

PHONETIC INTERFERENCE COMPETENCE IN ARABIC ARTICULATION FOR CHILDREN WITH DOWN SYNDROME

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Abstract: This study endeavors to meticulously assess the efficacy of a straightforward intervention in Arabic for a person with Down Syndrome. The research focuses on a specific subject denoted as MS, representing children with Down Syndrome possessing an extremely low IQ. The subject is perceived as incapable of executing cognitive tasks, including acquiring linguistic capabilities. Through a qualitative approach, this research integrates methods such as observation, interviews, and expert assessments conducted by psychologists to oversee the intervention process. Data collection encompasses the researcher's observational records, interviews, and pertinent documentation. A descriptive analysis methodology is employed for data analysis and presentation. The study reveals discernible enhancements in MS's Arabic pronunciation following the phonetic articulation intervention. Initially, MS could only pronounce the letters *Alif, Ta, Jim, Ha, Dal, Za, Sin, Shod, Tho, 'Ain, Fa, Kaf, Lam, Mim, Nun, Ya, Wawu, Hha, Hamzah*, but later, MS can also articulate *Ba, Tsa, Kho, Dzal, Ro, Syin, Dlod, Dzo, Ghin, Qof, Yak*. Throughout the investigation, recurrent challenges manifested as MS encountered difficulties, such as experiencing headaches and multiple crossed eyes in articulating specific phonemes and words during the initial phases of Arabic language acquisition.

Keywords: phonetic interference competence, Arabic articulation, Down Syndrome, language acquisition

INTRODUCTION

Many stereotypes are circulating in society regarding the notion that Down Syndrome children have intellectual and mental disorders (Yanos, 2018; Mattson et al., 2019; Mackelprang et al., 2021). People commonly underestimate the cognitive abilities of Down Syndrome children because Down Syndrome has attitudes, moods, and speech articulations that are hard to understand. Even though Down Syndrome children have the same emotional responses as typical children, their behavior might differ.

Down Syndrome children's behavior is varied and unique due to the slower thinking process and understanding of situations. Such a condition results in a wrong perception

within society. Zainal (2021) states that misconceptions about Down Syndrome arise from less qualified communication between individuals and children with Down syndrome. When children with Down syndrome have difficulty in articulation, it often leads the majority of society to assume that they are unable to adapt to their environment and that they have a mental disorder (Fadri, 2021).

One of the linguistic characteristics of Down Syndrome children is speech disorders due to articulation defects and problems in sound formation in the vocal cords and oral cavity. Such a condition makes it hard to articulate particular sounds (Daroni, 2017). According to Rvachew et al. (2018), poor

speech production accuracy is sometimes attributed to structural impairments in Down syndrome. However, the severity of the speech problem is more directly related to difficulties with speech motor control, complicated by concomitant hypotonia. Speech errors produced by individuals with Down Syndrome have also been described as atypical and inconsistent (Rvachew & Folden, 2018). They may experience difficulties in pronouncing words, especially certain consonants.

Speech disorders contribute to trouble understanding and expressing ideas clearly. Their use of words may be limited, and their sentences can be shorter than their peers. Martin (2009) said that some language development barriers in children with Down syndrome include (1) the use of shorter and simpler sentences accompanied by articulation disorders, (2) the use of more concrete word meanings, and (3) the use of fewer semantic functions such as temporal and locational markers (Martin et al., 2009). Specifically, Down Syndrome individuals have difficulties producing verbal communication, which can be seen through their limited vocabulary, articulation weaknesses, and the habit of using separate words while speaking (Niswariyana & Milandari, 2018).

Communication barriers in individuals with Down Syndrome can be reduced with the assistance of professionals (Nurmansyah et al., 2023). Communicating with disabilities should be inclusive and devoid of any discrimination. However, due to their specific needs, it is essential to understand their unique ways of communication. It is significant to employ a communicative approach with love, empathy, and gentle speech, ensuring that individuals with disabilities understand that we intend to engage in meaningful conversation and avoid misunderstandings (Nurmansyah et al., 2023).

