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Hodson Assessment of Phonological Patterns Criterion

HAPP-3 Translation and Arabization

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ABSTRACT

The current research aims at preparing HAPP-3 test for phonetic patterns and phonological disorders. It also aims at verifying the validity and stability of the test and determining its standards. For achieving this goal, researchers have translate and bumped a **measurement** consisting of three main forms; as follows: Firstly, a phonological sorting form which consists of 12 words, and it is considered as a preliminary form. Secondly, the form of substitution patterns which consists of 50 words. Thirdly, the form of aspects of deficiency in comprehensive phonological analysis which consists of 50 motivating words for measuring the levels of phonetic patterns

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

and phonological disorders. The measurement has been introduced to a panel of referees to ascertain its validity. Moreover, researchers have applied the measurement to a sample of 100 (72) males and females(28) children aged from 3 to 6 years old .The average age is 4.43 and a standared deviation 1.39 . Children's intelligence quotient (IQ) ranges from (90-110) . The children in the sample were in nurseries and centers for children. Results indicated the validity, reliability, and practicality of the test In Egypt.

Key words: Hodson Assessment of phonological patterns.

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Introduction:

Lack of clarity in speech and its emergence in an unfathomable fashion is considered as the main indicator of articulation disorders. This problem is one of the most difficult and obvious ones for children with articulation disorders. These problems are shown in aspects of articulation disorders such as omission, substitution, distortion and addition. The reason for that could be the presence of problems which affect the processes of producing speech sounds and articulation required for speaking the right way. Furthermore, this could also be due to lack of knowledge of the mechanisms of forming sounds. All these disorders could result in unfathomable speech (Abdel-Aziz El-Shakhs, 2017, pp. 209-213).

Phonological recognition is also deemed important because it is necessary for the child to be able to know and recognize the alphabetical letters. It is also an important and a preliminary stage for learning to read. Moreover, the phonological recognition is also important for making good expressive and receptive language. This is because if children knew that we can divide words into independent phonemes and put them together to be able to form different words, the child will be able to link the letter to the sound it refers to (Adel Abdullah, 2008, p.141).

Articulation tests should also be capable of evaluating normative grades. This is since illegitimate tests or that do not have norms do not help us compare the examined child from the rest of children of the same age group. The tests should also be capable of analyzing acoustic errors and disorders. For this purpose, several tests are

Hodson Assessment of Phonological Patterns Criterion HAPP-3 Translation and Arabization

available to choose from. Some of these tests are categorized under articulation tests; and others are categorized under phonological tests. These two types of tests do not differ in terms of examination model. However, they differ with respect to analysis (Ibrahim El-Zurikat, 2003, pp. 168-169).

In this respect, there is rarity in the presence of measurements which correctly apply the evaluation criteria of speech sounds disorders (SSD). Therefore, a suitable measurement should be used for accurately extracting the aspects of deficiency.

For accurately evaluating these skills, Arabic and foreign studies demonstrated that HAPP-3 test for phonetic patterns is a legitimate normative reference for setting the degree of disorder and aspects of deficiency of articulation and phonological disorders. This is also in addition to setting the best targeted sound units .it was translated and codified in accordance with the culture and customs of Egyptian society and with the nature of the Arabic language (Hodson & Preza, 2009. Hodson, 2012).

Hence, the process of diagnosing and evaluating is a dynamic one not a preliminary stage; which comes to an end by collecting data and information. Rather, it is a concluding act where partial diagnostics integrate for building complete units depicting children's factual world; in addition to their needs, as well as their points of strength and weakness. Through diagnosis, treatment programs could be set, as well as effective educational plans which complement children's abilities and needs and that would be positively reflected on their lives (Hodson & Prezas 2009, Hodson, 2012).

Therefore, we are in a need to translate and Arabize to measure articulation and phonological disorders which is the subject of the current study.

Statement of the problem:

Through considering articulation disorders for preschool children, it has been found that these disorders are due to weakness in the skills of the process of phonological acquisition. The

disorders were also found to result from children not knowing the movement mechanism of place of articulation, in addition to abusing linguistic sounds. These problems appear in the form of articulation disorders as follows: omission, substitution, distortion, addition, as well as the processes of syllable building and substitution. All these disorders result in unfathomable speech (Fikri Latif Metwally,2015).

In this regard, early and accurate diagnosis of pronunciation disorders is considered the base for creating the most suitable treatment program for children with articulation disorders which result from low levels of phonological recognition. This problem could lead to unfathomable speech. The diagnosis also aims at facing and overcoming these problems if suitable treatment strategies are put into place. On the other hand, inaccurate diagnosis could lead to a waste of precious time which children would better have spent it in training and treatment services suitable for their cases (Nail Abdel Rahman Al – Akhram, 2017).

It is noteworthy that, using the suitable method for diagnosing articulation and speech sounds disorders differs from one case to the other. The method should be used according to the type of disorder, its degree, its causes as well as the child's general circumstances. Hence, it would be wrong to use the same method or follow the same procedures in treating articulation disorders. It would also be wrong to adopt the same mechanism for forming the place of articulation for all children. The suitable treatment method for the child usually depends on the results of evaluating and diagnosing his case (Fathi Abd al-Rahim, 1990).

In this respect, several studies and researches in this field have shown the efficacy of the Cycles phonological Remediation Approach (CPRA). The approach diagnoses and treats articulation disorders through the process of phonological acquisition for children who suffer from articulation disorders. Based on what has been mentioned, we find that these children need a suitable tool for diagnosing articulation disorders as well as pinpointing points of strength and forms of weakness or deficiency. The level of strength or weakness should also be determined. This is also in addition to

Hodson Assessment of Phonological Patterns Criterion HAPP-3 Translation and Arabization

determining information with regard to syllables and sounds viable or not viable for improving. Moreover, a clear orientation for an intervention program should be set and the baseline should be measured to determine the range of change which follows the intervention program applied (Barbara Williams Hodson, 2010).

In the light of what has been mentioned, the importance of preparing a suitable tool for evaluating the level of phonetic patterns has become clear.

Another second goal at pinpointing the aspects of deficiency and adjustment or improvement for children with articulation disorders.

