

APHASIA AND COMMUNICATION

- A Literature review

Emiliene Eyongakpa Tabi

Degree Thesis

HUMAN AGEING AND ELDERLY SERVICES

2012

DEGREE THESIS	
Arcada	
Degree Programme:	Human Ageing and Elderly Services
Identification number:	10317
Author:	Emiliene Eyongakpa Tabi
Title:	Aphasia and Communication
Supervisor (Arcada):	Elisabeth Kajander, 2nd Reviewer, Birgitta Dahl
Commissioned by:	Kimmo Järvinen, Vanhusten Kotiapusaatio, Leenakoti
<p>Abstract: Aphasia is a common situation where speech is lost and can affect any one either through a stroke or brain injury. The situation where someone loses the speech is sometimes described as “missing speech”. All groups of persons ranging from children, young adults to elderly people can suffer from loss of speech and language. It is common especially amongst the elderly due to some age related factors. It is worth noting that a person with aphasia has lots of difficulties communicating. The purpose of this study is to examine the available tools and strategies that can be used to ease communication between a caregiver and an aphasic person. In order to meet with the aim and objectives of this study the author used Howard Giles (1973) Communication Accommodation Theory (CAT) that simply examines what happens when two speakers change their communication styles in order to accommodate each other. The CAT theory supports the use of Alternative and Augmentative Communication systems when communicating with aphasic persons. The study was guided by the following questions; 1- What kind of tools and strategies are available to communicate with aphasic persons? 2- How can these tools and strategies ease communication between persons with aphasia and their care givers? A qualitative method was used in this study. Deductive content analysis was applied while analyzing the selected articles and the findings were later on being categorized under two headings. Results of this study shows that there are available tools and strategies in forms of AAC systems and these tools can greatly ease communication between a caregiver and an aphasic person.</p>	
Keywords:	Approaches, Aphasia, Communication, Tools, Strategies, Rehabilitation, therapy
Number of pages:	73
Language:	English
Date of acceptance:	

DEGREE THESIS	
Arcada	
Koulutusohjelma:	Vanhus-Työn Koulutus Ohjelmassa
Tunnistenumero:	10317
Tekijä :	Emiliene Eyongakpa Tabi
Työn nimi:	Afasia ja Viestintä
Työn ohjaaja (Arcada):	Elisabeth Kajander, 2nd Reviewer, Birgitta Dahl
Commissioned by:	Kimmo Järvinen, Vanhusten Kotiapusaatio, Leenakoti
<p>Tiivistelmä:</p> <p>Afasia tarkoittaa sellaista tilaa, jossa puheen tuottaminen on kadoksissa ja jonka kuka tahansa voi saada halvauksen tai aivovamman aiheuttamana. Sellaista tilannetta, jossa joku menettää puhekykynsä kutsutaan joskus kadonneeksi puhekyvyksi. Kaikenikäiset lapsista vanhuksiin voivat kärsiä puhekyvyn tai kielentuottamisen katoamisesta. Se on yleistä erityisesti vanhemmilla ihmisillä ikään liittyvien tekijöiden vuoksi. On tärkeää huomata, että afasia vaikeuttaa huomattavasti viestintää. Tämän tutkimuksen tarkoituksena on tutkia olemassa olevia työkaluja ja toimintatapoja, joita voi käyttää helpottamaan vuoropuhelua hoitajan ja afaattikon välillä. Tutkimuksessa on käytetty tavoitteisiin ja päämääriin sopivaa Howard Gilesin (1973) kehittämää mukauttavan viestinnän teoriaa, joka yksinkertaisesti havainnoi mitä tapahtuu kahden ihmisen välillä, kun heidän pitää mukauttaa viestintätyylejään keskustelukumppaninsa mukaisesti. Teoria tukee vaihtoehtoisten ja apuviestintäkeinojen käyttöä afaattikkojen kanssa. Tutkimus ohjasivat seuraaviin kysymyksiin; 1- Millaisia työkaluja ja strategiat ovat saatevilla kommunikoida afaattikko henkilöt? 2- Miten työkaluja ja strategioita helpottaa viestintää välillä henkilöiden afasia heidän hoitajiaan? Tutkimusmenetelmä: Tutkimuksessa on käytetty kvalitatiivista tutkimusmenetelmää. Deduktiivista sisällönanalyysiä käytettiin valittuja artikkeleita analysoitaessa ja aineisto luokiteltiin sen jälkeen kahteen pääryhmään. Tutkimuksen tulokset osoittavat, että puhetta tukevista ja korvaavista kommunikaatiomenetelmistä löytyy työkaluja ja strategioita joilla voidaan huomattavasti helpottaa afaattisen henkilön ja hänen hoitajansa välistä kommunikaatiota.</p>	
Avainsanat:	Lähestyä, Afasia, Viestintä, työkaluja, toimintatapoja, kuntoutus
Sivumäärä:	73
Kieli :	Englanti
Hyväksymispäivämäärä :	

Contents

1 INTRODUCTION	7
2 BACKGROUND STUDIES	8
2.1 Etiology of Aphasia.....	9
2.2 Communicating with an Aphasia client	11
2.3 Consequences of aphasia and quality of life.....	12
2.4 The Concept of Communication.....	14
2.4.1 <i>Communication on a common level</i>	17
2.4.2 <i>Communication on a technical level (health care sector)</i>	17
2.5 Augmentative and Alternative Communication (AAC)	18
2.5.1 <i>Types of AAC systems</i>	19
2.5.2 <i>AAC Competences</i>	20
2.5.3 <i>Effects of ACC on speech production</i>	21
3 THEORETICAL PERSPECTIVE.....	21
3.1 Communication Accommodation Theory	22
4 AIM AND RESEARCH QUESTIONS.....	23
5 METHODOLOGY	25
5.1 Data Collection	26
5.1.1 <i>Database Search</i>	26
5.1.2 <i>Search words</i>	27
5.1.3 <i>Data screening (inclusive and exclusive criteria)</i>	28
5.2 Data Analysis	30
5.2.1 <i>Qualitative Content Analysis</i>	30
5.2.2 <i>Deductive content analysis</i>	31
5.3 Ethical consideration	32
6 FINDINGS	33
6.1 Available Tools and Strategies.....	33
6.1.1 <i>Aided Systems</i>	34
6.1.2 <i>Un-aided systems</i>	37
6.1.3 <i>Use of persons</i>	38
6.2 How tools and strategies ease communication	42

6.2.1 Psychological Effects	42
6.2.2 Social Effects.....	45
6.2.3 Physical Effects	48
7 CRITICAL REVIEW	53
7.1 Validity and Reliability	53
7.2 Limitations of the study.....	54
8 DISCUSSION/CONCLUSIONS	55
REFERENCES	58
APPENDICES	67
Appendix 1 Literature Review	67
Appendix 2 Abbreviations used.....	72
Appendix 3 Tables.....	73
Appendix 4 Figures	73
Appendix 5 Sample picture	73

FOREWORD

It is refreshing to know the approaches to use when communicating with persons who have lost their speech to aphasia. As I look at the way these persons struggle to communicate, it occurred to me that I must learn the best possible ways to ease communicating with them. So I set out into this research topic.

I will begin by giving all praises and adoration to God almighty... For all He has done. Many thanks also are due to the staffs and students of Arcada University of Applied Sciences, and friends who have contributed to make me the 'who I am' today. To Elisabeth Kajander, my supervisor, I will forever appreciate your encouragements and support! Am so indebted to Birgitta Dahl, for reviewing my work. I say thank you! To all the Hagel 08 students, thumb up for all the knowledge learned during presentations. To Dr/Mrs. Fobissie Kalame, I say, thank you for your invaluable help! And to Erica Ntoh, I appreciate your friendship... You are an inspiration. I will not stop appreciating everyone I met while climbing this ladder. You have in one way or the other helped to contribute to all that I am and will become. Every struggle I passed has shaped me and made me stronger.

To papa, Nso Divine, the bravest man I have ever known. I say thank you for giving me the most price less gift on earth, Education. To my dynamic mother, Nso Susan, I doff my hat to you! Thanks for the prayers. Your kind heart is making me to succeed in everything I do. You are beautiful, inside-out! To my siblings; Mrs. Tarkang Vivian Manyi, Marie, Mbi Charles (Em'kal), Dieudonne, Divine Williams and Lydiene-Favour Eyongakpa, I say thank you for all the moral support and steadfast love. May God forever meet each of your needs in Jesus' name. You have all brought out the best in me.

Last but not the least, my special thanks goes to my dearest husband, Melvine Ngwaseh, My daughter, Angel Vera Ngwaseh, and to my son, Melvine Jr Ngwaseh for your patience with me while doing this research. I love you guys completely, with all my heart. I must confess, You guys are my world... No me without them!

God will never stop Blessing You!

Helsinki, April 2012

Emiliene Eyongakpa Tabi.

1 INTRODUCTION

As the human body ages, a lot of changes occurs resulting to diminishing functional capacities. Some of these changes are biological while some are caused by illnesses. Amongst these illnesses is stroke, which is the major cause of aphasia. Aphasia is not a disease but a symptom of brain damage. *“Aphasia is a disorder that results from damage to portions of the brain that are responsible for language. It usually occurs as a result of stroke or brain injury”*. (National Institute of Deafness and other Communication Disorders, 2008) A person with aphasia has lots of difficulties communicating. It is worth noting that aphasia does not affect a person’s intelligence. It is just a situation in which one cannot easily find the words. *“Not being able to say anything is not the same as having nothing to say”*. (Nordic Aphasia Association, files/716)

In today’s world, there exist several approaches that can be used to ease communicating with aphasic persons in the forms of tools and strategies. These are called Augmentative and Alternative communication systems (AAC). AAC are used to assist those with speech problems. (American Speech-Language Hearing Association, 2002) More often when speech is lost, a speech therapist after assessing the individual will recommend new alternatives to communication depending on the aphasic person’s well-being. It has also being noted that most individuals with severe to profound intellectual disabilities are likely to require Augmentative and Alternative communication systems and devices. (Sigafos et al., 2007)

The author will be looking at the aspect of communication between a caregiver and a person with aphasia. This will be done by examining the available Augmentative and Alternative Communication (AAC) systems and at the same time check whether these available AAC systems are helping to ease communication between aphasic persons and their caregivers.

