# *COMPLEMENTARY TOOLKIT FOR APHASIA THERAPY: A LINGUISTIC APPROACH*

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*Abstract:Aphasia is a complex and multidimensional disorder that affects the higher integrating brain activity responsible for language production and communication. In-depth studies agree that there are two main types of aphasia, Broca and Wernicke, but argue upon the classification of different subtypes. This is mainly due to the diversity of cases that do not always fit into a pattern. Because of this miscellaneous behaviour of aphasia professionals always look for complementary methods to help recovery.*
*Music can aid communication where this is deficient or merely impossible. Recent studies demonstrated that, since it is not age dependent, musical training can modify brain function and plasticity in aphasics. Singing with lyrics showed higher brain activity than singing without lyrics. Melodic Intonation Therapy was particularly developed to aid recovery from aphasia.*
*Recent studies demonstrated that people with aphasia employ "content-carrying" gestures that display a cueing effect to help the production of speech. Researchers also argue that these movements have language-like properties in the same way as gestures used by mime artists and deaf signers. The use of gestures is encouraged by speech-language pathologists during therapy.*
*Emotional language is any choice of words that employs emotional response. Apropos of aphasia, we can think of the patient as the audience whose emotions are triggered by such language use, but we can also think of the patient as the speaker whose emotions can inhibit or facilitate speech production.*
*This study discusses the different possibilities that can add something to the aphasia therapy besides the usual speech-language rehabilitation. These complementary tools are neither devices nor other prefabricated tools.*

*Keywords: aphasia, music therapy, content-carrying gestures, emotional language*

## Introduction

Aphasia is described as a severe impairment of language production and comprehension which comes as a result of focal brain damage and cerebrovascular accidents which target the left hemisphere causing a deficit in different aspects of the language production and communication. Aphasia is often characterised by speech impairment, auditory comprehension, and word retrieval deficit and repetition disorders. This creates a limitation of lack of language in patients suffering from aphasia hence they fail to communicate the changes in cognition that they suffered. Studies have shown that individuals with severe aphasia depict greater impairments to cognitive functions particularly the memory used in working functions and attention which can withstand sustainability have been immensely affected in patients living with aphasia (Ardila 2014).

Despite this impairment and their almost entire loss of language, individuals with global aphasia have abilities in adding and subtracting, logic problem solving, thoughtful consideration of other people's thoughts, accept and enjoy music while navigating their environment with much ease than expected. This proved that various aspects pertaining thoughts engage different and distinct regions of the brains and have got nothing to do with language. Aphasic individuals



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are not individuals without language but are people who initially had language and later in life lost some language abilities. This means that these patients still maintained some residual linguistic abilities although the case of global aphasia is an exception. Language impairment in aphasia has been associated with the deterioration of diverse cognitive abilities which include spatial and conceptual abilities that eventually leads to an idiosyncratic cognitive world (Ardila 2014; Ardila & Rubio-Bruno, 2017). When such deterioration of cognitive abilities extend to language, it gives a clear insight that they are developed and mediated through language. This makes language a representation of the primary instrument of human cognition.

There exists a significant dispersion in cognitive abilities for both brain-damaged patients and ordinary people. This shows that the same variability experienced in cognitive impairment affects patients with aphasia. Due to the language impairment, aphasia patients tend to live in their world termed as an idiosyncratic cognitive world which is defined by two different strategies. These include the signal systems in aphasia and the availability of the external stimuli. The cognitive strategies of a patient suffering from aphasia need to be reorganised since people living without brain pathology interpret the world through language (Ardila 2014, Ardila & Rubio-Bruno, 2017).

Due to the different diversity of multidimensional aphasia disorder, unique rehabilitation programs which are based on specific deficits in each aphasia cases have been put into practice. For instance, the rearrangement of necessary language process may be considered by using a better-preserved level of a language at the base point to achieve communication goals. This starts from the actualisation of language where the patient is encouraged to produce as much language as possible. This increases the chances of reproducing an utterance which has been reproduced before (Ardila 2014, Ardila & Rubio-Bruno, 2017).