The unusual communicative circumstances mentioned above have led to the presence of stigma within society, where Down syndrome is considered a form of cognitive impairment. However, the communication barriers faced by Down Syndrome children can be reduced if they are treated from an early age. Handling Down Syndrome children is not easy; therefore, social support has a beneficial effect on the health and well-being of individuals with Down Syndrome (Saputra et al., 2018).

Support for individuals with Down Syndrome can be done through intensive treatment that requires a long process. People tend to assume that the lack of linguistic pronunciation in Down Syndrome children is a part of adaptive failure without considering that the interval of learning times might take longer than predicted. Society fails to highlight that the aim of communication is achieved when both parties understand the communication. Thus, although the pronunciation is unclear, it is not considered an adaptive failure when Down Syndrome children can express their thoughts and ideas. Down Syndrome children only require modification of the articulation of language learning methods, which aim to develop potential or capacity to the maximum so that the child can adapt (Nandiyah, 2019).

Such linguistic barriers do not disable them from speaking fluently or learning foreign languages, such as Arabic. Arabic vocabulary and pronunciation are more challenging than Indonesian. Many sounds not present in the Indonesian language can be found in Arabic. Individuals who successfully articulate the sounds of the Arabic language benefit from a more positive language transfer theory than Indonesian, owing to the greater complexity in pronunciation diversity (Indika, 2019). Such complexity aids children in mastering a broader range of pronunciations than in Indonesian.

Learning Arabic for individuals with Down Syndrome can help to improve their articulation skills. The diversity of Arabic pronunciation in articulating the letters and how each letter is pronounced helps relax the tongue. The absence of certain sounds in Indonesian can be supplemented with Arabic sounds so that children can successfully pronounce most of the words consisting of various sounds, thereby reducing previous barriers (Indika, 2019).

According to Taufiqurrochman (2020), there are five systematic approaches to Arabic language. The first is the phonetic system (*nizam shawty*). It refers to a systematic approach related to the sounds and pronunciation of Arabic. The second is the alphabet system (*nizam hijai*). It is associated with the systematic organization and usage of the Arabic alphabet. The third is the rhyme system (*nizam qawafi*). It involves

systematically arranging or classifying words based on their rhyming patterns in Arabic poetry or literature. The fourth is the morphological system (*nizam shawty*). It relates to the systematic study of the structure and formation of words in the Arabic language. The last is the articulation system (*nizam nuthqi*). It pertains to a systematic approach to articulating sounds in the Arabic language.

Despite the difficulties, it is essential to remember that Down Syndrome children are adaptable and can learn to communicate effectively with the proper support, including in learning Arabic. For individuals with Down Syndrome, the education provided should adjust the success indicators in learning technology for children with special needs who are below average (Sarif et al., 2022). Indonesian National Education System Law Number 20 of 2003, Article 5, Paragraph 1, states that every Indonesian citizen has an equal right to obtain quality education. As long as individuals are part of the Indonesian citizenship, regardless of any conditions or situations, they have the right to receive the best and appropriate education according to the demands of the time. Therefore, through educational efforts, it is possible to reduce existing barriers to abilities, especially those related to physical, cognitive, and mental development, such as those experienced by individuals with Down Syndrome (Rohmadheny, 2016).

A specific intervention is needed to address articulation barriers in speaking for individuals with Down syndrome and assist the child in improving their speech and language abilities (Kurniawati, 2015). Interventions can also be carried out as follow-ups when children are at school or home while considering the specific needs of children with Down syndrome. Such intervention is designed to stimulate the child based on their speech and language development condition. The intervention program offers stimulation and assistance in improving the speech and language abilities of Down Syndrome children. The aim is to enable the child to communicate verbally effectively and actively engage socially, for instance, with peers.