2 BACKGROUND STUDIES

In this section, the author discusses the basics of the study. This will definitely help to determine how to answer the research questions. A theoretical background study for any scientific writings is recommended. (Peterson et al., 2001)

Aphasia usually occurs as a result of stroke. Stroke occurs when blood that is flowing to the brain and the blood vessel that carries blood from the heart to the body are being interrupted. When these two situations occur, then brain cells will begin to die and brain injury occurs. (National Stroke Association, 1988)

Statistically, 85% of people with aphasia have suffered a stroke. Stroke can affect both the young and the old. But the mostly affected group is the elderly. This is for the simple reason that stroke incidences doubles after the age of 55 years. The disorder affects about one in every 275 people, most commonly older individuals. It is estimated that approximately 80,000 individuals become aphasic each year and that one million persons currently have aphasia in the United State. (National Aphasia Association, 1988) While in the United Kingdom, its incidences are estimated at 20.000 new cases annually. (Speakability, 2000)

According to the traditional medical model, aphasia can be regarded as impairment, with treatment approaches focusing on the restoration of language skills. (World Health Organization, 2001) Risk for aphasia increased significantly with age, such that each advancing year was associated with 1-7% greater risk. While 15% of individuals under the age of 65 experienced aphasia, in the group of patients 85 years of age and older, 43% were aphasic. (Engelter et al., 2006) Stroke is the most common cause of aphasia, and it has been estimated that about 20-40% of stroke patients develop aphasia. (Wade et al., 1986, Yavuzer et al., 2001) Stroke is the commonest cause of adult disability in the UK. Over a million carers provide care for more than 50 hours a week in England and Wales (Office for National Statistics, 2003).

Up to 40% of individuals with aphasia have chronic, severe language impairments. (National Aphasia Association, 1988) Individuals with severe aphasia often do not re-

cover sufficient language capability to become functional communicators without compensatory support from a variety of AAC strategies. (Beukelmam et al., 2007) There are available tools and strategies that can help in communicating with aphasic persons. These communication systems are called Augmentative and Alternative Communication systems. There are two types of AAC systems; aided and un-aided. AAC systems range from computer devices in forms of low or high technology, drawings, communication books and boards, remnant materials, gestures, writing, and the use of body movements.

Due to the increasing rate of people suffering from speech and language problems, it is said that Augmentative and Alternative Communication systems and devices will increase in tens of millions worldwide. (Cossette & Duclos, 2003) Considering the above giving statistics that shows the increasing number of persons in need of the Augmentative and Alternative Communication systems, it becomes a global concern to examine the available AAC systems that can be used to communicate with people who have aphasia.

2.1 Etiology of Aphasia

The national institute for deafness and other communication disorder (2008) defines Aphasia as “*A disorder that results from damage to portions of the brain that are responsible for language*”. For most people, the areas on the left side (hemisphere) of the brain are usually affected. Aphasia usually occurs suddenly, often as the result of a stroke or head injury, but it may also develop slowly, as in the case of a brain tumor, an infection, or dementia. The disorder impairs the expression and understanding of language as well as reading and writing. (National institute for deafness and other communications disorder, 2008)

Aphasia is also sometimes associated with Apraxia and Agnosia. Apraxia is a movement disorder caused by damage in the brain, while Agnosia is a disorder that affects a person and causes them not to be able to make meaning out of their sentences. (National Aphasia Association, 1988)

There are different types of aphasia but the two main types are; Broca and Wernicke aphasia. The different types of aphasia depend upon the areas of language, size and location that has being affected. In some cases, aphasia can affect one’s cognitive abilities whereas in other cases it does not. A person with aphasia can be affected with deficits in speech and language activities while in others it goes beyond that to affect reading, and writing. In most aphasic persons the left side of the brain that is in charge of controlling one’s ability to speak or understand is affected. The diagram below shows the left view areas of the brain that has been affected by Broca’s and Wernicke’s aphasia.

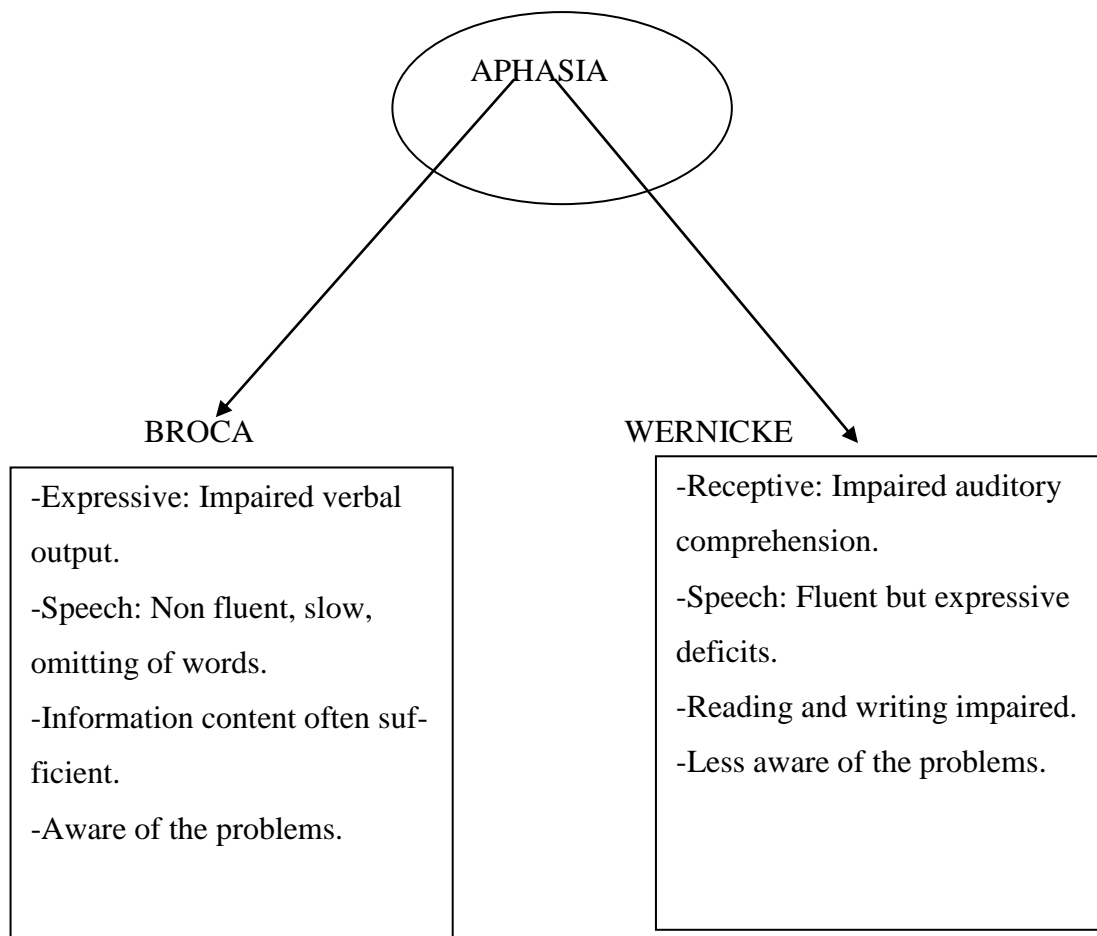


Figure 1. Diagram showing areas of the brain affected by Broca and Wernicke Aphasia: Accessed on 10.01.2012, through:
<http://en.wikipedia.org/wiki/image:BrocasAreaSmall.png>

The two different types; Broca and Wernicke aphasia (Expressive and Receptive, respectively) have different characteristics. With expressive aphasia, the person knows what he or she wants to say yet has difficulty communicating it to others. While with receptive aphasia, the person can hear a voice or read the print, but may not understand the meaning of the message. Oftentimes, someone with receptive aphasia takes figurative language literally. (National Aphasia Association, 1988)

The differences between Broca and Wernicke aphasia has been illustrated more on the table below:

Table 1. Characteristics of Broca and Wernicke Aphasia.



From the above table, it has been seen that aphasia results in the loss of speech; hence the illness limits fluent communication. As a result of this, messages, actions, wants and intentions of a person with aphasia are sometimes being misinterpreted by their caregivers; hence caregivers should investigate about the available AAC systems and learn how to use them. This will help them to understand the ways aphasic persons communicate thereby easing communication between them.

2.2 Communicating with an Aphasia client

As defined already in the previous chapters, aphasia occurs when the blood supply vessel that carries blood to the language –relevant area gets block, damaging the cells that controls communication. (National Aphasia Association, 1988) Communication is so important in our everyday lives. Communicating with an aphasia person sometimes can be so challenging. It entitles a whole lot of team work and collaboration amongst the caring team (multi professionals) that includes; doctors, speech therapists, caregivers

and the aphasic person. In order to help the aphasia person, the support and information needed by the aphasic person should be properly transmitted by all the team members. The person with aphasia also has a great role to play by being active and following the advice given by all team members especially the therapist who must always examine the well-being of the aphasic person in question before starting any rehabilitation programme. Sometimes it is difficult for caregivers to understand and know the best ways to communicate with a person who has aphasia. Caregivers should learn other alternatives to communication that are different from talking (oral speech) or writing for the benefit of aphasic persons. (Sarno, 2004)

Communicating with someone who has aphasia is different and complex because the loss of speech becomes a big challenge to the person with aphasia. A caregiver should be able to get the big picture of a person with aphasia by understanding the changes that has occurred from the onset of aphasia. Communication plays an important role in caring; hence caregivers should be able to learn the best ways to communicate with a person with aphasia. Aphasia therapies aims to improve a person's ability to communicate by helping him or her to use remaining language abilities, restore language abilities as much as possible, compensate for language problems and learn other methods of communicating. (Sarno, 2006)

2.3 Consequences of aphasia and quality of life

Stroke usually in many cases results in the loss of language and other cognitive impairments that ends up preventing the survivor from actively participating in their personal daily routines, drugs administration and decision makings. (American Heart Association, 2010) A person who has aphasia is in a state where he/she cannot easily communicate freely hence more often, their needs are not well met thereby reducing their quality of life.