From the above mentioned, the researcher can conceptualize the Research problem in the following question:

“To what extent is it possible to prepare a measurement that assess the level of phonetic patterns and articulation disorders among preschool children?”

The aim of the research:

The current research aims at preparing a measurement for assessing the level of phonetic patterns for children with articulation disorders such as omission, substitution, distortion and addition. The research also aims at categorizing the phonological disorders in a clear and accurate fashion.

The importance of the research:

The importance of the Research can be outlined on the theoretical level and the applied one as follows:

- 1- It is considered as one of the few Arabic studies which attaches importance to diagnosing the level of phonetic patterns for children with articulation and phonological disorders. That is because the measurement has tackled two curves. The first is the curve of evaluating aspects of phonological deficiency for children with articulation disorders; and showing to what extent it affects the disorders for those children. The second curve has dealt with assessing aspects of deficiency in articulation disorders. That is because knowing their current level of performance requires a

comprehensive test or measurement to accurately evaluate these disorders and pinpoint their strength and weakness points. This would help prepare suitable treatment programs for them.

- 2- Shedding light on sound awareness skills for the phonological system and its relation to articulation disorders, its most important skills and the different tasks that help in diagnosing and measuring it.
- 3- Preparing this measurement allows conducting more studies and researches to set the aspects of comprehensive phonological deficiency for children with articulation disorders; in addition to enhancing the Arabic library with this measurement.
- 4- Helping specialists to prepare suitable training programs for children with articulation disorders, based on the accurate diagnosis of the aspects of the comprehensive phonological deficiency they have.

Research terms:

Phonological disorders:

The American Psychological Association (APA) has defined phonological disorders as a disorder in communication which is characterized by failure in developing and using sounds suitable for the child's age. They generally include an error in articulating the acquired sounds such as (L,R) (th, z) (S, SH) and they could also include replacing some sounds such as (T to K) or omitting some sounds such as the final consonants which were referred to in DAM-5 as speech sound disorder and it was called before developmental pronunciation disorder. (American Psychological Association, 2015, pp. 792-793).

A Phoneme:

The phoneme is defined as "the smallest sound unit which affects meaning in a language. For example, words such as (camel and sentences) or (lamb and camel) the meaning has changed according to the phoneme (letter or vowelisation). As for treating phonemes, it is a hard ability to acquire for a lot of children this is due to articulation overlapping" (Alegria & Mousty, 2004; Sprenger & Charlloes al. 2006)

Hodson Assessment of Phonological Patterns Criterion HAPP-3 Translation and Arabization

Articulation disorder:

In the current research, articulation disorders are procedurally defined as “the inability to produce language sounds correctly as a result of problems in muscular coordination or a fault in the place of articulation, a deficiency in sound efficacy or a defect in an organ.”

Articulation defects could occur in vowels, consonants or in consonant clusters

(Enas Muhammad Alimat & FarouakFara Al- Russan. 2016).

Theoretical framework and previous studies

Theoretical background:

the researcher has first discussed the concept and aspects of phonological disorders. She also tackled the stages of phonological recognition, assessing phonological recognition and normative tests for evaluating phonological recognition. Secondly, the researcher dealt with the concept and aspects of articulation disorders, characteristics of children with articulation disorders, and articulation tests. Thirdly, Hodson Assessment of Phonological Patterns (HAPP-3) with regards to describing the measurement which dealt with the form of phonological sorting for preschool children and the form of substitution and other disorders, as well as the form of aspects of deficiency for the comprehensive phonological analysis. Then, the research dealt with the base on which HAPP is built. The research has tackled after those two curves. The first is the curve of assessing aspects of phonological deficiency for children. The second is the curve of the effect of this deficiency on articulation disorders for children.

Phonological disorders:

1- The Concept:

They are disorders in the sound system within the context of spoken or narrated language. They are represented by the person’s inability to organize and represent phonemes in language system. The person has a phonological problem when he/ she lacks a certain phoneme in his phonological system and he/she cannot recognize it among other sounds in the word; or who does not also know that this phoneme

constitutes a difference in meaning. (olimat, El- Russan, 2016, p. 131)

The difference between phoneme recognition and phonological recognition:

Phoneme recognition is considered a part or a branch of phonological recognition. Therefore, phonological recognition represents the ability to distinguish and manipulate sound units regardless of the size of the sound unit. This is whether the size is “big” like syllables; such as analyzing the word “writer” to its syllables, or the size is “small” like phonemes such as analyzing the word “writer” to its sounds. On the other hand, phoneme recognition represents the ability to distinguish and manipulate the smallest sound units in the language which is represented by phonemes only as in the latter example above (Philips, B., Clancy Menchetti, J, Lonigan, C. 2008)

2- Its aspects:

Secord and Donohue (2002) categorize phonological processes in developing the sound system for children as follows:

- a- Syllable structure processes
These processes result from children’s natural tendency to scale down the number of syllables in the words to one syllable. This dimension includes three processes as follows:
 - 1- Omitting the final consonant at the end of the syllable such as (house – hou , boot- bo)
 - 2- Alleviating succession between consonants. This phenomenon lasts with children for a long time such as /bi- nit- bit/ (girl).
 - 3- Omitting a syllable of the word. This process occurs due to the child’s natural tendency to reduce syllables in words to a syllable or two.
- b- substitution processes and they include the following processes:
 - 1- Gliding substitution.
 - 2- Vocalization substitution
 - 3- Frontal substitution

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

- 4- Deaffrication substitution
- 5- Stopping substitution: it includes prevocaling voicing and postvocalic devoicing.