In-depth studies agree that there are two main types of aphasia, Broca and Wernicke, but argue upon the classification of different subtypes. This is mainly due to the diversity of cases that do not always fit into a pattern. Because of this miscellaneous behaviour of aphasia professionals always look for complementary methods to help recovery.

This study discusses the different possibilities that can add something to the aphasia therapy besides the usual speech-language rehabilitation. These complementary tools are neither devices nor other prefabricated tools.

**Music Therapy**

Vocal singing is thought to be the initial form of music production. Mothers always used their musical abilities to communicate with their babies. Although an adult can tell the difference between speech and vocal singing, this seems to be less univocal to an infant. Communication through singing in early infancy is believed to help the development of language subsequently. There are several studies on the possible connections between music and language, their development, mechanism of functioning and acquisition (McMullen & Saffran 2004; Nakata &Trehub 2004; Callan et al., 2006). Investigations became more efficient and representative when the impairment of brain areas dealing with language and music were studied, especially in the case of PWA. Peretz et al. (1997) reported amusia (loss of musical abilities) in right-handed individuals presenting right-hemisphere impairment due to frontal lobe brain trauma, while speech was less affected.

Recent studies demonstrated that music can enhance learning abilities because it modifies brain function and plasticity, which is not age dependent. Singing with lyrics showed higher brain activity than just singing without lyrics, which may support the clinical findings that non-



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fluent aphasics are better communicators when intonating speaking. These findings are significant to the speech-language pathologist in aphasia therapy. (Özdemir et al., 2006; Schlaug 2015)

Music therapy for treating PWA who lost their ability to speak due to a neurological disorder or traumatic brain injury has proven to be efficient in facilitating speech output. Several studies have shown that right hemispheric regions are more active during singing. Therapy involving melodic components might activate patients' right hemisphere to compensate for the impaired left hemisphere. Music and language have been compared in various contexts (individual, group and choral singing) including the broader theoretical issue of modularity of mind. Being a central theoretical construct in cognitive science, modularity contains various conceptualisations which suggest a various possible relationship between language and music. It is believed that there exist different architectural brain regions which subserve language and music with an encapsulation that prevents a cross-talk between them. (Racette et al., 2006; 2003, Ozdemir et al., 2006; Callan et al., 2006; Schlaug et al. 2010, Breier, 2010, McMullen et al., 2012).

Melodic intonation therapy is a form of music therapy developed to help patients recover from aphasia. It was discovered that music had the ability to aid communication in cases where there is a huge deficiency or communication is completely impossible. In this method of therapy, patients with aphasia are exposed to various teachings on how to grasp and understand the rhythm of a spoken phrase as the intonation immediately starts from the therapist. The patient then tries to practice the intonation of the phrase while trying to maintain the rhythmic pattern. This process continues for a fixed period, and the therapist gradually withdraws from the exercise after being sure that the patient's intonation has become successful. This will allow the patient to stop the rhythm tapping and embrace the intonation. This melodic intonation therapy has proved to be an enormous success among particular patients suffering from aphasia worldwide. These techniques have gained extensive use in various countries in the world especially for a single limited type of language disorder that entails severe verbal output limitations. These limitations include poor verbal agility, poor repetition with a preserved comprehension and a general poor repetition. Despite this huge success worldwide, this type of therapy has proved unsuccessful for the Wernicke aphasia and any of the extra Sylvian language disturbances. (Norton et al., 2009; Schlaug et al., 2010; Stahl et al. 2013; Zumbansen et al. 2014)

The biomedical researchers came up with significant findings regarding music in the treatment of aphasia. They found that music is a language that is highly structured, it involves complicated perceptions, motor control, and cognition which makes it useful in retraining and reeducating the injured brain. Through the researches that were conducted, it was evident that music activates the brain areas which are well known to the music and the process of learning music changes the brain. The activated brain areas are very active in processing language, memory, motor control, attention, executive control and auditory perspectives. The Broca's area is essential in processing the sequence of physical movement, and it converts them into spoken words (Paul & Ramsey, 2000; Peretz & Zatorre, 2005; Schlaug et al., 2008).