A person with aphasia is faced not only with language impairments but also long-term psychological effect such as personal losses and depression. The impairments minimize their activities with daily living, causing them to depend more on their caregivers. When

Physical functioning of a person with aphasia decreases, quality of life also deteriorates. (Bond and Corner, 2004:15)

Quality of life is seen as the degree of which satisfaction or dissatisfactions are felt by people within various aspects of their lives. It has been defined “*as a complete model consisting of personal autonomy, expressed satisfaction, through physical, mental well-being, social integration and cultural factors*”. (Bond and Corner, 2004:15)

Quality of life has two dimensions; Objectives and Subjective. Objectives, includes general health and functional status while Subjective, includes life satisfaction and self-esteem. Health is seen to be the first priority when it comes to quality of life. Not being able to communicate freely is a big handicap. For many aphasic persons, not being able to talk is a barrier to feeling satisfied and happy due to the fact that the impairments cause physical and psychological dependencies.

In caring for a person with aphasia, a caregiver, together with the other professional team mates must understand first and foremost the sudden change that has occurred in the life of an individual with aphasia and try to encourage them to use their remaining abilities and enjoy life to the fullest. Making them know that there is still more to life without using oral speech or being able to write. When you are faced with aphasia, usually there occurs a gap in your life caused by the simple fact that you no longer have the ability to be in complete charge over your own life as before. The good news is that most caregivers are vested with the knowledge on how to communicate with aphasia persons thereby improving their quality of life. (Sandt-Koenderman, 2011 pp. 21-27)

The use of Alternative and Augmentative Communication (AAC) systems that assist in making communications possible to some voiceless persons will help to improve their quality of life. AAC is all about people and interactions. It helps individuals with speech problems to become more sociable and able to express their minds through the available tools, and strategies.

As a caregiver, attempting to fit your legs in the shoes of a person with aphasia will help the caregiver to provide care in creative ways that will end up giving value to a person with aphasia and helping them maintain their dignity.

Caregivers have the responsibility to value a person with aphasia even though they have lost their speech. Although this will depend on caregiver's individual attitudes and their personal approaches to how they value disabled persons in general. It is worth remembering that a stroke survivor who suffers from aphasia still has the same personality as before. Caregivers should not only focus on the disabilities a person with aphasia has, but rather consider the available approaches to communicate better with them. Augmentative and alternative communication systems can help to improve the quality of life of persons with Aphasia. Quality of life is said to be any thing that makes a person to feel good and satisfy. The approaches to how communication is being channeled have a greater role to play in order to improve the quality of life for aphasic persons. Hence caregivers can learn the best ways to communicate with those affected by aphasia. (Sandt-Koenderman, 2011 pp. 21-27)

2.4 The Concept of Communication

Communication has a greater role to play in our every day's life. The flow of communication is needed in every giving situation that involves the exchange of ideas. Persons with aphasia also need to be understood and their wants met. This can be done solely by exploring different ways of communication that can be used when speech is lost.

According to the Oxford dictionary of current English, Communication can be defined "*as the passing of information in humans through a simple process that can be termed sharing*". Communication is so important when human beings are exchanging view points and ideas. On a common level, communication is the passing of information between human beings.

According to (Andersen, 1959) "*Communication is the process, by which we understand others and in turn endeavor to be understood by them. It is dynamic, constantly changing and shifting in response to the total situation*"

Communication can also be defined as, “an exchange of facts, ideas, opinions, or emotions by two or more persons”. (Newman & Summer, cited by Patnaik, 2008) There are two types of communications; verbal and non-verbal. Communicating with a person with aphasia entitles a lot sometimes. In order to maximize the effectiveness of communication between a person with aphasia and a care giver, various techniques, tools, and strategies have to come into use so that a non-speaking person is being understood by a caregiver.

During the process of communication, there must be something in common between the sender and the receiver. It is said to be complete when the receiver has understood the message of the sender. Communication usually involves two or more persons. It can be done through speech, symbols, text, graphics, sounds, body language, eye contact, pictures, postures and gestures. Therefore there are two major forms of communications between humans; verbal and non-verbal.

Below is an illustration showing the process of communication. The main idea in this illustration is for the reader to understand the fact that communication; be it verbal or non-verbal is said to be complete only after the receiver responds to the message received and the sender then gets the feedbacks. This illustration also shows the inter relationship that exists between the sender and the receiver.

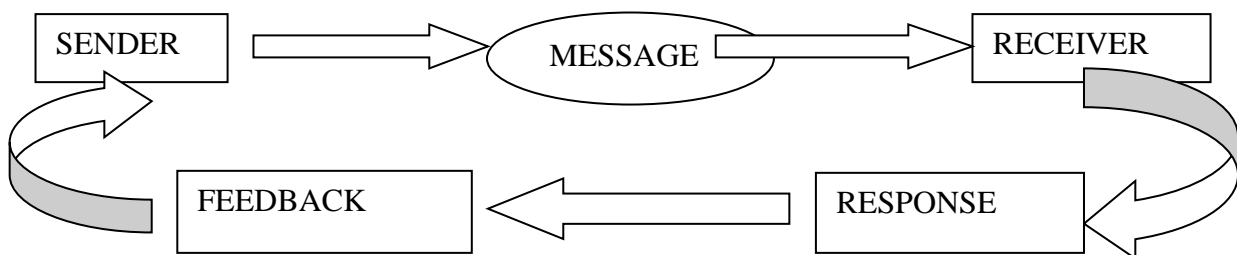


Figure 2. (Illustration showing the process of communication)

From the above illustration, there are certain things that must occur or be included in a role to make up communication and these are called elements. (Buck, 2009) In order for communication to be complete, there must be a message that needs to be transmitted by

a sender to another person being the receiver. It goes beyond that to include the method to be used and ends up with feedbacks received by the sender of the message. As has been explained in the back ground section, Aphasia, a disorder that results from damage to portions of the brain that are responsible for language can interrupt ones conversational ability, writing ability but reasoning faculties more often remains the same. (National Stroke Association, 1988) Therefore learning other non-verbal modes of communication together with available AAC systems is a call for concern for caregivers and aphasic persons.

Miss-conceptions occur when communication is not fluent between humans; in this context between aphasic persons and their caregivers. Therefore it is of vital importance implore other modes that will ease communication between them. Satisfaction with one's health is of vital importance to all humans. The loss of speech to a person with aphasia usually takes hold of them. And generally, life becomes better when someone understands your need and in return can give a helping hand. Usually a person with aphasia faces embarrassments, depression, and dissatisfaction that arise due to their limitations to communicate, and this prevents them sometimes from receiving optimum care. Usually, satisfaction is related to human's expectations about care and dissatisfaction arises when one's expectation are not met. (Johansson-Oleni, 2002) Due to this reasons, caregivers have to learn the best ways of communicating with aphasia persons. Regarding aphasia and communication, caregivers have to learn how to use the available Augmentative and Alternative Communication systems in order to provide them with quality care through communication.

As mentioned earlier, communication has a vital role to play in our daily livings. It is one of the basic necessities of life. We cannot live a day without communicating. Messages are being expressed daily either through verbal or non-verbal communication modes. Life without communication seems worthless. Sometimes non-verbal communications, for example, gestures, eye contact and facial expressions can be more productive than by expressing words through speech.

2.4.1 Communication on a common level

On the common level communication occurs when the person passing the message does it through any means possible and the receiver in return understands what the message is meant for. Communication becomes successful when outcomes are felt or seen through response that comes from the message that has being transmitted. (Newman & Summer, cited by Patnaik, 2008)

2.4.2 Communication on a technical level (health care sector)

In a situation where speech is lost, a speech and language therapist should be consulted. According to Sarno 2006, *“Aphasia therapies are very much helping to improve a person’s ability to communicate by helping him or her to use remaining language abilities, restore language abilities as much as possible, compensate for language problems and learn other methods of communicating”*. Therapy refers to practicing a particular thing over and over again in order to augment a giving situation. According to the American Speech-Language-Hearing Association, The overall objective of speech-language pathology services is to optimize individuals’ ability to communicate and/or swallow in natural environments, and thus improve their quality of life. This objective is best achieved through the provision of integrated services in meaningful life contexts. (American Speech-Language-Hearing Association, 2001 p.26)

Communication on a technical level is not easy because it involves at least one party who has lost the ability to communicate freely. All groups of persons ranging from children, adults and elderly people can suffer from lose of speech and language. As discussed earlier, a situation where someone losses the speech is called aphasia, sometimes described as “missing speech”. In a situation where speech is lost, AAC systems should be used as substitutes. (American Speech-Language-Hearing Association, 2002 pp 97-106)

2.5 Augmentative and Alternative Communication (AAC)

By definition, AAC is an intervention approach that are different from oral speech including manual signs, communication boards with symbols, and computerized devices that are used for the expression of thoughts, needs, wants and ideas. (American Speech-Language-Hearing Association [ASHA], 2002)

AAC is described “*as the effort to study and when necessary compensate for temporary or permanent impairments, activity limitations, and participation restrictions of persons with severe disorders of speech-language production and/or comprehension, including spoken and written modes of communication*”. (American Speech-Language Hearing Association [ASHA], 2005)

Alternative and Augmentative Communication (AAC) systems can be seen as an alternative way of helping individuals with speech problem and language disorders express themselves. Alternative in this context means any other mode of communication that is used instead of speech while Augmentative method involves any mode of communication that is used to supplement speech. Sigafos, (2001, pp 152-16)

AAC has also been noted as “*a system with four primary components; symbols, aids, strategies and techniques*”. (Beukelman & Mirenda, 2005) Augmentative and alternative communication systems can help to improve the quality of life of a person with Aphasia. Augmentative and alternative communication systems and devices are mostly used when speech is no longer functional. It is also noted that those who have lost their speech and are still cognitively able to understand, will report positive result by using the AAC. (Beukelman & Mirenda, 2005) This is for the simple reason that life can become easier and much better when someone can understand what you want and in return give a helping hand.