Stages of phonological recognition:

- a- The stage of prior preparation for the child (auditory distinction). It is the stage of recognizing the different sounds, their types, the number of syllables as well as knowing the sound of the first letter of the word and linking and understanding the relation between the sound and the letter. Then another stage follows which is:
 - b- Being aware of words which are similar in rhythm and rhyme such as /hanaʔ/ (name) - /habaʔ/ (futile)- /sanaʔ/ (name)- /samaʔ/ (sky)- /ʃetaʃ/ (winter).
 - c- The stage of learning syllables. In this stage, the child learns syllables then analyzing words to syllables and this stage starts from the age of 3- 4 years old. This stage is called early sound awareness which means awareness of the syllables which constitute words. An example of this is /jial-/ /ʃab/ (play). In this case, the child raises two fingers in reference of the two syllables which constitute the word (play). The word lemon consists of three syllables.
 - d- Fusing sounds: it is the ability to fuse the heard sounds to form words. An example of that is when the students pronounce the word /katab/ (wrote) after hearing the sounds which form the word /k,a,t,a,b/ . Other examples include words with vowels such as /kita:b/ (book).
 - e- Manipulating sounds: it is represented by the ability to omit sounds and substitute them with other sounds for forming new words. An example of this is if we replaced /r/ by /k/ in /rjima:l/ (sand) and /kama:l/ (name) (Adams,J. M.,&Jones,W.H.(Eds),1999, 67 – 81; Demarcy, Benzin & Hoin, 2006; Adel Abdullah, 2008, 138-139)

Assessing phonological recognition:

Two principles direct the process of assessing phonological recognition and treatment of children who suffer from articulation disorders.

1- **The first principle:** all children should participate in activities which aim at increasing their sensitivity towards language structure. The activities should focus more on developing sensitivity towards the level of the phoneme. Young children develop their phonological recognition through natural participation in repetitive reading and writing activities. This knowledge is substantially linked with reading and academic performance. Hence, every teacher or specialist should deal with children and provide the best training to get all children involved in reading and writing activities which help develop phonological recognition.

2- **The second principle:**

Children who are lagging behind their peers in the field of phonological recognition might need a direct treatment for phonological recognition. Weak phonological recognition might constitute the essential part of the problem of reading and writing acquisition. In such cases, an official phonological recognition assessment should be conducted when moving from one stage to the other. This is because it is expected that children should reach a certain level of acquisition as a result of growing older or due to education experiences. For example, some nursery programs target developing the phonological development directly through activities such as distinguishing words with rhyme scheme and setting words which start with a certain sound. If the child was found to be facing difficulties in such activities in the second stage of nursery, an official assessment should be conducted to determine to what extent the child needs an intervention program for developing his phonological recognition. Then, an evaluation of phonological recognition for school children who suffer from written language problems should be carried out. This should include dictation as children with a history of phonological

Hodson Assessment of Phonological Patterns Criterion HAPP-3 Translation and Arabization

weakness show certain difficulties in dictation. Such difficulties are considered as an indicator of the presence of linguistic weakness at the level of analyzing the phonetic structure of the language. For these children, we recommend conducting a comprehensive evaluation to decide to what extent these problems of phonological recognition participate in such difficulties.

To conclude, an assessment for phonological recognition could be conducted before the training or treatment and also after the two of them. This is to register the level of progress achieved and also to determine the aspects of deficiency to proceed with the treatment. The choices of phonological recognition assessment; as well as other aspects which have been mentioned before include the use of tests with normative reference as well as tests with yardstick reference. Hence, the researcher has prepared this measurement (Johanna Rudolph & Oliver Wendt, 2014).

Tests with normative reference:

Tests with yardstick reference aim at pinpointing if children have sufficiency in a certain side of phonological recognition. Specialists in the field of articulation treatment can extract their own tasks with a yardstick reference. These unofficial tasks could be used to disclose children who have weakness according to a certain yardstick. This task could also describe their current level of performance (points of strength and weakness), set the aim of treatment, document progress, set the time for ending treatment (Johanna Rudolph & Oliver Wendt, (2014).

In this regard, normative tests are not generally recommended in the nursery and preschool stages to assess the phonological recognition of children at that age and younger. The problem with these tests at that age lies in comparing children marks with those of their peers in the normative sample based on age and not on their grade (ASHA, 2001). There is a huge discrepancy in school experience for nursery children among the different area schools and also the same area schools. The development of phonological

recognition is substantially affected by these experiences in some nursery grades (Johanna Rudolph & Oliver Wendt, (2014).

There are some normative tests which are used in measuring phonetic patterns for children; to name a few:

- 1- Comprehensive test for phonological treatment by Wanger, Torgesen and Rashotte(1999). The test measures children between the ages of 4 and 5 years. The test performs some tasks; disclosing alliteration (sounds at the beginning and end), fusing phonemes, omitting phoneme, it also includes questions to gauge the phonological memory and the quick naming.
- 2- Phonological recognition test by Robertson and Salter (1997), it tests children between the ages of 5 to 9 years. The test carries out some tasks such as distinguishing/producing assonance, dividing the sentence/ word/ phoneme, isolating the phoneme (at the beginning, end, middle), omitting the syllable/ word/ phoneme, fusing syllables / phonemes.
- 3- Phonological recognition test by Torgesen and Bryant (1994). The test measures children between the ages of 5 and 8 years old. The test performs some tasks such as disclosing alliteration (sounds at the beginning and end).

Second: articulation disorders

The Concept:

Abdel aziz El-Shakhs (2017) defined articulation disorder as “ the disorder which occurs as a result of errors in producing sounds at their place of articulation and not forming them the right way. The degrees of articulation disorder range from simple to acute, this is as speech becomes unfathomable as a result of omission, distortion, substitution and addition.

Its Aspects:

There are four main aspects and types for speech and articulation disorders: omission, distortion, substitution and addition in addition to three subsidiary disorders such as pressure, replacing the first sound by the second, as well as other disorders.

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

a- Omission:

Omission means that the child articulates the word missing one letter or more, and usually it is the final letter which is omitted. This causes difficulty in understanding the child. The child might tend to omit some consonants of the word, especially at the end by simplifying speech. This simplification might extend to omitting syllables which include a cluster of sounds, for example, when the child says /mak/ for /samak/ (fish) or /kat mak/ for /kalt samak/ (I ate fish). Omission is considered a substantial disorder in articulation because it becomes so difficult to understand the child's speech, especially if omission is repeated in his speech (Abdel Aziz El- Shakhs, 2017, 209- 213; 85- 116, Marwa Adel El-Sayyed, 2016, 44-45).