The process of incorporating music in learning changes the brain by increasing the auditory and motor areas of the brain which enhances more efficient interactions. This also aids in driving the generalreeducation of cognitive, improvement of speech and language with the inclusion of motor functions and shared brain systems. A typical example is singing which entirely relies on the brain systems which are located in the right hemisphere, and they hugely contribute to the rehabilitation of the injured hemisphere to help the regaining of speech. Learning words in a



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song have an effect of activating the temporal and the frontal areas of the brain, unlike spoken word learning which activates only the left hemisphere (Paul & Ramsey, 2000; Weller & Baker, 2011; Zumbansen et al. 2014)

Music is essential in patients suffering from aphasia since individuals do emotionally respond to music and there is that tendency to verbalise and vocalise the songs especially in the cases where the patient loves that kind of music. Silent instrumental music is preferred for it has proven to be more efficient than other forms of music. Music reduces memory load, and it assists in structuring phrases and sentences. This is made possible by the fact that music is deeply encoded and phrases consisting of several words can be transformed into one musical phrase. The use of structured and repetitive lyrics helps people with aphasia to improve their articulation, and special breathing exercises increase the lung power making it easy to communicate in speech. Involvement in music improves the ability to focus and listen. Music is regarded to be positive on the idea that music and language seem to share some of the brain systems. Some therapists encourage their patients to sing phrases of the standard terms they cannot speak and the patients can learn to speak the words after some time. Recently singing groups are coming up with the aim of helping the aphasia patients. Stroke survivors with aphasia from the local stroke association support groups came up with the aphasia chorus which aids the patients through the process of regaining speech (Hartley et al., 2010; Norton et al., 2009; Schlaug et al., 2008; Stahl et al. 2013, Zumbansen et al. 2014).

Music can aid communication where this is deficient or merely impossible. Recent studies demonstrated that, since it is not age dependent, musical training can modify brain function and plasticity in aphasics. Singing with lyrics showed higher brain activity than singing without lyrics.

**Content Carrying Gestures**

Speakers with impaired verbal communication skills like persons with aphasia may compensate partly or in full their less informative speech and co-speech gesturing. Since speech and co-speech gesture production are extensively coordinated, they may end up resulting from a particular single process which eventually breaks down with speech. Majority of those living with the aphasia condition suffer from limb apraxia which hinders their ability to pantomime particular action whenever requested to, hence affecting spontaneous gesturing. It is not all gestures that are coordinated with speech since others are produced and understood without concurrent speech, a typical example being pantomimes (Kong et al., 2015). The process underlying this type of gestures is hugely independent of the verbal language production since they rely on different resources other than the usual production of co-speech gestures. Therefore, aphasic speakers who are predominantly affected by impaired communications can partly compensate their deficiency in a verbal speech by a more informative co-speech gesturing (De Ruiter, 2006)

Various studies have shown that people with aphasia are fond of using gestures spontaneously and frequently. Individuals with extreme aphasia conditions have produced more gestures that convey meaningful messages as compared to non-aphasic speakers (Mol et al., 2013). Some aphasic speakers have successfully proved that they can effectively use gesture in their communication. This has gone miles in enhancing the rehabilitation of these patients since they are now able to produce meaningful iconic gestures in their communication. Results from various studies have firmly advocated for the use of this gestures in therapy for cases with severe aphasia conditions. Gestural gains for such individuals cannot be overstated (Kong et al., 2015).



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Gestures have been defined as visible actions used as an utterance or as part of a statement. Usually, when gestures are expressed in the context of an utterance, they portray semantic content about the accompanying speech. These gestures are categorised into various subtitles which can be conceptualised as existing on a continuum organised by three features: their relation to speech, morphological properties and their degree of conventionalization. Unlike in spoken utterances, gestures are complex in nature, and they cannot be divided into smaller parts (Erlenkamp & Becker, 2013). There are several types of gestures and gesticulations which include pantomime, symbolic gestures and iconic gestures. For instance, the production of pantomime speech heavily relies on the production of co-speech gesture (Goldin-Meadow et al., 2008; Lausberg et al., 2007; Van Lancker Sidtis, 2004). Iconic gestures illustrate meaning, and they contain a large communication potential since they are capable of referring to a vast number of entities depending on the context they are used. These gestures adopt three different iconic mechanisms which differ in meaning construction mechanism in spoken language which will eventually advantage people with aphasia (Erlenkamp & Becker, 2013).