In order for life to become better for a person with aphasia, a speech and language therapist has to assess the individual concern and try an available tool and strategy that exist as an alternative or augmentative communication (AAC) system that can help rehabilitate and or restore the remaining language ability of the aphasic person in question.

Extra materials that range from a whole lot of different tools are needed when using alternative and augmentative communication systems. The list includes, photographs, paper and pencil, drawing symbols, books, and even devices that can produce voice output, and written output unanimously. These devices are now widely in use as aided AAC interventions. (Schlosser, 2003a) When using the electrical communication devices, the user is given the opportunity to use the pictures, phrases, symbols, gestures, letters and words in other to create messages. Some electrical devices can also produce sentences and words in different languages making them more advantageous and highly in demand.

2.5.1 Types of AAC systems

AAC systems have being program and are dedicated to assist persons with language disorders to communicate better. Augmentative communication methods include manual sign, gestures, use of pictures, spelling, word/phrase boards, etc. Augmentative communication systems may be used on electronic and non-electronic communication aids. While Alternative to oral speech are to be used when it becomes clear that for some individuals non-speech systems are the only means of communication possible. The author uses the word tools to refer to the two types of AAC systems; aided and un-aided alternative and augmentative communication (AAC) systems that can be used to ease communicating with aphasia persons.

Aided AAC systems, are other forms of communication, other than speech. Aided AAC systems may use electronic or non-electronic aids. Electronic aids are used through assistive technology ranging from handheld to computer bases programs. (Logsdon, 2010) The aided forms of communication consist of those approaches to communication that requires some additional external materials. The list includes computer devices and software programs (assistive technologies) [in the form of a computer that “speaks” for its user (also known as a “speech-generating” device) via either synthetically produced speech or recorded natural (digitized) speech, to laptop computers that talk and can perform a wide range of other operations (word processing, World Wide Web access) and computerized devices], and communication boards (pictures, photographs, line draw-

ings, symbols, printed words, pens papers (Beukelman & Mirenda, 2005)) It is of interest to note that aided communication systems combines the use of tools and devices in addition to body language to express ideas. (Lloyd et al., 1997)

Un-aided AAC systems are other forms of communication, other than speech, that does not require any props or devices. Unaided AAC includes body language, gestures, facial expression and the more formal use of manual sign. The un-aided AAC systems are more often used to communicate with aphasia persons. Also it is for the interest of the user to know that the unaided communication systems demands personal attitude which can be formal or informal. The list includes; gestures, facial expressions pointing, and other body movements.

Un-aided AAC systems involves non-verbal communication modes and previous research shows that non- verbal communication accounts for 55% of all communication made and these include body movements, facial expressions, and gestures. (Mehrabian, 2009)

2.5.2 AAC Competences

Communication is important to all and for that simple reason, the American Speech Language Hearing Association, is making effective communication a human right, accessible and achievable for all. (American Speech Language Hearing Association, 2002)

It is worth noting that, before AAC system become applicable, a speech therapist has to assess the client's individual cognitive and physical abilities, and also look into the most useful words needed in the individual's life in order to know the best device that will fit the client in question. (Kangas & Lloyd, 2005) A person in use of an AAC system should also possess some competencies that are different from in the situation of fluent communication. Four of these competencies have being identified in the areas of Linguistic that deals with the linguistic knowledge needed to use the AAC systems, The use of alphabet board where the user can point to the letters found on the board, Operational competence that refers to how the AAC system works, and Social competence that involves the social skills needed during the process of communication. (Light et al., 2003)

2.5.3 Effects of ACC on speech production

People faced with language disabilities are usually encouraged to try as much as they can to use their remaining skills. Hence those who are using the AAC systems are advised to try combining their remaining skills with the AAC system in use so as to achieve good results. The best current evidence to back this suggests that AAC use does not hinder speech development but instead often has a facilitative effect on speech and language learning. (Millar et al., 2006 and Schlosser & Wendt, 2008) cited by Attila et al., 2011

AAC strategies are communication strategies that a person uses as an alternative or to help develop receptive and expressive language skills, including speech. Sometimes it goes beyond to include any giving plan on how a caregiver can decide to proceed with something that can help to ease communicating with an aphasic person. Most of the strategies used with aphasic persons, ranges from the use of rehabilitation plans, plans on the best ways of meeting and talking with aphasia clients.

AAC tends to enhance communication abilities to those who have lost their speech. Learning how these available AAC systems work is of utmost importance. The use of tools and strategies is usually a learning process for both persons with aphasia and caregivers. It has be noted (Cossette & Duclos, 2003) that people in need of speech assistive devices will increases worldwide in tens of millions. It is important to know and understand how these available tools and strategies work.

The use of these tools and devices helps to improve their quality of life by making communications possible to some voiceless persons. AAC is all about people and interactions. It helps individuals with speech problems to become more sociable and able to express their minds

3 THEORETICAL PERSPECTIVE

Theoretical framework is a collection of interrelated concepts in the form of a theory. It guides the research, determining what things are to be measured, and what statistical relationships to look for. *“Theory is like a lens where observations can be done by different kind of lenses and then the viewer will be able to figure out questions on different perspective”*. (Bengtson et al 2009)

In this section an already existing theory that supports the fact that AAC systems can be used as an alternative or to augment speech while communicating with aphasic persons will be examined. The Communication Accommodation Theory by Howard Giles (1973) will be examined.

Reading through the theoretical perspective of this study, the reader will understand the reasons why it is important to use alternative and augmentative communication systems to communicate with persons who have aphasia.

3.1 Communication Accommodation Theory

Howard Giles founded the Communication Accommodation Theory (CAT) in 1973 and his school of thought describes CAT as a theory that simply examines what happens when two speakers have to change their communication styles to accommodate each other. Communication Accommodation Theory (CAT) (Howard et al., 1973) explains and describes how information needs to be processed.

This theory also explains why speakers sometimes need to accommodate their speaking styles. According to the Communication Accommodation Theory, during communication, persons involved should be able to either accommodate or adjust their verbal and non-verbal speaking styles to accommodate others.

Also, it is seen that interpersonal factors have a greater role to play in the accommodation theory. CAT also assumes that accommodation varies depending on the appropriateness of the situation; therefore communication should sometimes be accommodated. (Howard et al., 2006)

CAT also supports the fact that, while communicating, people should sometimes bring in their background, attitudes and knowledge learned. Bringing in these aspects can be noticed through their speech and behaviors since there exist similarities between speech and behaviors depending on the basic elements of communication.

Maine's Communication Accommodation Theory (initial version by Howard et al., 1973) tries to explain why and how we need to adjust our style of speaking when exchanging ideas in order to fit any particular situation. Maine further relates this adjustment to our motivation of doing so and also assumes that the CAT has increase benefits in the sense that when we adjust or accommodate our style of passing messages, communication becomes efficient and accommodates the differences between the speakers. (http://www.pptuu.com/show_25938_1.html)

Sanders, 2009 suggests in her chapter 30, Communication Accommodation theory of Howard et al., 1973 that "*the process of seeking approval by meshing with another's style of speaking is at the core of what Howard, meant as speech accommodation theory*". Sander goes further to mention two different communication accommodation strategies with different motivations. The two strategic forms of communication that diverse people use when they interact, is convergence and divergence. Convergence is a strategy by which you adapt your communication behavior in such a way as to become more similar to another person. Divergence is a communication strategy of accentuating the differences between yourself and another person.

The CAT theory is evident based facts that support the introduction of new modes to assist communicating with persons who have lost their speech. As persons who have lost their speech try to use AAC systems, caregivers can also adapt their speaking styles to fit those they are caring for. Squishing from oral communications to other forms of alternatives modes is a way of adjusting one's speaking style.

4 AIM AND RESEARCH QUESTIONS

The author decided to carry out this study in order to explore the best available approaches to use and ease communication between the caregiver and persons with aphasia. The main idea came to the author's mind while doing a practical training in an institution. The author became so frustrated attending to a client with aphasia. This caused the author to remember a close relation (of blessed memory) who had lost her life to stroke and aphasia.

When misinterpretation of ideas occurs between a caregiver and an aphasic person due to the loss of speech by the aphasic person, provision of care becomes difficult. Previous researches have been carried out already about the best possible ways of easing communication between a person with aphasia and a caregiver. Therefore, it is important to know and understand how these available tools and strategies are working.

This study will examine the available tools and strategies that are available to communicate with aphasic persons and also investigate how they can ease communication between these two different groups of persons, laying emphasis on the effects or impacts that can be realized while using AAC systems.

In trying to investigate the above stated aim, the author goes further to formulate two research questions. Research question is vital when carrying out research work. "*Research questions helps to focus your literature searches, data collection, analysis and writing*" (Lejonqvist, 2009).

The author of this study will be guided by answering two research questions;

- 1- What kind of tools and strategies are available to communicate with aphasic persons?
- 2- How can these tools and strategies ease communication between persons with aphasia and their care givers?