Characteristics of omission among children:

- 1- Their speech is childish or not mature; that the child's speech does not suit his age. Results of studies show that omission is considered one of the acute articulation disorders; either for understanding speech or for diagnosis. The more omission increases, the more it becomes difficult to understand the child.
- 2- Omission in the child's speech usually decreases as they grow older. However, it could appear in adults' speech who suffer from a defect in articulation apparatus or disorders in the nervous system. Omission also appears in highly stressed children or those who speak very fast.
- 3- Children have a tendency to omit some sounds more than other sounds. Omission also occurs at certain places of words. Therefore, children could omit (g/sh/f/r) at the beginning or end of the word whereas they could pronounce them in the middle.

b- Distortion :

Distortion means that the child articulates the sound in a manner close to its normal way but not very similar to it. This means that it includes some errors. Distortion is common among children and adults and it usually appears in certain sounds such

as (s,sh). For example, pronouncing /s/ is accompanied by long whistling or pronouncing /sh/ by the sides of the tongue. Some people use the term “lispings” to refer to this type of articulation disorders. An example of this would be /madraʃa/ for /madrasa/ (school) /za:bat/ for /dʻabat/ (officer) (Ihab El-biblawy, 2008; Abdel Aziz El-Shakhs, 2017).

c. Substitution:

Substitution involves articulating one sound instead of the other. In many cases, the wrong sound is similar to the correct one in terms of its place, way of pronouncing and characteristics of sound. Substitution might occur as a result of movement of the place of articulation. For example, /d/ instead of /g/. Also, such as put in instead of put into. Or, /lagel/ instead of /ragil/ (man), as such substitution between pairs of sounds occurs a lot like (s,th) (l,r) etc. (Abdel Aziz El- Shakhs, 2017, 209- 2 13; 85- 116, Marwa Adel El-Sayyed, 2016, 44-45).

d. Addition:

This disorder involves adding an additional sound to the word. The sound could be heard as if it is being repeated such as (ggood morning, hhello, catt).

e. Pressure:

Some consonants require the person to press his tongue against the upper hard palate incorrectly such as (r and l). This disorder is caused by congenital defect in the upper palate or the tongue or the nerves surrounding it. Most of articulation disorders are unchanging, however they improve with the child’s growth. Such disorders could appear in some situations more than others. They are strongly influenced by psychological and emotional aspects (Faisal El-Zarad, 1990, 229; Abdel Fattah Abdel Meguid, 1996, 55)

f. Replacing the first sound by the second:

It involves replacing the first sound by the second such as /zur/ for/ruz/ (rice) /baimah/ for /bamiah/ (lady’s fingers). This disorder appears by age 2 and it disappears by age 5 (Zeinab Shukeir, 2005, 117).

g. Other disorders:

Hodson Assessment of Phonological Patterns Criterion HAPP-3 Translation and Arabization

We can add to the previous articulation disorders cases where (the old child) finds difficulty in vowelization and grammar when articulating letters and words. This is in addition to another disorder where we find the old child repeating a certain sound automatically (sound repetition). This is as the case of repeating the /t/ sound or /f/ or /th/. These cases are referred to as “automatic articulation” where repetition is characterized by pressure, solidity and pausing (Abdel Fattah- Abdel Maguid, 1996, 55-56).

Moreover, Hamdy El-Faramawy (2009, pp 177-181) Said El-Ghazaly refer to the most important articulation disorders as follows:

Articulation disorders (dyslalya), between the scientific and general term:

1- Partial dyslalya

Specialists in the field of speech disorders use the term partial dyslalya to describe any speech which generally appears to be clear except for one defect or more in the manner of articulation. This is in case the defect appears in the form of omitting a letter or more from the word; such as when the child says /katmak/ instead of /kalt samak/ (I ate fish). Or, in case the defect appears like substitution as in /setina/ instead of /sikiyna/ (knife).

Partial dyslalya is divided into different patterns:

Sigmatism:

It is one of the most common articulation disorders among children. It involves errors that have to do with pronouncing the /s/ letter and replacing it with other letters such as /sh/, /d/,/th/and others. In this case, the /s/ letter is produced from a different place of articulation. The /s/ sound is velarized alveolar fricative. This sound is produced as a result of the tongue moving behind the edge of the upper teeth without the tip of the tongue touching the teeth. Sigmatism is common among children between the ages of 5 and 7, the age when children change their teeth. Many children get cured of this disorder once the changing of the teeth is done in a correct way. If this

disorder persists after this age, the child should be referred to speech therapist. Sigmatism has several types:

Sigmatism of teeth structure.

It involves articulating the /s/sound /th/ such as /θukar/ instead of /sukar/ (sugar) as the tip of the tongue touches the edge of the upper teeth or the tongue protrudes between the front teeth. This defect is known among the public as “lipsing”.

Sigmatism of lateral tongue:

In this case, the /s/sound is pronounced /sh/ as in /ʃukar/ instead of /sukar/ (sugar). In normal cases, the air stream passes through a narrow groove between the tongue and the hard palate while articulating /s/sound as it should be. Instead, the air stream in the case of sigmatism of lateral tongue results in the child being unable to control the muscles of the tongue or as a result of an anatomy defect in the tongue.

Sigmatism of the nose:

In this case, the child uses the nasal cavity while trying to produce the /s/ sound instead of using the lips in releasing the air stream which accompanies the articulation of the /s/sound.

Lisping:

It is one of the types of partial dyslalya: in this type of dyslalya, the child articulates the /r/ sound, which is hard post-alveolar, incorrectly. The child either replaces it by /ji/ (y) such as /sija:b/ instead of /sara:b/ (mirage), or by /l/ (L) such as /sala:b/ instead of /sara:b/ or by /ɣ/ such as /saya:b/ instead of /sara:b/ (mirage). The public usually call this defect “lipsing”. This could be caused by a disorder in the degree with which the tongue presses against the hard palate while articulating the /r/ sound. This problem is either caused by a congenital defect in the hard palate or by weak tongue muscles.

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

Gamasism:

In this disorder, the person articulates the /g/ /d/ such as /darda/ instead of /garga/ or he substitutes /ɣ/ by /ʕ/ such as /maʕrab/ instead of /mayrab/ (Morocco). This is caused by the /ɣ/ and /g/, which are velar fricatives, being produced from incorrect places of articulation.