A new rehabilitation program which enhances the adoption of gestures in aphasia patients has been developed with the approach of teaching aphasic patients and their communication partners while majoring on the use of gestures in communication. The program included education of PWA and their close associates on the different types of gestures with an ultimate aim of increasing the combination of gesture functioning while emphasising their focus on the use of iconic gestures and body language. The program by the name SunnGest was introduced with a strategy which included the internalisation of the acronym husk referring to four principles of action, form, size, and context. Variety of exercises were also introduced which enhanced the practicing of the usage of gestures (Erlenkamp & Becker, 2013). Aphasic speakers majorly divide the content of the message they want to convey in gesture and speech. According to Melinger and Levelt (2004), any critical information which was expressed in gestures had high chances of being overlooked in speech (De Ruiter, 2006; Melinger & Levelt, 2004).

Gestures have also been considered to be hugely helpful in aphasia therapy. The inclusion of sign language to language therapy has attempted to substitute other means of communication for aphasic patients. Initially, the teachings of sign language to aphasic patients yielded limited success. Thiswas blamed on the fact that aphasia is usually associated with the dominant limb-paresis and further contaminated by non-dominant–limb apraxia (Erlenkamp & Becker, 2013). However, it was later proved that this technique was indeed beneficial to aphasia patients since it was demonstrated that limb apraxia did not necessarily impede the acquisition of sign/gesture by the aphasic patients. Rather, the severity of the language disorder was the crucial factor in the routine failure of sign language assessment of limb apraxia that involves requests for an individual to act in a way suggesting that he is performing a specific action, and it is facilitated by pantomime rather than co-speech gesture (Goldin-Meadow et al., 2008; Lausberg, Davis, & Rothenhausler, 2000; Mol et al., 2013; Rose & Douglas, 2003). There exists a variety of sign languages which demand a high level of language competency while the usage of the sign language majorly depends on the extent of suffering on the patients with aphasia. The American Indian general communication system which is famously known as the Amerind was adopted to overcome the language disorder though it proved to be a language that could not be adopted by the majority of aphasic patients who were unable to master the complex sign languages (Erlenkamp & Becker, 2013).

Additionally, gesture in aphasia has served as a natural alternative to speech for communication in a more efficient way. Research done on the integrity and function of gestures



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in aphasia patients proved that gestures were mostly used to compensate for the absence of speech rather than complementing the speech as it is depicted by the results from the healthy speakers. These findings supported the claims that most speakers opt to use gestures with specific meanings to compensate for their lack of language content for communication with the listeners. These results depicted incidents whereby gestures were able to produce words in advance to enhance the comprehension of listeners when difficulties arise in the word finding. In sharp contrast to spoken utterances, gestures cannot be defined through some types of gesticulations can be defined. A typical example of iconic gestures is given whereby they are used to illustrate meaning since they are able to refer to a wide number of entities (Erlenkamp & Becker, 2013; Kendon, 2004; McNeill 2007; Marshall, 2006). Furthermore, the results successfully indicated gesture system which seemed more intact in people with aphasia which mainly replaced verbal communication (Erlenkamp & Becker, 2013).

The compensatory gesture modality facilitates spoken word production which is in line with the inter-systemic reorganisation. The gesture techniques used in word retrieval remediation include pantomime and iconic gestures, intention gestures and pointing. This constitutes four subtypes which are arranged according to their characteristics. They include the deictic gestures, metaphoric gestures, beats and iconic gesture (McNeill, 2005; Kendon, 2004; De Beer et al., 2017). This gesture technique has led to the introduction of treatment strategies that include gestures which have immensely boosted the verbal naming skills for those suffering from non-fluent aphasia. Studies have shown that individuals with chronic aphasia benefited most from the pantomime gestures and verbal training which were found to be useful in increasing spoken naming and gesture use of trained and untrained nouns and verbs (Erlenkamp & Becker, 2013). The combination of modalities such as gestures and verbal cueing facilitated efficient verbal communication. According to Ferguson et al., (2012) in their article, a comparison of intention and pantomime gesture treatment for noun retrieval in people with aphasia, combining semantic cueing and gestural cueing proved to be much more effective than the initial single modality treatments.