5 METHODOLOGY

In this section the author explains the methods and the data bases that are used for this study. How the data was collected and the search engines used shall be examined. The author goes further to explain the search words used; how, and why they were chosen. The author will also examine the inclusion and exclusion criterions used to select the articles and finally explain how the data collected was analyzed.

The state of art of this study is a literature review. The author chose literature review in order to examine all the already known facts about the topic and unanswered questions by previous researchers. In the opinion of (Tranfield & Starkey, 1998) literature review has increasingly become important in the health care field as a result of the necessity for evidence based new methods of provision of healthcare. Doing a literature review study in health care setting is of vital importance and it is almost inevitable. Health care information is being updated daily and nurses are also responsible in providing the consumers of nursing research with updating relevant findings that may affect their practice. (Polit et al 2003 pp 4-17) *“Doing a Literature review in health and social care: A practical guide”* (Aveyard, 2007), was also used for the methodology.)

Polit & Beck, (2003, P 111) stated, *“A literature review is a written summary of the state of existing knowledge on the research problem. It involves identification, selection, critical analysis and written description of the existing information on a topic”*. In addition, the main idea of reviewing previous literature is to attempt answering certain questions and come out with new solutions. The main goal of research is to develop, refine, and expand already acquired knowledge. (Polit et al., 2001) In the same light it has been said, qualitative literature review aims at bringing out information from previous researches on the same topic and explaining how they relate to each other. (Lobiondo-Wood & Haber, 2006)

There are five main stages when conducting a literature review. Stage one is choosing a topic. Stage two is to identify studies that are relevant to the purpose of the study from electronic databases, web searches, and books. Stage three is scrutinizing selected data that is relevant to the research question by applying the inclusion and exclusion criteria

in order to obtain primary articles. Stage four is reapplying the inclusion and exclusion criteria in order to assess the studies for quality and stage five is using the quality criteria for qualitative studies. (Khan et al., 2002 pp. 1-109)

5.1 Data Collection

In this section, the author explains and describes the methods used in collecting the data that is used for the study.

5.1.1 Database Search

The search was conducted using the following database search engines; Web of Science, Academic Search Elite (EBSCO), and Google Scholar. The author started by searching for articles using the Google scholar but finally did not use the articles. Firstly the author searched for articles that related to aphasia and communication through the Google web. It was noticed that the articles were both general and scientific articles mixed up together.

The author later on redirected the search by exploring the Google scholar search engine. The preliminary search resulted to 25,200 articles, including only articles published from 2000 to 2011. The author continued scanning by using the key words. This hit gave a sum of 16,600 articles which were still not arranged in order of relevance even though good for a scientific study thus making it very difficult to get few most relevant articles. Added to that, the author could not freely access most of the articles from Google scholar hence no article was selected from the Google scholar.

Eight of the articles used for this study were selected from the Web of Science search engine, accessed through the Nelli portal connected to the E-library of the University of Helsinki network. The author started by doing an advanced search, for articles that were published, 2000-2011 and the first hit gave a total of 2,215 articles. Later on, the author limited the search results by relevance. By relevance, articles that were closer to the search words appeared first in the search results and this amounted to 989 articles. From this point the author limited the search again by using the keyword “communication”

within the existing results and this search resulted to 502 articles. Author continued searching by screening the abstracts of the 502 articles by including the word “and” that resulted to 354 articles. The author continued searching again using another keyword “approaches” from the abstracts of these 354 articles and it resulted to 97 evidence based articles that met with the inclusion criteria and finally 8 most relevant full text articles were selected from this search engine. It is worth noting that these eight chosen articles had something relating to the use of alternatives and augmentative communication systems for persons with aphasia which serves as the foundation for answering the research questions.

The author also used the Academic search Elite (EBSCO) for the study. Four of the selected articles were taken from the Academic Search Elite. It is worth noting that EBSCO database that is connected to the Nelli portal of Arcada University of applied Sciences provided a range of library services and had good scientific articles that could be accessed. The initial search from this search engine resulted to 915 titles. A second scan was done through these 915 titles and this search resulted to 77 articles that were deemed relevant to the study by the author since they met with the inclusion criteria. Finally the author selected 24 articles that appeared as “full text” for further examination of which 4 were finally chosen in order of relevance and added to the 8 articles gotten from the Web of Science, making a total of 12 articles used for the study.

5.1.2 Search words

The search words were generated from the topic and purpose of the study. During the search, words were combined with “and” in order to get better results. When “and” was used to link two or three different search words, search engines gave less but most relevant results. The search terms used for this study included aphasia, approach, strategy, therapy, rehabilitation and tools in combination with the following words; communication and conversation.

The data bases were screened using the following search strings:

- Communication and aphasia and approach
- Communication and aphasia and tool

- Communication and aphasia and strategy
- Approach and aphasia and communication
- Aphasia and communication and therapy
- Aphasia and Conversation and therapy
- Aphasia and rehabilitation and Communication

After selecting the topic, the author used inclusive and exclusive criteria as the selection criterions to select and screen the articles that could best answer the research questions by using the key words seen above. It is only by collecting data (using special criterions) that any researcher can go further to answer the research questions correctly. This study was done by applying the inclusion and exclusion criteria in order to find out the most relevant articles needed for this study. According to (Burns & Grove, 2001) “*Inclusion criteria refers to the characteristics an article has to meet in order to be used for the study, whereas the exclusion criteria are the characteristics of an article that makes it unsuitable for the purpose of the study*”. In addition, Inclusion and exclusion criteria are “*combinations of limit that are necessary to focus a research work and pragmatic limitations that are required due to the resources available*”. (Aveyard, 2007 p 60)

5.1.3 Data screening (inclusive and exclusive criteria)

The inclusion criteria the used for selecting articles for this study are:

- Published articles based on approaches to aphasia and communication that are relevant to the research topic.
- Studies that confirms the availability of tools and strategies to communicating with a person who has aphasia and how they can help to ease communication
- Literature that are written only in English
- Articles and journals published from the year 2000 – upwards was included (because researches on health sciences usually require current information).
- Studies that were scientifically written were included
- Articles and Journals rated as scholarly were included since they are rated as high quality research.

- Author included articles that repeatedly appeared in other database search engines.
- Literature that was well organized, focused and understandable was included.
- Literatures and journals, that appeared as full text and available electronically was included.
- Studies carried out in the developed world were included.
- Articles and other previous researches that included a bibliography of the resources that were consulted were included.

The exclusion criteria used are:

- Studies that had similar titles but could not be used to answer the research questions were excluded from the study.
- Unpublished literatures and articles that were not written in English were excluded.
- Literatures and journals that were not easily accessible as “full text” were excluded.
- Articles that did not mention the keywords were excluded.

Finally, a total of 12 scientific articles was selected and reviewed for the study as illustrated in the table below.

Table 2. Table shows where and how the articles used for this study was chosen.

Database search Engines	Hits (Key-words and string)	Hits (Refined/ relevance/abstract/ “and”)	Hits (Refined within results)	Selected articles
Google Scholar	25,200	16.600	X	0
Web of Science	2,215	989/ 502/ 354	97	8
EBSCO	915	77	24	4

From the table above, it is marked “X” under Google scholar Hits (Refined within results) because the author did not continue to search any article which is evidence based through the Google scholar search engine after the second search due to limited accessibility).

5.2 Data Analysis

Content analysis in a deductive way was used as a method by the author to analyze data gotten from previous literature. Content analysis can be applied to both qualitative and quantitative data in an inductive or deductive way. (Elo & Kyngäs, 2007)

5.2.1 Qualitative Content Analysis

This is a qualitative study. Qualitative content analysis is a research method for the subjective interpretation of text contents and data’s by systematic classification and identity themes or patterns. (Graneheim & Lundman, 2004) A qualitative research which aims at understanding previous theories or models was used for this study making the study more subjective and less generalizable.

Qualitative content analysis is defined as *“any qualitative data reduction and sense-making effort that takes a volume of qualitative material and attempts to identify core consistencies and meanings”*. (Patton, 2002 p 453)

In a similar way, Content analysis has being described as *“A research technique for making replicable and valid inference from texts (or other meaningful matter) to the contexts of their use”*. (Krippendorff, 2004) Through content analysis, condensed and broad description of a phenomenon will be chased, new insights will be provided, and the understanding of this phenomenon certainly will be deepened. (Elo & Kyngäs, 2007)

The author of this study did a content analysis by categorizing the study materials that attempts to answer some unanswered questions by previous researchers in an attempt to come out with some new goals. Hence throughout the study the author will be working

with data such as words, text, and pictures in attempt to answering the research questions guiding this study. By doing this, the author will draw conclusions from the read and summarized literature that will allow and permit the research questions to be investigated and produce new results.

5.2.2 Deductive content analysis

When doing a content analysis, it is important to categorize the data that has being used for the study and in this case, the author used the deductive method. *“A deductive approach is based on an earlier theory or model, therefore it moves from the general to the specific”*. (Burns & Grove, 2005) It has being mentioned, (Elo & Kyngäs, 2007) *“deductive content analysis is good for studies where the main findings relies more on previous theories, model, mind maps”*.

In this study the Communication Accommodation theory that supported the use of AAC systems was examined. It is worth noting that before analyzing any data, the most important aspect to take into consideration is to be well vested with the primary source of literature that is to be used for the back ground studies and for answering the research questions. In other to do this, the author of this study read the raw data several times, over and over in order to get answers to the research questions. According to (Thomas, 2003), *“The best way in doing so is by reading the raw data several times in order to develop various categories from the data into a model of framework so as to identify key themes”*.