Capsism:

It is another type of partial dyslalya where the infected person pronounces /k/ or /q/ as /t/ such as /tita:b/ instead of /kita:b/ (book) and /batra/ instead of /baqara/ (cow) or he would also replace /x/ for /q/ such as /qaruf/ instead of /xaru:f/ /sheep/. This results from these letters /k,q,x), which are uvular plosives, being produced from incorrect places of articulation.

Rynolalya

It is one type of partial dyslalya. In this disorder, the child produces all sounds in a distorted and unfamiliar way. He produces vowels as if they have nasality. As for consonants, he produces them like snorting, replaced or like he is nasal. This results from the presence of a gap in the soft or hard palate or in both of them. This could be caused by a lack of healing for the fetus during growth stages or due to a deep wound by a sharp tool. This disorder could also result from a shaft in the lips, or that the soft and hard palate area is not flexible in raising and lowering easily. This way, it could block the air stream coming from the larynx from passing into the mouth cavity to proceed to the nasal cavity, or as a result of inflamed nasal passages and consequently this leads to blocking nose holes.

Complete dyslalya:

The speech is not clear to the extent that it is impossible to understand. The person does not only have omission, addition, distortion or substitution of one letter of a word. Rather, this takes more than one form in the word to the degree that he pronounces the word in a strange or unfathomable manner. An example of this is /mijkija/ for /muluxija/ or /ʔamijlla/ instead of /kamijlija/. In the severe cases of complete dyslalya, the speech is completely assimilated that the syllables overlap. This case is referred to as

Indo- Glossia (Hamdy El-Faramawy, 2009, 117-181 & Said Kamal Abdel Hamid Al Ghazali ,2011:132).

Articulation tests:

Articulation tests are designed to cause spontaneous stimulation based on projecting photos for diagnosing most of the consonants in the language at the beginning, middle and end of a word. Articulation tests have many positive sides such as:

- 1- They are easy to apply and correct.
- 2- They do not need a long time to be applied and corrected.
- 3- Test results present the researcher with a qualitative list of articulation errors in the different speech positions. This helps conduct the additional evaluation and planning for treatment. Several articulation tests involve legitimate criteria that allow the researcher to compare the normal expected performance of the same age group. It also allows the researcher to know the amount of progress and the need for treatment.

As for the drawbacks of articulation tests; they include:

- a- Articulation tests involve articulating selected isolated words. Stimulating speech sounds based on the response of a single word does not give us a constant as for the person's ability to produce speech sounds. Sounds produced in selected words do not represent the child's ability to produce certain sounds, given the normal speech circumstances.
- b- Articulation tests do not give enough information on the sound system. It only measures the production of speech sounds, which means that they are only phonetic tests. Hence, they do not give us information on phonological analysis. Moreover, some spontaneous procedures analyze the wrong sounds according to the phonological operations. Hence, the information we have is not sufficient for the purposes of a comprehensive phonological analysis.
- c- Articulation tests do not measure all speech sounds in the contexts where they appear. Also, some tests do not measure the consonants and some of them describe the consonants in

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

- a few groups.
- d- Measured sounds do not appear in comparable sound contexts. Therefore, they are not accurate in terms of context. For example, sounds after and before the examined sounds differ from one word to the other. The used words differ in terms of their length and complexity and this reflects a change and a disparity in the difficulties that the child faces in producing one word rather than the other.
 - e- Articulation tests are like any other legitimate tests. They involve selected or chosen aspects of articulation attitude through segments for the persons. This is since they measure a limited portion of the articulation attitude through segments which reflect the child's performance during a certain day or a certain situation of context. This problem hampers the credibility and the probability of generalizing and diagnosing articulation errors in the speech of a child with articulation disorders.

HAPP- 3 Test

Target of the HAPP- 3 Test:

HAPP-3 test for phonetic patterns aims at assessing children through three forms. The first is the phonological sorting form for preschool children. The second the substitution of forms and other strategies. The third one is analyzing aspects of comprehensive phonological deficiency.

Sources of the HAPP-3:

- 1- Theories of phonological development (e.g., Browman & Goldstein, 1986; Stamp, 1972)
- 2- Principles of psychology (e.g., Hunt, 1961; Vygotsky, 1962)
- 3- Researches in the field of phonological learning (Dyson & Paden, 1983; Grunwell, 1987; Hodson & Paden, 1981; Porter & Hodson,2001).

- 4- Sign phonology and it is linked to cycles preface. It is a theory where phonological representation is the base for recognizing speech and physical deficiency factors (Ingram, 1976; Presisser, D., Hodson, B & Paden 1988)
- 5- Constant phonological clinical research (Hodson, 2007)

The HAPP-3 test:

HAAP-3 test is considered a legitimate normative reference and it is also a reference test which is being conducted before launching the intervention program to pinpoint the following:

- 1- Pinpointing the degree of disorder for children who suffer from disorders in the phonological system.
- 2- Pinpointing aspects of deficiency or the main articulation distortions such as omission and distortion in consonants; to determine the best targeted sound units.
- 3- Making comparisons to register change and the effect of treatment during the targeted period of time.
 - HAPP-3 test is also applied after each cycle to evaluate the changes that occur in the phonological system of the child, and also to set the adjustments that the test requires, in addition to reusing it.
 - Drawing diagrams and the baseline are conducted in order to clarify changes in the models or the phonological units as well as (the Total Occurrences of major phonological deviation) (TOMPD)
 - The best models and the targeted units that have been recognized during the timeline are being discovered by the end of every session. The best unit or phoneme or previous targeted sound model are chosen for the following sessions (Hodson, B.W., & Prezas, R.F, 2009 Hodson, B. ,2012).
- 4- Authenticating or registering progress made after treatment.

Description of HAPP-3:

HAPP-3 test for phonetic patterns has been designed in a way that clarifies aspects of phonological deficiency for children with

Hodson Assessment of Phonological Patterns Criterion HAPP-3 Translation and Arabization

unfathomable speech to a severe or moderate degree. The measurement includes forms used for conducting comprehensive phonological evaluation. In addition to sorting aspects of phonological deficiency for preschool children as well as what older children do in producing multi-syllabic words. The measurement includes a brochure of using five forms, a group of manual games as well as picture cards. In the following sections, we will explain:

First: components of the test

Second: the time needed for applying and counting the test's grades.