One of the studies that examined the phonological abilities of Down Syndrome is

Barelli (2018). The study states that the pronunciation ability of students with Down syndrome (articulatory phonetics) in speaking their local language increases after using articulatory phonetics, which is applied intensively in the teaching process. The articulatory phonetics is applied through several cycles. They are planning, implementing, observing, and reflecting. Furthermore, Barelli's (2018) study is supported by Mulyani (2019). Mulyani (2019) explained that the phonetic articulation of Down Syndrome children in their local language improved after the intensive application of phonetic articulation in the teaching process. The intensive application involved four stages of Arabic language cycles: planning, implementation, observation, and reflection.

Another study examining the phonological skills of Down Syndrome children is Wild et al. (2018). Under the title "Single-Word Speech Intelligibility in Children and Adults With Down Syndrome," the study reveals that Speech clarity in individuals with Down Syndrome (DS) showed enhancement with increasing age, particularly from 4 to 16 years. While consonants significantly improved intelligibility, vowels also contributed to reduced clarity, revealing a developmental distinction between low and high vowels. There was considerable variability between speakers, with males generally exhibiting lower intelligibility than females. Additionally, certain adult males demonstrated notably poor speech intelligibility.

More recently, Smith et al. (2020) examined how intervention could benefit Down Syndrome children in acquiring linguistic capabilities. The results demonstrate notable effects after the intervention. The common thread among effective interventions was the shared goal of enhancing language skills in children with Down syndrome. In summary, children with Down syndrome show promise in responding to language interventions, yet more effort is required to achieve transfer effects and optimize language outcomes.

The present research examines one Down Syndrome child with MS learning the Arabic language, specifically Arabic phonology, through speech learning

intervention. Since Down Syndrome children tend to show articulation disorders in terms of phonological development (Saifudin & Oktaviani, 2023), phonetic articulation is the main focus of the intervention as it could help sharpen the speech sounds.

Focusing on their phonological abilities is deemed necessary. As the language production process barriers decrease during communication with others, their resilience in leading an independent life and engaging in activities will also increase (Sultan & Yahya, 2020). Speaking activities are closely linked to listening activities, creating a two-way communication process. The effectiveness of speaking depends not only on the speaker's abilities but also on the role of the listener. A child needs to understand what others are saying to communicate with others. If not understood by others, conversations will not relate to what others are saying, potentially damaging their social connections.

Compared to previous studies, the novelty of this research lies in the involvement of Arabic language practitioners supervised by psychological therapists to conduct simple phonetic articulation interventions, especially in pronouncing Arabic (*makhorijul*) letters. This research combines the expertise of language practitioners and psychological therapists to develop a targeted intervention approach for improving speech and language skills, specifically in the context of Arabic language acquisition for individuals with Down syndrome. By focusing on the unique linguistic challenges individuals with Down syndrome face in Arabic pronunciation and vocabulary, this study contributes to a more comprehensive understanding of effective intervention strategies in this specific language domain.

METHOD

This study is experimental research. The subject is MS, one of the college students in a private university in Surabaya. MS is a person with Down Syndrome with an average IQ of 30 to 40. He receives education under the supervision of Down Syndrome School QIS. He was born with the genetic disorder Down syndrome, a heart function disorder, and experiences challenges in articulating speech accurately and sharply (pronunciation).

This study utilizes several intervention materials and research instruments. The intervention materials used in this study include colorful straws, transparent glasses, half-filled glasses of water, 70 mm-sized paper, small-sized papers, and a flat surface such as a table. The instrument used is a simple vocabulary table questionnaire. The steps taken by the researcher are 1) visiting the subject, 2) getting acquainted and explaining using the most straightforward language possible so that the subject understands what activities will be carried out, 3) starting to carry out articulation phonetic tests by carrying out periodic intervention activities (subjects carry out intervention activities) oral and using some simple intervention tools, 4) The results of the subject's articulation notes in speaking Arabic will be presented in the form of notes which will be determined at each level based on the level of articulation difficulty and intervention efforts.