In addition to the production of words, gestures are remarkably similar to word concept. Pantomimes may work as compensatory modes of transferring information in verbal communication. Further studies depicted that patients with extensive oral gains tended to abandon gesture gains while those with fewer verbal benefits demonstrated a large gesture use to untrained words (Ferguson et al., 2012). This led to the emergence of the fact that gesture training provides a mean of communication in patients with severe aphasia with a less possibility of improving word retrieval abilities after training (De Ruiter, 2006; De Beer et al., 2017). Moreover, intention gestures and pantomime gestures improve verbal picture naming in individuals suffering from chronic non-fluent aphasia. Pantomime also known as the iconic gesture is a representation of the concept of the target word which facilitates production of verbal communication and the provision of potential means that can compensate gesture communication. For one to produce the pantomime gestures, an elaborate hand gesture is required whereby this gesture has a content specifically intended for a single word (Ferguson et al., 2012). The production of intention gestures also requires meaningless, complex motions without specific content requirement thus making it useful since it can be used in flexible conversations regardless of the content.

The iconic gesture proved to be superior to pointing and cued articulating gestures in the facilitation of the easy word retrieval in patients with phonological retrieval impairments as compared with patients with semantic impairments or apraxia of speech. Several types of



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gestures have been developed in an attempt of replacing words by hand gestures. This technique has been successful to some extent, but it has attracted some challenges including a large number of gestures that have to be learned to improve communication functions by the people with aphasia (Ferguson et al., 2012). Evidence has shown that the production process of speech and gestures facilitates the ease with which aphasic speakers express their semantic content via gesture. They, therefore, provide additional information to complement speech (Beattie & Shovelton, 2011; De Ruiter, 2006; De Beer et al., 2017).

Recent studies demonstrated that people with aphasia employ "content-carrying" gestures that display a cueing effect to help the production of speech. Researchers also argue that these movements have language-like properties in the same way as gestures used by mime artists and deaf signers. The use of gestures is encouraged by speech-language pathologists during therapy.

**Emotional Language**

The relationship between human language and human emotions is based on the fact that language has roots in emotional expression. Emotions such as cries, songs, and shouts have been used to express or in motivating various linguistic developments. Both the emotional language and formulaic expressions hold a crucial role in the linguistic competence of an individual. Thus the human language is dependent on emotional and formulaic speech (van Lancker Sidtis, 2004; van Lancker Sidtis, 2008). Language and emotions have coexisted regarding communications for an extended period though sometimes they have been perceived to be disparate entities. However, emotional disorders such as Neuropsychological disorders have proved to bring diverse effects to communicative competence (van Lancker Sidtis, 2008). This is converse to the speech and language disorders which drastically interfere with effective communication of emotional and attitudinal information.

Emotional language is characterised by two features which include the valence and arousal. Valence, which is also known as evaluation, ranges from negative to positive and it typically measures the unpleasantness of a stimulus. Arousal, on the other hand, means activation, which varies between calm and highly arousing and it is used to describe the readiness of a person to approach or flee from the stimulus (Wildgruber et al. 2006). Research has shown that the right hemisphere (RH) is often reported to function as an emotion processor while the left hemisphere (LH) is more efficient in language processing. The right hemisphere (RH) hypothesis argues that the right hemisphere has a huge function in the synthesising and processing of emotional information as compared to the left hemisphere (Small et al., 2001).