Thirdly: the motivators used during the evaluation (picture cards that help the child to pronounce and articulate words)

First: Components of the test:

The following sections will briefly view and describe the components of the three assessments of the measurement which are represented as follows:

- The form of sorting or phonological surveying for preschool children.
- The form of substitution patterns and other strategies.
- Form of aspects of deficiency for the comprehensive phonological analysis.
- Some motivating games and shapes which are as follows; a boat, a ship, fish, a flower, glasses, a horse, a screwdriver, soap, three colors, socks, a small wooden chair.

The first form: Sorting or phonological surveying for preschool children.

- 1- The form of sorting or phonological surveying for preschool children is used to quickly know the children who suffer from clear and sufficient phonological disorders to guarantee the evaluation of the comprehensive phonological evaluation. The choice of the twelve words used for the phonological sorting for preschool children is based on several reasons as follows:
 - a- The twelve words are simple and known which means that they are frequently used in the Egyptian environment by most preschool children.

- b- Eliciting these words through shapes and games in the measurement.
- c- These words provide chances for the occurrence of aspects of the common phonological deficiency for three times at least.
- 2- Sorting process requires two minutes for applying, and it could also be used for quick sorting of a great number of preschool children. In addition to that, the sorting or surveying tool could be applied to two-year old children to get basic data through drawing the baseline. It could also be applied to the early stage of primary school children who suffer from producing unfathomable speech. The sorting form for preschool children includes a group of criteria to decide if there is an urgent need to apply the comprehensive phonological evaluation.

The second form: Substitution patterns and other disorders.

The form of substitution patterns includes the processes of phonological substitution of developing the sound system for children. The processes are as follows:

2-Substitution processes include:

- a- Gliding: it is about substituting the sounds of (l,r) into (j or u) such as /jiamba/ instead of /lamba/ (lamp) or /jiuma:n/ instead of /rum:an/ (pomegranate).
- b- Vocalization: it is about substituting the voiced sounds by voiceless sounds such as /sarafa/ instead of /zarafa/ (giraffe) or /ʃamal/ instead of /gamal/ (camel).
- c- Fronting: it is about substituting back articulation sounds by front articulation sounds. Examples of this are /yamij/ instead of /ramy/ or /jidʕa/ instead of /Reda/.
- d- Deaffrication: It is about replacing plosives with fricatives.
- e- Stopping: it is substituting fricatives with plosives such as saying /dalam/ instead of /qalam/ (pen). It includes two processes:
 - a- Prevocalic voicing which is the effect of the sound on the sound which follows it such as /uzbuʕ/ instead of /usbuʕ/ (a week).
 - b- Postvocalic devoicing: it is comparing sounds which include:

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

(L, X, N, M, ʕ, ʁ, B, T). As for the biggest group which had the most difficult and changing sound, it was the sound /q/. Regarding the sound errors, five sounds were the most difficult which are (r, sʕ, tʕ, dʕ, zʕ) (Secord & Donohue , 2002).

The third form: aspects of deficiency for the comprehensive phonological

Evaluation:

- 1- The form of the comprehensive phonological evaluation includes a group of motivating games and picture cards (which exist in the measurement) to motivate children to spontaneously produce speech. It also includes 50 words in the form of registering the comprehensive phonological evaluation to register aspects of comprehensive deficiency for children.
- 2- The card of analyzing aspects of phonological deficiency is used to analyze word or syllable structure and what it means is (forms of omission). It is also used to analyze aspects of deficiency or disorder in consonants.
- 3- The form of analyzing substitution patterns and other disorders is used to analyze forms of substitution for children and substituting sounds which they find difficult to produce.

The comprehensive phonological evaluation form includes a group of sections that have to do with the following:

- 1- Applying the form of phonological sorting which consists of 12 words as a preliminary evaluation. The evaluation ranged from 3 to more than 12 grades. Then, children were referred to applying the other two forms.
- 2- Setting total occurrences of major phonological deviation which consists of 50 motivating words in addition to analyzing omission disorder; whether omitting a sound, two sounds or a syllable and determining the place and type of the sound. It also seeks to set any other disorder such as substitution and its type.

- 3- Registering the total occurrences of substitution patterns and other disorders which were analyzed in the form of substitution patterns and other disorders such as gliding, deaffrication, stopping, fronting and backing.

HAPP -3 for phonetic patterns has been designed to match the following criteria:

- Application time should not exceed 20 minutes (the time of applying evaluation with the child).
 - The measurement of applying the form of the comprehensive phonological sorting is 3 or more. If the gauge of applying the rest of the measurement is available, the child is to be referred to applying the form of aspects of analyzing phonological deficiency and the form of substitution patterns and other disorders.
 - If there is a phonological disorder or handicapping, results indicate the severity of the disorder.
 - Results determine the phonological level where children start, then a suitable treatment plan should be drawn.
 - 'Continuous results of applying the evaluation are used after applying the treatment plan as final procedures to the examination (Hodson, B.W., & Prezas, R.F, 2009. Hodson, B. ,2012)
- 4- **Motivation strategies and games used during the evaluation:**

The 48 shapes are used as motivators and they include common objects such as (three different colours, three body parts such as the thumb, nose and mouth) to elicit the 50 targeted words to facilitate performing the comprehensive phonological evaluation. The 50 motivating words were chosen to match the following criteria:

- 1- =These words are generally known for Arabic speaking preschool children (Arabic after Arabization) .

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

- 2- Each of these words provide several opportunities to evaluate and show more than one aspect of phonological deficiency through motivating pronouncing sounds at different places.
- 3- These motivating words include all vowels and consonants .
- 4- These motivating words comprise clusters and sequences of common consonants.
- 5- Monosyllabic and multisyllabic words are subject to evaluation. Shapes are being used whenever possible, as manual shapes are usually considered more pleasurable than pictures for most young children. This is in addition to another important reason which is responses elicited through these shapes are more probable to show the real ability of the level of the examined children especially after conducting the examination or applying the measurement. It has been noticed that children repetitively tend to the spontaneous production only of what they have completely generalized when using the manual shapes (Hodson, B., 2012).