Checking MS's Arabic competition articulation was first carried out to measure MS's ability to pronounce words or sounds correctly and clearly. The procedure to assess the initial pronunciation results begins with asking MS to recite Al-Fatihah verses from the Quran. Reading the Qur'an is used to differentiate between vocal and consonant phonemes to determine whether the meaning of the recited verse changes (Saputra, 2023). While the subject recites the sacred verses, the researcher will note unclear or less sharp pronunciation.

The most accessible level of pronunciation includes the vowel letters *Alif, Ta, Jim, Ha, Dal, Za, Sin, Shod, Tho, 'Ain, Fa, Kaf, Lam, Mim, Nun, Ya, Wawu, Hha, and Hamzah*. The letters that are heard with less sharpness include the vowel letters *A and E* and the consonant letters *Ba, Tsa, Kho, Dzal, Ro, Syin, Dlod, Dzo, Ghin, Qof, and Yak*.

The data is collected through the completion of a phonetic articulation questionnaire. The research data consisted of observing the subject to determine initial abilities before receiving treatment, interviews with those closest to them who were also tasked with being a shadow subject about what habits the subject always had to find out the factors of inability to pronounce and the subject's excess ability in several

letter pronunciations, personal interviews with MS about some activities related to pronunciation, talked to how many friends, and told about the social activities he likes. Such data sources are recorded and presented in a systematic report.

The analytical descriptive and distributional methods are used to analyze the articulation phonetic aspects of the research subjects. The analytical descriptive method is a method that describes or gives an overview of research subjects through data or samples that have been collected objectively without conducting analysis and conclusions that apply to the public (Creswell, 2010). The distributional method in this study uses a technique that uses the intuition of each research activity in sorting and differentiating the subject's pronunciation. Specifically, this research analyzes the correct pronunciation of sounds, stress, intonation, fluency, flow of speech, and tempo.

FINDINGS AND DISCUSSION

The findings are classified into four levels. Each level represents MS's ability to pronounce and articulate particular sounds, along with the pressure of the intervention. The level starts at 1, which represents some consonants/vowels that are easy to articulate and given no intervention. Meanwhile, level 4 represents very difficult and requires complex intervention. By classifying in levels, the researchers can understand and assess the challenges faced by MS.

Level 1 Consonants and Vowels (Very Easy)

At this level, MS articulates the Arabic consonants fluently and without obstacles. No intervention is conducted at this level since the subject has pronounced the consonants correctly. Table 1 below is the list of consonants that belong to level one (very easy).

Table 1. Pronunciation, Vowel Fluency, and Consonants Level 1 Result (Very Easy)

Arabic Letter	Vocabulary/ Words	Pronunciation and Fluency	Intervention Actions	Final Result
<i>Alif</i>	أنا أنت أنت	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
<i>Sin</i>	سین	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
<i>Kaf</i>	كَلَب	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
<i>Ta</i>	أنت	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
<i>Jim</i>	جَلَد	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
<i>Ha</i>	هُو	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
<i>Dal</i>	دَرَس	Very good, very fluent, and very sharp.	-	Easy with a single utterance.

