddles, experiencing family love, a scenario familiar to most children. Themes of family love and a simple moral lesson made the story meaningful. Also the pictorial representation of the story showed culturally appropriate characters, it was also the reason of connectedness as it’s not something beyond the imagination of children. Majority of children replaced the word چھتری with چھاتا The story's overall language was suitable for the age ranges it was intended for.

The story of / ch^h / was found relevant for the age of 4 to 7 years, but it was difficult for the majority of children to pronounce the word مچھیرے, they replaced it with .کچھ لوگ مچھلی کو پکڑنے آگئے The reason of interest for

the children in the story was the friendship of turtle, fish, mosquito and scorpion that created an imaginative world for the children, and it was the reason for the connectedness to the story.

The story of / ch^h / at final position was found very interesting for children due to unique characters of bear and crocodile, and humorous elements such as the bear losing his moustache. Overall the story was relevant and simple for age appropriate group. However, some substitutions were noted: children replaced ریچھwith بھالوand پونچھwith ,دمand they replaced the word چھاچھwith .دودھ Overall vocabulary was appropriate for targeted sample. The story's overall language was suitable for the age ranges it was intended for.

The study's findings supported the usage of stories targeting /k/ sound in the beginning, middle, and end of words intended for children. Typically growing children learn the /k/ sound between the ages of two and three. All age groups of children were able to articulate the /k/ sound intelligibly.

The story of /k/ at initial position was found relevant for all targeted population. Children prefered talking and debating about their fictional plots with their peer groups, thinking back on potential situations that may occur. The narrative included two sisters and their friend, a setup that mirrored real-life social dynamics, such as sibling relationships and peer friendships. The pictorial representation of the story showed culturally appropriate characters, aiding children's understanding and imaginative engagement. The story's overall language was suitable for the age ranges it was intended for.

The results for the /k/ story at the middle and last positions showed that children would find the story interesting and appropriate. In general, they find the story intriguing, and the plot held their interest. The vocabulary was suitable for the research sample.

The study's findings support the usage of /k^h/ story for children at the beginning, middle, and end of words. The acquisition of / k^h / sound among typically developing children is around 4 to 5 years of age. The intelligibility of / k^h / sound for children of 3 years of age was not clear. Findings revealed that the children of 4 to 7 years were capable of articulating / k^h / sound intelligibly.

The story featuring the / k^h / sound at initial position was found relevant as the outdoor adventure and relatable family dynamics made the story

clear, simple, and enjoyable for children.. At middle position the story of a fly who was interested in enhancing her complexion by using fairness cream added a humorous element in the story, it was also the reason of connectedness. But some children replaced the word رنگ with نکھارنے in the sentence .مکھی کو رنگ نکھارنے کا شوق تھا The story of /k^h/ at final position was a very simple story of two little friends who were fond of singing so it found relevant and simple. گورا کرنے

Typically developing children acquire the **/ph/** sound around the ages of 6 to 7 years. The study's findings support the usage of stories targeting /p^h/ sound at the beginning and middle positions for this age group. The children in the age ranges of 6 to 7 were found to articulate the sound /p^h/ intelligibly.

The story of / p^h / at initial position was found relevant and interesting for the children as the little girl's aunt slipping and falling on the hopping frog made the situation interesting and humorous. In the story of /p^h/ at middle position it was difficult for children to pronounce the word ,پھپھوندی they replaced the word with خراب in the sentence مونگ پھلی کو پھپھوندی لگی تھی. Overall vocabulary was appropriate for targeted sample.

Overall, the findings of this study align with motor learning theories of articulation therapy, which emphasize the importance of meaningful, repetitive, and structured practice. The incorporation of target sounds in various word positions within relatable stories provided a naturalistic context for repeated auditory exposure and articulation practice. As supported by Kairienė (2017), this kind of contextualized learning can facilitate greater generalization of speech sounds.

Furthermore, the study affirms the importance of cultural and linguistic specificity in speech therapy, particularly in under-resourced languages such as Urdu. As highlighted by Ambreen and To (2021), the lack of Urdu-specific intervention tools has hindered effective therapy for children with SSDs. This study contributes directly to addressing that gap.

Conclusion

The objective of the present study was to develop stories in the Urdu language as an intervention strategy for targeting and correcting articulation errors of certain sounds /g/, /k/, /ch^h/, /k^h/ and /p^h/ at the start, middle, and final positions. Auditory drilling is crucial for eliminating articulation errors and significantly contributes to the improvement of targeted sounds. In each story, the specific sound was repetitively emphasized, serving as an auditory

drill for that particular sound. The findings clearly demonstrate that developed stories are very effective and beneficial for improving articulation errors. The content validation revealed excellent I-CVI values for the stories. The standardization results indicated that the stories are suitable for the intended age group. The reliability analysis revealed that the stories exhibit a high level of reliability, as indicated by a strong Cronbach's α coefficient. The data clearly indicate that the Urdu stories that were created are reliable and may be used as an intervention to alleviate articulation errors.

Conflict of Interest

The author of the manuscript has no financial or non-financial conflict of interest in the subject matter or materials discussed in this manuscript.

Data Availability Statement

The data associated with this study will be provided by the corresponding author upon request.

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