Secondly: time required to count and register grades of the test.

Articulated sounds are registered and examined and results of HAPP-3 test for phonetic patterns are analyzed according to the experiences of the examiner and the severity of the disorder that the examined child of articulation disorder is suffering from. These sorting tools could be applied in a time of 2 to 3 minutes. The content of the comprehensive phonological evaluation of the 50 motivating words could be applied in less than 20 minutes. Results from the evaluation could be analyzed through conducting sorting procedures in approximately 5 minutes. Hence, it becomes clear that time required for analysis processes relevant to the comprehensive phonological evaluation reach 30 minutes or a little less.

The role of parents and researchers in evaluation processes:

The role played by parents is extremely important in presenting information relevant to sounds that the child is unable to articulate correctly or the difficulties the child faces in understanding others

and communicating with them as a result of being shy of their articulation disorders. Parents could also determine how others perceive of the child; as well as observe the effect of the problem on the child's relation with his siblings and classmates. Parents could also observe the effect of the problem on the child's academic learning in the different subjects, such as his grades and participation in the class, points of weakness and strength and his social interaction.

Applying the test:

After establishing its validity, the scale was administered to a group of normal children with speech sounds disorders. Tasks in the measurement items were applied to children individually. Then, the child's capability of applying the task is determined according to the grade available in front of each item and in light of the set correction criteria for each item. The results were analyzed using T-test. Results indicated the validity, reliability, and practicality of the scale.

Validity and Reliability of The Test

Procedures of ascertaining the psychometric characteristics of the test:

Description of the sample:

The list has been applied to a sample of 100 children aged from 4 to 6 years old, with average age of (4.43) years and standard deviation of (1.39). The following table shows the sample's distribution according to their gender.

Table (1)

Distribution of children according to gender

A: Truthfulness:

The measurement's truthfulness has been ascertained as follows:

First: Arbitrator's truthfulness:

The measurement has been introduced to a panel of arbitrators in the fields of special education, Arabic department as well as teaching methods and methodology (appendix 1). This is to give

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

their opinion on how convenient the measurement's items and pivots; as well as how suitable they are to the aim they are prepared for. Also to ascertain the truthfulness and accuracy of phrasing the items. The ratio of agreement on the measurement's items between the arbitrators has ranged between (90%- 100%).

Second: Internal consistency:

Correlation coefficients between the subsidiary items and the total mark of the form have been counted. The following table shows these coefficients:

Table (1) correlation coefficients between the subsidiary dimensions and the total grade of the form of phonological sorting registration for preschool children.

Dimension	correlation coefficient by measurement's total grade
Omitting consonants (sound)	0,77
Omitting consonants (2 sounds)	0,73
Deficiency aspects for consonant clusters (voiced sounds)	0,66
Deficiency aspects for consonant clusters (velar sound)	0,77
Deficiency aspects for consonant clusters (alveolar sound)	0,69

It is shown from the previous table that all correlation coefficients refer to level .0,01, which reflects the truthfulness of the internal consistency for the form.

Invariability of the form of phonological sorting registration for preschool children:

The researcher has done the required statistics for the invariability of phonological sorting registration form for preschool children in two ways; Retesting way and the invariability of the grade way as follows:

a- Retesting:

The researcher has applied the form and after two weeks, she reapplied the form. Then, she did the required statistics for the correlation coefficient between the two applications and the results were as they are in the following table.

Table (2) stability coefficients by retesting for the phonological sorting registration form for preschool children and the form as a whole

Dimension	Retesting
Omitting consonants (sound)	0,94
Omitting consonants (two sounds)	0,88
Deficiency aspects for consonant clusters (voiced sounds)	0,82
Deficiency aspects for consonant clusters (velar sound)	0,84
Deficiency aspects for consonant clusters (alveolar sound)	0,85
The measurement as a whole	0,91

It is shown from the previous table that all stability coefficients are high and this asserts the invariability of the form.

b- Invariability of grades way:

The researchers have graded the children and the required statistics for the correlation coefficient between the two grades has been done; results were as shown in the table below:

Table (3) stability coefficients by two grades invariability for the phonological sorting registration form for preschool children and the form as a whole:

Dimension	two grades invariability
Omitting consonants (sound)	0,89
Omitting consonants (two sounds)	0,86
Deficiency aspects for consonant clusters (voiced sounds)	0, 88
Deficiency aspects for consonant clusters (velar sound)	0,90
Deficiency aspects for consonant clusters(alveolar sound)	0,85
The measurement as a whole	0, 93

It is shown from the previous table that all stability coefficients are high; which asserts the invariability of the form.

Validity and invariability of the form of deficiency aspects for the comprehensive phonological analysis:

Internal consistency:

Correlation coefficients between the subsidiary items and the total grade of the form has been counted and the following table demonstrates these coefficients:

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

Table (4) correlation coefficients between subsidiary dimensions and the total grade for the form of deficiency aspects for the comprehensive phonological analysis:

Dimension	correlation coefficient by the total grade for the measurement
Omitting a consonant (beginning)	0, 60
Omitting a consonant (middle)	0, 63
Omitting a consonant (final)	0,58
Alleviating consonant sequencing	0,54
Omitting syllables (one-syllable)	0, 68
Omitting syllables (2 syllables)	0,57
Deficiency aspects for sonorant clusters (Alveolar sounds)	0, 67
Deficiency aspects for sonorant clusters (nasal sounds)	0, 56
Deficiency aspects for sonorant clusters (gliding sounds)	0, 66
Deficiency aspects for occlusive (voiced fronting sounds)	0, 63
Deficiency aspects for occlusive (voiced backing sounds)	0, 64
Deficiency aspects for occlusive (velar sounds)	0, 51

**** refers to 0,01**

It is shown from the previous table that all correlation coefficients refer to level 0,01 which shows the validity of the internal consistency for the form.

Invariability of the form of aspects of deficiency for the comprehensive phonological analysis:

The researcher has done required statistics for the invariability of the form of aspects of deficiency for the comprehensive phonological analysis by two ways; Retesting way and the invariability of the two grades way, and this is as follows:

a- Retesting:

The researcher has applied the form and after two weeks, she reapplied it. Then, she has done the math for correlation coefficient between the two applications and the results were as in the following table:

Table (5) stability coefficients by retesting for the form of deficiency aspects for the comprehensive phonological analysis; and the form as a whole.