Za	كَزَّ	Very good, very fluent, and very sharp.	-	Easy with a single utterance.	Ya	يَقِي	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
Shod	صَيَّرَ	Very good, very fluent, and very sharp.	-	Easy with a single utterance.	Wawu	وَقَى	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
Tho	طَعَّمَ	Very good, very fluent, and very sharp.	-	Easy with a single utterance.	Hha	هُو	Very good, very fluent, and very sharp.	-	Easy with a single utterance.
'Ain	عَيَّنَ	Very good, very fluent, and very sharp.	-	Easy with a single utterance.	<p>In Table 1, the articulation fluency of 18 Arabic consonant letters is relatively sharp. Then, when the researcher turned to the articulatory pronunciation of the vocabulary, the researcher found that the articulatory pronunciation of MS still sounded clear, smooth, and sharp. MS showed a relaxed and confident attitude when pronouncing the Arabic consonants and vocabulary. Such attitudes demonstrate MS's ability to pronounce the 18 Arabic consonant letters.</p> <p>Level 2 Consonant and Vowels (Intermediate/Easy)</p> <p>Consonants and vowels belong to level 2, indicating that such sounds are easy to pronounce. However, such sounds still need some repetition to get them correctly articulated. There were no signs of disturbance either physically or in attitude when the researcher asked MS to repeat 2 to 3 times. Repeating is a beneficial training system, given that Arabic is a challenging language to learn (Wahyu & Lubis, 2023). Arabic letter belonging to this level is <i>Mim</i>. In pronouncing <i>Mim</i> as in the word مَسْجِدٌ (<i>masjid</i>), MS is initially difficult to pronounce. However, in one repetition, MS was able to pronounce it fluently. At this level, the intervention instrument is still redundant.</p>				
Fa	أَفَفَ	Very good, very fluent, and very sharp.	-	Easy with a single utterance.					
Lam	لَا	Very good, very fluent, and very sharp.	-	Easy with a single utterance.					
Mim	مَاءٌ	Very good, very fluent, and very sharp.	-	Easy with a single utterance.					
Nun	عَيَّنَ	Very good, very fluent, and very sharp.	-	Easy with a single utterance.					

Level 3 Consonant and Vowels (Difficult)

The consonants and vowels at this level are considered difficult to articulate since MS

begins to express articulation difficulties. Such difficulties are expressed through a tired attitude when reading letters. At this level, intervention is given. The intervention given is doing oral exercises such as bending the tongue to the right and left and blowing on sheets ranging from book-sized to vertical paper. In detail, MS was asked to re-pronounce letters that did not sound perfect one by one. In addition, the researchers also combined several words to see how sharp the letters sounded. The consonants and vowels belonging to this level are shown in the table below.

Table 2. Pronunciation, Vowel Fluency, and Consonants Level 3 Result (Difficult)

Arabic Letter	Vocabulary/Words	Pronunciation and Fluency	Intervention Actions	Final Results
Ba	أَبْوَاب	Good, fluent with repetition.	Moving the tongue from right to left repeatedly or oral exercise.	Successfully articulated with three interventions and repetitions. After three times, MS refuses to continue.
Yak	يَتَكَلَّم	Good, fluent with repetition.	Moving the tongue from right to left repeatedly or oral exercise.	Successfully articulated with three interventions and repetitions. After three times, MS refuses to continue.
Qof	أَقْرَاب	Good, fluent with repetition.	Moving the tongue from right to left repeatedly or oral exercise.	Successfully articulated with three interventions and repetitions. After three times, MS refuses to continue.
Ghin	غَرَائِب	Good, fluent with repetition.	Moving the tongue from right to left repeatedly or Oral	Successfully articulated with three interventions and repetitions

Kho	خُلُقَاء	Good, fluent with repetition.	Moving the tongue from right to left repeatedly or oral exercise.	s. After three times, MS refuses to continue. Successfully articulated with three interventions and repetitions. After three times, MS refuses to continue.
Dzal	ذُرِّيَّة	Good, fluent with repetition.	Moving the tongue from right to left repeatedly or oral exercise.	Successfully articulated with three interventions and repetitions. After three times, MS refuses to continue.

There are six Arabic letters belong to this category. In this category, oral exercise and repetition are the keys to correct articulation. At this level, MS started to show Down Syndrome characteristics. MS needs to remember how several consonants and vowels sound, making it hard to repeat the sounds. MS also complained that it is difficult for her to move her tongue. His voice started to sound smaller, and he got dizzy. The difficulties made the researcher stop combining several existing words into a sentence.

Level 4 Consonants and Vowels (Very Difficult)

Consonants and vowels belonging to this level are deemed challenging to articulate. Several intervention kits, such as straws, water, and plastic cups, are prepared. At first, MS was asked to blow air from a straw to relax the tongue muscles. Later, the straw was directed to blow some air at a glass of water. The researcher also did this pre-activity to make the situation less tense for MS. After MS felt calm and improved mood; he was asked to recite the remaining letters: *Ro, Syin, Dlod, Dzo, Tsa*.