Furthermore, the entire comprehension of a linguistic prosody should entail a thorough analysis of the lexical, semantic and syntactic aspects of patterns in pitch modulation. This can help determine whether the linguistic prosody is processed in the area on the left of speech areas though, in normal conditions, the comprehension of emotional prosody should be bound to the right hemisphere (Wildgruber et al. 2006). There is a clear indication that these operations are situated in the anterior perisylvian languages area since the activation of the left inferior frontal cortex is collateral with the discrimination of linguistic accents. Observations made by clinicians proved that there existed distinct contribution of the left hemisphere to the linguistic aspect of intonation. For instance, aphasic patients suffering from the focal left-sided brains lesions (a condition where blood supply is cut off from the left side of the brain) were found to be significantly more error-prone in the identification of linguistic prosody compared to the effective recognition of the intonation. On the other hand, patients with severe damages on the right hemisphere depicted similar profile in both linguistic identification and adequate intonation



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(Wildgruber et al., 2006). According to Geigenberger and Ziegler (2001), there has been a predominant disturbance which affects the linguistic prosody comprehension which is collateral with the processing of emotional intonations in aphasic patients exhibiting damage on their left hemisphere.

Different expressions portrayed by emotions depicted a massive increase of hemodynamic responses which are housed in the bilateral orbitofrontal cortex. The linguistic task gives the particular contribution of this region concerning the evaluation of emotional aspects taking into consideration the verbal utterances by the tone of speech. During the perception of emotional intonation, there is activation of the orbital nasal frontal cortex in the existing functional imaging studies (Wildgruber et al., 2006, Small et al., 2001). Additionally, patients who had damaged their unilateral focal in this area were characterized by the inability to effectively identify emotional face and voice expressions while their performance in non-emotional tasks was not affected. These observations distinctly depicted that the orbitofrontal area has a role to play in the explicit evaluation of emotional information that is channelled by different communication sources. This region is supposed to be of tremendous influence in building associations between the perceived emotional signals and the emotional episodic memory. Pronounced abnormalities of social behaviour have been rampant in patients suffering from lesions of the orbitofrontal cortex (Blair & Cipolotti, 2000; Wildgruber et al., 2006). Therefore, it would be prudent to argue that the functional role of the acoustic signals in the communication process affects the hemispheric specialisation for the higher level processing of the intonation contours.

Since most aphasia patients subscribe to the restriction regarding syntactic and lexical models, they often find difficulties in evaluative language which tend to prefer abstract words while ignoring the factual language. Emotive topics which are a source of evaluative language have been applied in aphasic language leading to both negative and positive experiences (Armstrong & Ulatowska, 2007). Studies have shown that speakers with damage in their left hemisphere have produced better conversations when engaging in emotional discussions than the others. They also portray a much better conversation when discussing emotional topics which tend to be positive. This provides an avenue for improvement in communication by incorporating the evaluative language (Blair and Cipolotti, 2000). Some aphasic speakers experience difficulties in using verbs and clauses that bring out the evaluative language. For efficient communication and emphasis, the art of repetition was embraced.

Recent studies have demonstrated that aphasic patients possibly adopt evaluative language in their communication to enhance their ability in conveying attitudes and feelings while boosting the manner in which they organise their conversations. It was evident that evaluation ranged from utterances which were deemed to be incomplete thus supporting the ideas that aphasic individuals can convey meaning in their communication without using intact syntax and semantics. The aphasic speakers were able to simplify their language while exposing the primary functions of evaluative language in the organisation of a conversation (Geigenberger & Ziegler, 2001). This provided the speaker with an optional resource for creating coherence while giving the listener a platform for a better interpretation of the message being conveyed despite the disruptions brought about by the aphasia condition. Additionally, the evaluative language devices may sometimes be used as compensatory techniques to compliment problems concerning lexical and syntactic issues (Armstrong & Ulatowska, 2007).

Emotional language provides an extra niche for assessment in aphasia by extensively covering all the functional tasks involved. It aids in the conveying of factual information by patients with aphasia, their ability to give event description and produce discourse procedures.