In using a deductive approach, some hypothesis will be confirmed or rejected as the author proceeds to categorize the data in other to pick out the important materials that can answer the research questions. The author read thoroughly through the twelve articles used in this study so as to pick out all the important concepts and relevant findings that could answer the research questions and later on proceeded to analyze and categorize the findings that emerged from the study. Hence a logical necessity was involved in concluding by using a deductive method in categorizing the findings.

5.3 Ethical consideration

Ethical consideration is perceived to be, “*Ethical principles guiding public health research built on a foundation of medical ethics, developed in the first instance to regulate the conduct of clinical research*”. (Fitz, 2008) In carrying out this study, the author considered professional ethics as a starting point for good scientific practice and read the rules as stated by the Arcada University ethical committee board.

First and foremost, the topic proposal was approved by the head of the Human Ageing department and was later on being commissioned by one health care institution in Finland. The author visited the site; www.urkunde.se to learn about Arcada’s instruments for plagiarism and also visited Arcada Thesis guidelines page. Throughout the study the author had a tutor who was assigned to act as a supervisor given guidelines on how to write a scientific article and above all advising on the step by step process for doing a research although the author had a pre-knowledge about the study topic.

Throughout the study the author respected the principles of non-malevolence and benevolence and also applied professional secrecy and confidentiality by avoiding to mention names as respect of human dignity; human value, integrity and autonomy are of utmost importance. (Helsinki Declaration, 2000) The study meets with the rules as outlined in the ‘Helsinki declarations’ which serves as a statements of ethical principles necessary for healthcare professionals doing research in health and social fields involving human subjects. (World Medical Association declaration of Helsinki, 2000)

All articles used for the study were read and reported correctly exactly the way they were written. By analyzing the articles, the author avoided ethical carelessness by making correct referencing to sources in the written work, and interpreting the results correctly, and at the same time avoid including personal opinions and drawing conclusions. All the articles used had references as backings and were referred to. In addition to this, the author created an extra folder (check list) and stored in an electronic and a paper base form so as to store all necessary records; to wit, search engines used, key words, search strings, and list of references.

6 FINDINGS

Twelve relevant studies were included in this literature review. The findings from the articles are presented in the order of how they answer the two research questions. All of the twelve reviewed articles confirm the availability of tools and strategies in the form of AAC systems having out reaching benefits that can help to ease communication between a caregiver and an aphasic person. In all the twelve researches, interventions were discussed, tested and proven that, there exist many different available approaches through interventions and strategies with many benefits that can ease communication between aphasic persons and their caregivers.

Due to the fact that the author is doing a content analysis study, text interpretation was done, by putting into categories the raw data that was mentioned in the reviewed literature, guided by the research questions. In so doing, the findings that emerged from the articles that were used in answering the research questions will be reported. These will be presented by relating to the research questions, one after the other so as to assist the reader in grasping each question separately. The results will later be summarized as shown on tables 3 and 4 below.

6.1 Available Tools and Strategies

Regarding the first question;

What kind of tools and strategies are available to communicate with aphasic persons?

It has being noticed from the findings that lots of AAC systems are available in the form of tools and strategies that can assist persons who have lose their speech to aphasia and their caregivers to communicate better. These modes of communications used with persons who have lost their speech are called AAC systems. AAC systems are either aided or un-aided depending on how they function. These tools and strategies can be interpreted as the coping mechanisms that can be used with aphasic persons. Coping mechanisms can be described as ‘survival skills’. AAC systems are the communication strategies that people with aphasia and their caregivers use in order to deal with the new altered life event.

Coping strategies are learned patterns used to cope and deal with new situations. Many aphasic persons through therapy and rehabilitation learn how to use the AAC systems and these tools and strategies are helping to ease communication between aphasic persons and their care givers as seen in the literature reviewed.

The author of this study, groups these coping strategies into three different sub categories. The first categories are the aided AAC systems that can be used to communicate with aphasic persons with the help of extra materials. The second categories are the unaided AAC systems that includes; body movements, gestures, pointing, and facial expressions. And the third is the use of persons as available strategies to communicate with aphasic persons.

6.1.1 Aided Systems

From the findings in this study, it has been proven that aided alternative and augmentative communication systems can be used as alternative ways of helping individuals with speech problem and language disorders express themselves.

Reading through the study material, the following devices were mentioned in the raw data as available tools and strategies that can be used with the help of extra materials for communicating with aphasic persons. They include; C-Speak Aphasia (CSA), Portable Communication assistant for persons with dysphasia (PCAD), Computerized Scripts training Software programs, Video-based Script training programs, Voice Recognition software programs, Model-orientated aphasia therapy (MOAT), Animal Assisted Therapy (AAT), drawing, and communication books. These tools have being categorized as the aided AAC systems that can be used with aphasia persons to communicate.

Through the use of Video-based Script training program, persons with chronic aphasia achieved language improvements through intense and structured linguistic training. (Meinzer et al., 2005; Pulvermüller et al., 2001) This is evident of the availability of AAC tools in form of a computer based script training program with a virtual trainer.

Model-oriented Aphasia therapy (MOAT) is a strategy used to communicate with aphasic persons. Its fundamental approach is a model-based therapy that emphasizes different levels of language production. (Nickels, 2002) The MOAT therapy training program is a program involves speech therapists and the relatives of aphasic persons. The present of the speech therapist is needed as a strategy because the aphasic individual's well-being must be evaluated prior to using MOAT as an alternative mode.

The Portable communication assistant for people with dysphasia (PCAD) is a computer device that greatly assists persons with aphasia in their daily livings through a rehabilitation plan. (Sandt-Koenderman et al., 2005) In this study, PCAD was tested on 22 aphasic persons from the United Kingdoms, Portugal and The Netherlands. Majority of the aphasic participants in this study used this aided device after the therapy process and it enabled them to communicate independently in specific activities.

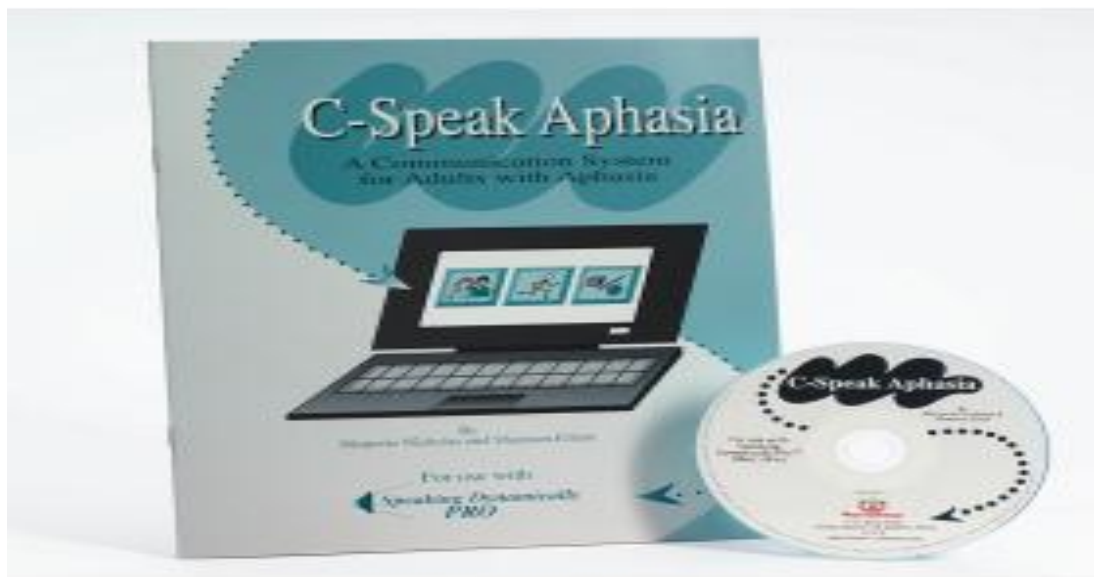
Another aided AAC device, called, Dragon Natural Speaking which functions through Voice recognition software programs can be used by persons with chronic aphasia as an alternative means of communication when writing ability is lost.

Voice recognition programs can be installed on computers that can allow the production of written language through spoken language. (Estes & Bloom, 2011) One of the mostly used voice recognition program is the 'Dragon Naturally Speaking program'. This is evident that aided AAC devices are available as an alternative means of communication that can assist persons affected by aphasia to communicate even when they have lost their abilities to communicate through writing.

It was also noted that Computerized Scripts Training software program is amongst one of the many available aided AAC systems that can assist persons with aphasia to communicate. An aphasic person can use the Computerized Scripts Training software program with the help of a speech therapist to reduce speech and language impairments. The therapist together with the aphasic person builds the empty central system by fixing useful vocabularies needed in relation to the well-being of the aphasic person. (Cherney et al., 2008)

C-Speak Aphasia (CSA) is an aided alternative communication computer program that is picture-based. This picture-based computer communication system was developed for persons with severe aphasia and it's mostly used. According to Nicholas & Elliott, (1998) Computer-based communication systems that are best for non-fluent aphasia persons should be picture-based rather than text-based due to the difficulties most of the non-fluent aphasic persons face with reading and spelling and one such computer program is C-Speak Aphasia. (Nicholas et al., 2011) The C-Speak Aphasia program is rated as an alternative means of communication that is picture-based. It is worth noting that this software program can assist to augment communication for aphasic persons.

The picture below is a sample of a C-Speak Aphasia program.



Sample picture. C-Speak Aphasia.

www.Mayer-johnson.com/c-speakaphasia

Animal Assisted therapy can be used as an aided communication system. Dogs when trained can be able to learn different commands. They can listen and show empathy through non-verbal actions. Aphasic individuals sometimes are shy to associate for reasons that others might criticize their points by not understanding the message they are trying to pass out. (La France et al., (2007)

Drawings are widely used to express ideas when speech is lost. It is worth noting that aphasia does not affect a person's cognitive reasoning. The memories an aphasia person has, can be conveyed through interactive drawings that eventually enhances active communication. Drawing is being used as an aided tool for aphasic persons. According to Sacchett (2002), drawing can either be viewed as an alternative to speech or as an augmentative tool for aphasic persons.