Rania Hassan Abass

Dimension	retesting way
Omitting a consonant (beginning)	**0, 89
Omitting a consonant (middle)	**0, 88
Omitting a consonant (final)	**0,87
Alleviating consonant sequencing	**0,81
Omitting syllables (one syllable)	**0,82
Omitting syllables (two syllables)	**0,79
Deficiency aspects for sonorant clusters (Alveolar sounds)	**0,82
Deficiency aspects for sonorant clusters (nasal sounds)	**0,82
Deficiency aspects for sonorant clusters (gliding sounds)	**0,88
Deficiency aspects for occlusive (voiced fronting sounds)	**0, 91
Deficiency aspects for occlusive (voiced backing sounds)	**0, 84
Deficiency aspects for occlusive (velar sounds)	**0, 90
Measurement as a whole	**0,93

It is shown from the previous table that all stability coefficients are high, which asserts the form's invariability.

b- Invariability of the two grades way:

The researchers have graded the children and they have done the required statistics for the correlation coefficient between the two grades; and the results were as in the table below:

Table (6) stability coefficients by two grades way for the form of deficiency aspects for the comprehensive phonological analysis and the form as a whole:

Dimension	two grades way
Omitting a consonant (beginning)	**0,94
Omitting a consonant (middle)	**0, 92
Omitting a consonant (final)	**0,90
Alleviating consonant sequencing	**0,87
Omitting syllables (one syllable)	**0,89
Omitting syllables (two syllables)	**0,91
Deficiency aspects for sonorant clusters (Alveolar sounds)	**0, 85
Deficiency aspects for sonorant clusters (nasal sounds)	**0,89
Deficiency aspects for sonorant clusters (gliding sounds)	**0,90
Deficiency aspects for occlusive (voiced fronting sounds)	**0,88
Deficiency aspects for occlusive (voiced backing sounds)	**0,86
Deficiency aspects for occlusive (velar sounds)	**0,85
Measurement as a whole	**0,95

It is shown from the previous table that all stability coefficients are high; which asserts the invariability of the form.

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

Validity and invariability of the form of analyzing substitution patterns and the other disorders in HAPP-3 test for phonetic patterns:

Internal consistency:

Correlation coefficients between the subsidiary items and the total grades for the form have been counted. The following table shows these coefficients:

Table (7) correlation coefficients between subsidiary dimensions and the total grade for the form of analyzing substitution patterns and the other strategies in HAPP-3 test for phonetic patterns.

Dimension	correlation coefficient by the total grade of the measurement
Gliding	**0,72
Vocalization	**0,55
Fronting	**0,75
Deaffrication	**0,74
Stopping	**0,71
Prevoalcalic voicing	**0,62
Postvoalcalic devoicing	**0,51
Omitting a syllable	**0,60
Front lispng	**0,65
Lateral lispng	** 0,57
Substituting vowels	**0,49

** Reference to 0,01

It is shown from the previous table that all correlation coefficients refer to level 0,01, which indicates the validity of the internal consistency for the form.

Invariability of the form of substitution patterns analysis and the other disorders in HAPP-3 test for phonetic patterns.

The researcher has done required statistics for the invariability of the form of analyzing substitution patterns and the other disorders in HAPP-3 test by two ways. The first one is the retesting way and the second is the invariability of the two grades way; and this went as follows.

a- Retesting

The researcher has applied the form and after two weeks she reapplied it. Then, she did the required statistics for the correlation coefficient between the two applications and the results were as in the table below:

Table (8) stability coefficients by retesting for the form of analyzing substitution patterns and the other disorders in HAPP-3 test for phonetic patterns and the form as a whole:

Dimension	Retesting way
Gliding	**0,84
Vocalization	**0,71
Fronting	**0, 78
Deaffrication	**0,86
Stopping	**0,69
Prevocalic voicing	**0,66
Postvocalic devoicing	**0,86
Omitting a syllable	**0,82
Front lispings	**0,81
Lateral lispings	**0,74
Substituting vowels	**0,76
Measurement as a whole	**0,92

It is shown from the previous table that all stability coefficients are high which asserts the invariability of the form.

b- The invariability of the two grades:

The researchers have graded the children and they did the required statistics for the correlation coefficient between the two grades; and results were as in the following table:

Table (9) stability coefficients by the invariability of the two grades for the form of analyzing substitution patterns and the other disorders in HAPP-3 test; and the form as a whole:

Dimension	the invariability of the two grades
Gliding	**0,90
Vocalization	**0,92
Fronting	**0,89
Deaffrication	**0,87
Stopping	**0,91
Prevocalic voicing	**0,90
Postvocalic devoicing	**0,89

**Hodson Assessment of Phonological Patterns Criterion
HAPP-3 Translation and Arabization**

Omitting a syllable	**0,86
Front lisping	**0,88
Lateral lisping	**0,91
Substituting vowels	**0,92
Measurement as a whole	**0,95

It is shown from the previous table that all stability coefficients are high which asserts the invariability of the form.

Criteria of analyzing substitution patterns and the other strategies in HAPP-3 for phonetic patterns:

Table (10) arithmetic mean, standard deviation, the upper and lower quadrants for the form of analyzing substitution patterns and the other strategies in HAPP-3 test for phonetic patterns.

Number	lowest grade	highest grade	arithmetic mean	standard deviation	lower quadrant	upper quadrant
100	1	5	2.9	0.9	2	3

How to use the criteria:

- If the child got a raw grade of 3 or more, this means that the child has problems in substitution.

Criteria for the form of deficiency aspects for the comprehensive phonological analysis.

Table (11) arithmetic mean, standard deviation, upper and lower quadrants for the form of deficiency aspects for the comprehensive phonological analysis.

Number	lowest grade	highest grade	arithmetic mean	standard deviation	lower quadrant	upper quadrant
100	4	5	4.58	1.3	4	5

How to use the criteria:

If the child got a raw grade of 5 or more, this means that the child has phonological deficiency and substitution problems.

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