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Furthermore, it helps in the provision of means to deal with interpersonal effects related to language difficulties (Armstrong & Ulatowska, 2007). It makes it easy for one to express his/her own perspectives on life and how they opt to be considered by other individuals, an essential aspect for individuals suffering from aphasia. Evaluative language provides a better and relevant environment for the application of aphasia therapy. Emotional motivation offers an immediate natural context for conversations to thrive and experience which has proved that aphasic patients of different levels are ever willing to engage themselves in emotive conversations despite their difficulties. In both reading and writing, emotional words significantly evoke more semantic paralexias and paragraphias than non-emotional words (Landis, 2006). Thisis attributed to the large lesions of the dominant hemisphere which link to a right hemispheric participation in emotional word processing. Research done on emotional language depicted that rapid recognition and categorisation of emotional words is possible and independent from later semantic and syntactic analysis when the emotional words are flashed into the left hemisphere (Landis, 2006).

The use of emotional content made up of stimulus words on aphasic patients shows that the patients can repeat significantly better emotional abstract words compared to non-emotional abstract words. The ability of the aphasic patients to do oral reading, writing, auditory comprehension and repetition is improved when emotional stimuli are used in their treatment. The right hemisphere has been proven to be dominant for emotional processing; it contributes to the linguistic and non-linguistic expressions and perceptions of emotions (Landis, 2006). There exists an uneasy coexistence between language and emotions since they are disparate entities and coworkers in the field of communication.

A good example is the use of laughter. Thisis typically done after a prolonged effort. The aphasic speaker is involved in producing a humorous notice of a mistake he has committed by highlighting it. This entertaining noticing at times include laughter and the aphasic patients at times tend to laugh at the humorous noticing regularly. This humorous noticing encompasses laughter emotions which are often incorporated into their various conversations with partners. It is evident that most aphasic speakers will opt to introduce the use of emotional laughter at a particular point whereby the aphasic individual is unable to produce a self-repair although he made several attempts. Numerous studies have been done in a bid of establishing the relationship that exists between a laugh, the source of the laughter and the role it plays in conversations of aphasic patients (Blair and Cipolotti, 2000). Emotional laughter has been regarded as a type of retro-sequence which performs the functions of noticing the features of a scene and portraying aspects of talks which existed there before. Although the source of this laughter cannot be easily traced, efforts are needed by the participants to determine the actual source of each laughter (Wilkinson, 2007). A laugh in itself can evoke a sequence of events since it can be perceived as an invitation to responders to laugh back. This though does not apply to all incidents of laughter. For instance, when a trouble telling individual may opt to include emotions of laughter in his narrations, he might be exhibiting the fact that the troubles in the story are not getting the better of him (Small et al., 2001).

In an attempt of systematically affecting displays in repair sequence, it was noted that word searches which had silence extending beyond the maximum limit could be terminated by the affected display such as laughter. Laughter regularly appears in areas deemed to be sensitive, whereby the aphasic speakers are discussing their speech difficulties. Wilkinson (2007) presents findings showing four different ways in which laughter was used in a conversation involving an aphasic patient. He noticed that the emotional laughter was sometimes used to highlight the



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linguistic problems suffered by the individual though it was not meant to be taken seriously. Wilkinson et al. (2003) consider two types of repair sequence which are displayed by aphasic speakers and with the inclusion of affect displays. In the first one, the aphasic speaker introduces the usage of tuts and exclamation of annoyance in an effort of correcting an error. In another scenario, the aphasic speaker is seen to produce a loud laughter as he comes up with a funny comment regarding his inability to reproduce a word he said a few minutes ago. The usage of laughter has been depicted in these two scenarios as a mean in which aphasic speakers treat their failures as a prominent display of incompetence and proves that they are indeed putting up with it (Wilkinson, 2007; Wilkinson et al., 2003). Speech errors which have proved to be common in aphasic talks tend not to be perceived as laughable until they appear as prolonged repairs where they are treated as laugh sources. Regressive trials that occur within prolonged repairs are recurring sequential slots that are treated as laughable. This allows for the humorous noticing that helps in the repair of attempts that allow for joint laughter best described as time-outs (Wilkinson, 2007). Psychologists perceive humour to be a message sending device. Thiswas proved by the study done on aphasia patients who happened to laugh when trying to communicate to their audience that something was not dangerous.