Persons whose speech is limited by aphasia can try to convey their messages through drawing. It does not matter if the drawing looks perfectly correct or not. What matters is the fact that looking at any given drawing done by an aphasic person, one should be able to pick out something and make sense out of it. *"The quality of the drawing produced should be overlooked when it is viewed as a substitute to language since what is important is the value of communication"*. (Sacchett, 2002 pp 263-277)

Drawing as an aided tool has as one main limitation. The limitation of interactive drawing for aphasia persons is due to the fact that it is limited only to a pen and paper and involves face-to-face contact only and does not assist in areas like talking on the telephone, sending fax and e-mails. (Sacchett, 2002)

One commonly used aided AAC systems with persons who have global aphasia ranges from graphic symbols, and the use of communication books (remnants and pictographs books). Communication books are used as aided systems to communicate with aphasic persons. In HO et al. (2005), the two participants who both had global aphasia reported to be able to initiate topics for discussions in the situation where communication books were present as aided AAC system.

6.1.2 Un-aided systems

The second categories of AAC systems that are available for communicating with aphasic persons are the un-aided systems. They are called un-aided because no extra materials are being needed apart from non-verbal actions. Usually, non-speaking clients when communicating prefers to transmit their messages through these non-verbal actions.

Nonverbal communication is any behavior, other than spoken or written communication, that creates or represents meaning. Nonverbal communication is talking without speaking a word. It is very effective, maybe even more than speech. Most aphasic persons use nonverbal communication to communicate. The saying, “Actions speak louder than words” was interpreted to mean “communication without the use of oral speech”. 55% of communication between people takes place through nonverbal actions. In other words, nonverbal communication may be the most important part of communicating with other people. (Mehrabian, 2009)

Un-aided AAC systems that are available as tools or strategies to be used for communicating with aphasic persons include; body language, facial expressions and gestures.

Body language is body movements that depend on a person’s attitude or feelings. Body language includes the way people use their facial features. In other words, it includes any kind of meaning that is shown by a person's body attitude or movements. Aphasic persons who have lost their speech are being encouraged to learn more on how to use their bodies and facial features in order to pass out their messages. From the review literature, it was mentioned that most aphasic persons use non-verbal communication as available tools and strategies to communicate.

Another main un-aided AAC system being used as a strategy to communicate with aphasic persons is the use of gestures. Gestures are communications done through facial expressions, hand signals, eye gazing, and body postures. (Cunningham & Ward, 2003) In order to have a successful co-constructed meaning, an aphasic partner can use gesture, vocalization, and gaze to convey information to the speaking partner. (Goodwin, 1995; Laasko, 2002; Oelshlaeger, 1999; Perkins, 2002)

6.1.3 Use of persons

Persons who learn available AAC Systems can greatly assist aphasic persons by shifting or adjusting their ways of dishg out ideas. Sometimes, it goes beyond that for them to be used to speak on behalf of aphasic persons.

Using persons to speak for another has been used as a strategy to ease communication between aphasic persons and their care givers. Persons are used in different ways. Professional interpreters are being used in some cases while in others therapists, spouse or relatives of aphasic persons, who have the basic knowledge about aphasia, have also been used to speak on behalf of their aphasic client, spouse or relative. Also in situations where a speech therapist is needed, they sometimes help to speak on behalf of the aphasic persons.

The list for interpreters for aphasic persons can range from speech therapist, professional interpreters, partners, care-providers, relatives and friends. It has been proven that using interpreters can improve the quality of life for aphasic person if they have received formal support through training. Hence interpreters can be used as an AAC strategy and this has been said to ease communicating with aphasic persons. AAC Acceptance Model, Milieu, person, and technology are the crucial factors in the acceptance of AAC devices. (Lasker & Bedrosian, 2000)

In Larsson & Thoren-Jönsson (2007), the Swedish Speech Interpretation Service was noted to fulfill some possibilities of being accepted as AAC tools. AAC Acceptance Model, Milieu, person, and technology are the crucial factors in the acceptance of AAC devices. (Lasker & Bedrosian, 2000) The results of this study confirms the fact that, Interpreters can be used as an available AAC tool to ease communication with aphasic persons.

Spouses and partners can sometimes speak on behalf of their aphasic partners and not on their own behalf if the aphasic partners can only make some utterances. The fact that aphasic persons are not able to say anything does not mean they do not have their own ideas to pass through. In order to have a successful co-constructed meaning, an aphasic partner can use gesture, vocalization, and gaze to convey information to the speaking partner (Goodwin, 1995; Laasko, 2002; Oelshlaeger, 1999; Perkins, 2002).

Aphasic persons are sometimes encouraged to use their relatives speak for them if they have been trained alongside with aphasic persons on the use of available AAC systems

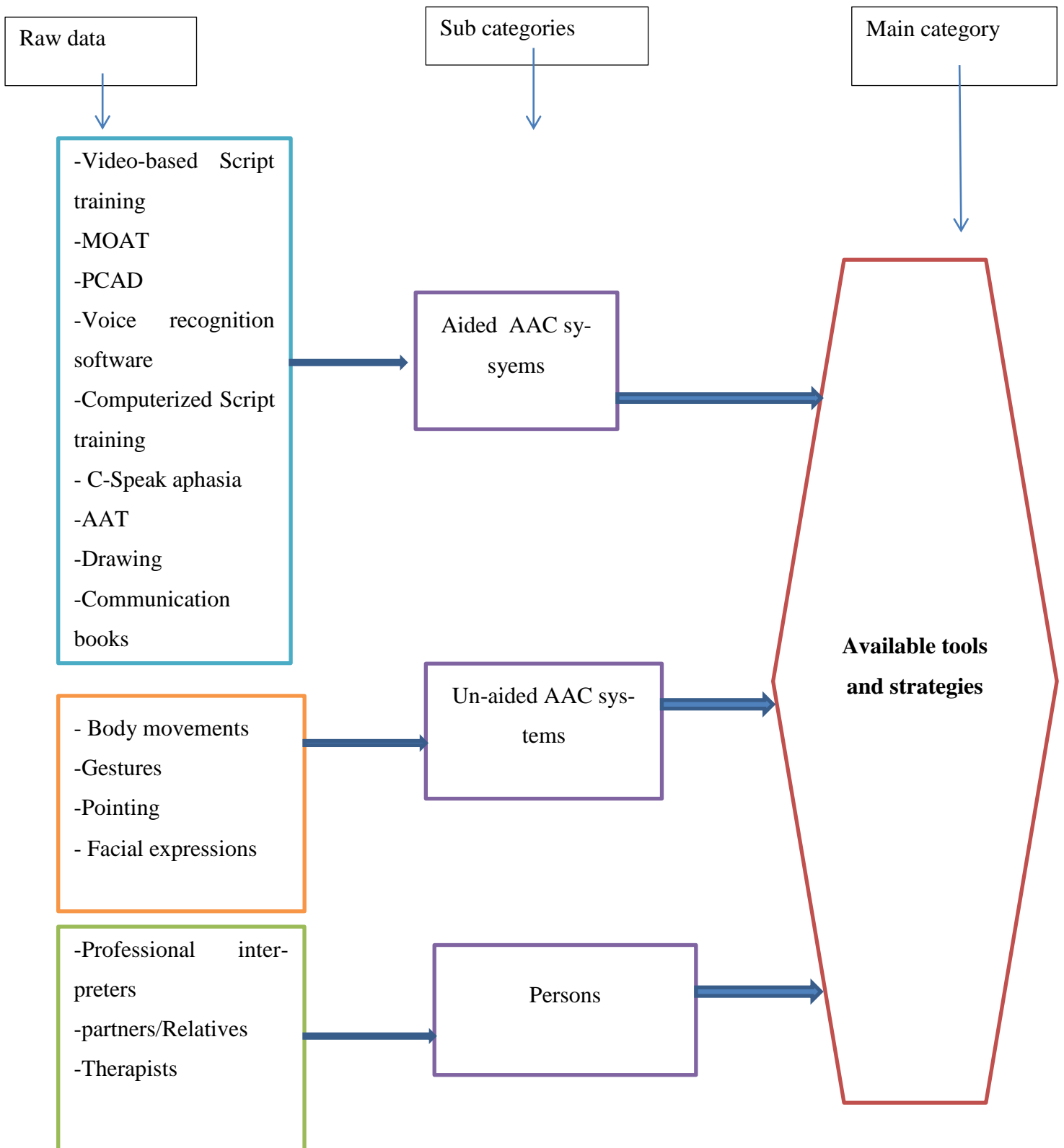
in order to ease communication. Conversation for Adults with aphasia (SCA), a program created to help facilitate conversation with aphasic persons have being seen to have far reaching benefits. In a similar situation, Lyon et al. (1997) gives an example for a system developed, where people with aphasia are paired with a trained partner who tries to enhance overall confidence and encourage a return to social activities.

According to Simmons-Mackie et al. (2004), speaking for another was used between an aphasic person and a speech language pathologist, to converge messages. Non-aphasic partners can speak on behalf of their aphasic partners and not on their own behalf if the aphasic partners can make utterances which are not full statements. The findings in this study were similar to those in Goodwin et al., (2002) where participants with aphasia used only three words and a range of cues to communicate their desires to others. The importance of including a relative or friend in the program, Conversation for Adults with aphasia was seen as a strategy that can be used to ease communicating with aphasic persons. (Cunningham & Ward, 2003)

Sometimes nurses and speech therapists are also needed to speak on behalf of aphasic persons. Usually a speech therapist is needed in order to evaluate the well-being of the aphasic person in need of any AAC tool before the start of a rehabilitation program. In the case where, the aphasic person needs to work with an aided devices, as for example, a device like the Dragon Naturally Speaking that has to be uploaded with important data, the therapist will work together with the aphasic person in building the central modem or in a case where an aphasic person needs consultations with a doctor for instance, the therapist can speak on their behalf when need be.