Table 3. Pronunciation, Vowel Fluency, and Consonants Level 4 Result (Very Difficult)

Arabic Letter	Vocabulary/Words	Pronunciation and Fluency	Intervention Actions	Final Results
Ro	مُتَخَرِّجِينَ	Difficult and unclear pronunciation.	Blowing air through a straw.	Able to pronounce but with much struggle.
Syin	الشُّرَكَاءُ	Difficult and unclear pronunciation.	Blowing air through a straw.	Able to pronounce but with much struggle.
Dlod	مُسْتَضْعَفِينَ	The pronunciation sharpness is thin and difficult.	Blowing air through a straw.	Able to pronounce but with much struggle.
Dzo	تَذَلِيلًا	Difficult and unclear pronunciation.	Blowing air through a straw.	Able to pronounce but with much struggle.
Tsa	-	Difficult and unclear pronunciation.	Blowing air through a straw and repeatedly moving the tongue from right to left.	Able to pronounce but with much struggle.

The letters belonging to this level are considered difficult since it takes an effort to pronounce them successfully. *Tsa* is the most challenging letter to pronounce among all the Arabic letters. MS once again experienced several disturbances due to the Down Syndrome effects. The disturbances are experiencing dizziness when pronouncing the letters more than twice, eyes crossed, and head put on the table. At this point, the researchers tried their best not to hurt MS. However, though the letters are tricky to pronounce, MS has successfully pronounced them.

The current research findings have demonstrated that children with Down syndrome, whose IQ is about 30-40, can achieve good Arabic phonetic articulation through repetitive simple interventions. It implies that individuals with Down Syndrome

are not a group of people whose cognitive abilities cannot be developed. Instead, they face challenges in processing information slower than the average population. Various therapies and specialized training positively impact the development of communication skills, self-development, and many other skills in children with Down Syndrome (Situmeang, 2023).

The findings of the above research support Barelli (2018), Mulyani (2019), and Smith (2020). Promising improvements and linguistic developments are achieved through intensive intervention. Repetition is the key to achieving successful progress, especially in phonological abilities. Besides that, the utilization of media and cost-effective intervention activities that are easily accessible and safe to carry out also contribute to the success. Such simple yet effective activities are proven effective in enhancing phonetic articulation skills.

CONCLUSION

As a result, MS can pronounce more Arabic letters than before the intervention. At first, MS could only pronounce *Alif, Ta, Jim, Ha, Dal, Za, Sin, Shod, Tho, 'Ain, Fa, Kaf, Lam, Mim, Nun, Ya, Wawu, Hha, and Hamzah*. Later, he could pronounce *Ba, Tsa, Kho, Dzal, Ro, Syin, Dlod, Dzo, Ghin, Qof, and Yak*. *Tsa* is considered the most difficult letter to pronounce. In short, the study suggests a promising success of the phonological abilities of Down Syndrome through intensive intervention. The intensive intervention continuously ensures Arabic phonetic articulation progress.

The study is subject to certain limitations, particularly in selecting research participants. Our research subjects were chosen based on recommendations from experts in Down Syndrome schools, focusing on individuals deemed to exhibit a more stable emotional state. While this approach necessitates careful consideration in participant selection, it is essential to acknowledge that practitioners at Down Syndrome schools possess profound expertise in understanding the specific areas and vulnerabilities of each student with Down Syndrome.

Given the identified limitations in participant selection, future researchers in this field may consider various research

subjects to incorporate a broader range of characteristics to ensure a more comprehensive representation of the Down Syndrome population, not to mention the integration of standardized assessment tools to supplement the selection process, which

also needs to be considered. Such standardized tools for the intervention help ensure a more objective and consistent evaluation of participants, reducing potential biases in the selection criteria.

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