The appraisal framework which is used to focus on attitudes mainly works within the linguistic theory of systematic function. This framework uses a language that is semantic in perspective and language is presented in a series of options which are available for speakers (Matthiessen, 2006). The semantic resources are helpful in negotiating emotions, valuations and judgments. This leads to the formation of interpersonal meanings from the social relations (Martin, 2003). There exist three groups of attitudes within the appraisal framework, the first group is in charge of identifying the speaker's expressions of their emotional conditions which include both the positive and negative emotions (Matthiessen, 2006). This group explains how people feel. The second group is in charge of judgment, and it takes into account the speaker's judgments based on ethics, social values and morality of other individuals. This category helps the speakers analyse if other people's behaviour is against or supports the speakers' norms. The third group is appreciation. This group is used to express the reactions made by the speakers and to evaluate things whether they qualify to be concrete or abstract, positive or negative. Affect is the core method for encoding feelings. The effect is later on re-contextualised to bring out behaviour regarding judgment and evaluation of the results of behaviourin terms of appreciation (Martin, 2003).

Amplification and grading can be done to all attitudes. Amplification refers to the choices that raise the emotional volume or lower its tone. Human emotions can be expressed in several ways which include facial expression, verbal expression, body posture and blushing. Communication of emotions is considered to be multidimensional, and it involves various channels such as the face, speech, language, voice, gesture, and posture. It has been proven that aphasic patients can retain certain automatic emotional aspects of speech. Under normal circumstances, it is hard for the patients to pronounce some words but when they experience any emotional change like anger, they are able to articulate the second word correctly (Marshall, Borod, & Koff, 1998; Heberlein et al., 2003).

The abstract language which is defined as volitional, relational and propositional and concrete language which uses instruments in speech and emotional utterance are used in combination in everyday communication (Heberlein et al., 2003). This combination is crucial in the emotional expression of the aphasic patients. Intonation which is both emotional and linguistic is used to convey the emotional tone, stress, and syntactic structure. The intonation



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impairment in aphasic patients is linked to the syntactic function of the utterance. The aphasics prove to exhibit natural terminal falling points in the short and simple sentences, but they are impaired when it comes to complex and longer sentences (Lorch et al., 1998).

Emotional language is any choice of words that employs emotional response. Apropos of aphasia, we can think of the patient as the audience whose emotions are triggered by such language use, but we can also think of the patient as the speaker whose emotions can inhibit or facilitate speech production.

To sum up, this study aimed to discuss the possible ways that can be of value to aphasia therapy other than speech-language rehabilitation. The research has majored on music therapy, content carrying gestures and emotional language as the fundamental alternatives for aphasia rehabilitation. Complementary options that aid aphasia therapy by using different devices and items to help recovery were not taken into consideration. Different approaches to aphasia therapy have been looked at in the three mentioned subtopics while extensive coverage of additional innovation has been given consideration. For instance, the melodic intonation therapy has emerged to be one of the best-known aphasia therapy which falls under music therapy. The limitations which emerge give room for further innovations in language therapy in future.

Similarly, rehabilitation including gestures has been encouraged to enable the boost up of aphasic communication in patients while improving their verbal skills. People with aphasia often employ "content-carrying" gestures that display a cueing effect to help language processing. Considering that these movements can have language-like properties in the same way as gestures used by mime artists and deaf signers, their use is encouraged by speech-language pathologists during therapy.

Human beings are constantly surrounded by words conveying emotions in their daily communications. The kind of information conveyed by such words develops different feelings in a person such as, a feeling of satisfaction or a feeling that brings tension and resentment. There exists different words with similar definitions but convey conflicting emotions whenever they are incorporated in communication. Therefore the choice of these emotional words contributes substantially in communication by aiding in the elaboration of the speaker's opinions and feelings which contribute to the semantic referent of a particular word improving human communication. The expression of emotions is encouraged with different techniques during aphasia therapy since it can facilitate word retrieval and communication.

The complementary toolkit for aphasia presented in this paper can be employed in various institutions such as the health sector and education sector to deal with cases of aphasia. Moreover, families with individuals suffering from aphasia condition can use them to help improve the cognitive abilities of these individuals.

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