A summary of the available AAC systems that appear to be the coping strategies used in dealing with the new-altered event; aphasia, that has been sub categorized as aided systems, un-aided systems and the use of persons can be seen on table 3 below.

Table 3. Summary of Available tools and strategies



6.2 How tools and strategies ease communication

In this section, the author explains how these tools and strategies help to ease communication between caregivers and aphasic persons by looking at the effects felt by those using them. These effects can be sub divided into three sub categorizes; psychological, social and physical.

The basic idea behind AAC interventions is to ease communication. Apart from the available AAC systems that are being used to ease communicating with aphasic persons, a multi-professional team working through collaboration and the sufficient knowledge that is available to the general public are also seen as contributing factors that helps to ease communication between aphasic persons and their caregivers who uses the coping strategies that can be used when speech is lost due to aphasia.

As regards the second research question;

How can these tools and strategies ease communication between persons with aphasia and their caregivers? The findings did prove that using the available tools and strategies (AAC, systems) were able to help ease communication between aphasic persons and their caregivers.

The findings were latter being sub categorized as psychological, social and physical effects that result from the use of the tools and strategies that were mentioned in the articles. As said above, the effects felt by those who uses these tools are proves to show that the tools and strategies can ease communication and has being divided into three sub categorizes; psychological, social and physical.

6.2.1 Psychological Effects

Aphasic persons who use the available tools and strategies as mentioned in the review articles became psychologically stabled and reported to experience a lot of functional improvements. Aphasic persons who use the available AAC systems were more positive in their outlook on life compared to those who did not; they felt more in control of their

lives and saw these tools and strategies as helpful and they also confirmed that it eases communication between them and their caregivers.

Previous research shows that those aphasic persons who use AAC systems have higher levels of emotional and psychological well-being that led to lower levels of depression amongst them.

The presence of relatives through the MOAT program helps to optimize and encourage communication between them. (Bongartz, 1998; Kagan, 1998) Aphasic persons turn to build that psychological closeness through the encouragements they receive from their relatives who work together with them. The closeness between them can help to make the aphasic person more willing to participate thereby easing communication.

Some of the devices available are portable and can easily be used independently with one hand. The availability of the Voice recognition software is helping aphasic persons to cope with activities of daily living thereby increasing their self-efficacy that leads to improved wellbeing and quality of life amongst aphasic persons who use this device. This is due to the fact that they turn to gain trust from the tools they use.

Most aphasic persons want to make their points and ideas heard. Most of the available AAC tools and strategies help to compensate for speech and writing skills. For example the Dragon Naturally Speaking Program when installed in the central modem of a special designed computer can help to compensate for writing skills that have been lost to aphasia. In return the method used by the Dragon Naturally Speaking Program can help to improve speech, writing and social communication thereby making communication more functional and easy.

PCAD software, called Touch speak includes two packages that come with seven modules and has been proven to ease communication between aphasic persons and their caregivers. The fact that a therapist has to build a personal vocabulary on the empty hierarchical vocabulary module of its central systems with the help of the aphasic person gives them more autonomy. This indicates that, persons with chronic aphasia can use the PCAD to improve their conversational and language skills with the pre-requisite of having a rehabilitation plan before using it. (Sandt-Koenderman et al., 2005)

The benefits of being present in any conversation and feeling free to make your points through any form possible give aphasic persons the zeal to be more responsive and this also has a greater impact on their psychological well-being. Aphasic persons prefer the non-verbal modes of communication because little or nothing seems to be said by them and thereby they are free from the frustration of trying to speak or at the same time speak jargons while trying to express their ideas. While using non-verbal communication modes, most of the messages will be transmitted through pointing, gesturing and eye contact.

With the use of communication books, aphasic persons can initiate topics for discussions thereby being willing to participate more. It is worth noting that both types of communication books; remnants and pictographs can help to facilitate interactions for the aphasic persons and their partners making communication enjoyable, and at the same time, causing the aphasic persons and their partners more responsive to communication. (HO et al., (2005) Similarly, (Rogers et al., 1999) stated that conversations involving individuals with aphasia tend to focus on functional needs such as expressing basic needs, rather than expressing social needs such as having conversations for pleasures. This in effect gives the aphasic persons who use communication books experienced higher level of psychological well-being.

Animals Assisted therapy can sometimes be used as a non-verbal communication tool to ease communication and at the same time acts on the psychological wellbeing of an aphasic individual. As said earlier, aphasia does not affect reasoning. In trying to solve the problem of depression and loneliness amongst some aphasic individuals, bringing a pet usually calls for attention especially to pets lovers thereby improving socialization and taking the aphasic person from their lonely zones. For instance in the case where an aphasic person was used to having a pet, bringing a pet similar to that which the aphasic person had before this new-altered event is seen as a means of easing communication. Therefore AAT in a way helps to ease communication between an aphasic person and a caregiver.

The use of gestures can lead to active participation in conversations. This is because

when passing information through gesturing, speech is not needed hence in a situation where a relative of an aphasic person know and understands how to communicate through gesturing, the flow of communication will lead to more participation between them. It was noticed that aphasic persons who participated in hobbies or learning new skills together with their relatives were positively related to enjoy greater psychological well-being and these factors lowered their levels of depression and loneliness. The flow of communication can be easily achieved when relative who communicate with these aphasic persons too are trained on how to apply other non- verbal communicative behaviors. Hence it's worth noting the importance of training as a treatment to easing communication.

6.2.2 Social Effects

Social impacts from this point of view, is considering the social effects that result as changes that happens on the lives of aphasic persons who uses the available tools and strategies to communicate. The social improvements that results from the use of the available tools and strategies are greatly helping to ease communication between a care-giver and an aphasic person. A person with severe speech and language problems who uses the AAC systems tends to increase their social interactions and feelings of self-worth.

Through social presence, aphasic persons, learns the best ways to communicate. Social presence refers to the degree to which individuals perceive others to be real in the learning environment; social presence is influenced by the delivery modes utilized for specific communication functions, including the way in which communication is being processed. In this context aphasic persons and their care givers can use the best available AAC systems that can help to communication between them.

When speech is lost, other non-verbal communicative behaviors should be encouraged like using gestures, drawing, touch, and hand movements. (Cunningham & Ward, 2003) There exist other forms of communication modes that are available to augment communication or to be used as alternatives while communicating with aphasic persons.

Trained therapy dogs are sometimes used as tools that help to improve aphasic person's well-being through socialization even though they don't talk. Through gesticulations, aphasic persons can be more active to participate in conversations hence easing communication between them and their caregivers.

Dogs when trained can be able to learn different commands. They can listen and show empathy through non-verbal actions. Aphasic individuals sometimes are shy to associate for reasons that others might criticize their points or not even understand the message they are trying to pass out. But with pets, especially dogs, they can only listen and not say a word in return. *"People who are isolated, lonely or institutionalized often find solace with friendly dogs and view them as empathic listeners"*. (La France et al., 2007)

Based on evidence reported in a questionnaire distributed by Lane et al. (1995) to individuals with service dogs, 92% reported that when their dogs accompanied them, people stopped by to talk to them than when they did not have the dog. Animal Assisted Therapy program (AAT) has been seen to have outstanding benefits. Through the AAT programme, a therapy dog brought to the life of an aphasic person cheerfulness, competence, and good social relationship through improved social contact. According to (La France et al., 2007) lovers of dogs usually stopped by to talk and appreciate the dog and this caused the aphasic person to become more sociable and less isolated. A trained therapy dog can do a lot to ease communicating with an aphasic person by applying non-verbal modes of communication through body movements.

Education and training has a lot to do in easing communication between aphasic persons and their caregivers. Individuals who have basic knowledge about the best ways of communicating with aphasia persons will find it easier to communicate than for a person who has basically no knowledge about aphasia. One of the best treatments for aphasia is to train the caregivers. The use of persons who have undergone some kind of training on how to use and understand non-verbal communication modes can greatly ease communication between caregivers and aphasic persons. Professional interpreters can now speak on behalf of aphasic persons hence making them to be included in meetings and that also respects their autonomy and at the same time relieving them from burdening their family members. (Larsson & Thoren-Jönsson, 2007)

One of the compensatory strategies used to ease communication with aphasic persons is when non aphasic partners speak on behalf of their aphasic partners. In other to have a successful co-constructed meaning, an aphasic partner can use gesture, vocalization, and gaze to convey information to the speaking partner (Goodwin, 1995; Laasko, 2002; Oelshlaeger, 1999; Perkins, 2002). The goal of this approach to aphasia intervention is to teach patients alternate methods of expressing themselves in real world settings. These include gestures, writing and the use of augmentative aids. It is again important with this approach that the family and friends are involved in the sessions so that everyone learns to be familiar with the strategies through education and training.

From the literature used for this study, there are evidences that approve the fact that communication becomes easy when partners speak on behalf of their aphasic partners. According to Lyon et al. (1997), an example is a system developed where by a person with aphasia is being paired with a trained partner who tries to enhance overall confidence and encourage a return to social activities. Through little utterances or through gestures done by an aphasic person, others can speak on their behalf in any gathering. Therefore it is worth saying training non-aphasic partners together with their aphasic partners can greatly help to ease communication between them. (Lyon et al., (1997)

When non-aphasic partners learn gesture clues, they can understand their aphasic partners well even through few utterances there by easing communication between them. According to (Cunningham & Ward, 2003) *“The use of strategies to help facilitate a repair is positive because it enabled the couple to work together to complete the repair”*. These encouragements helped to rebuild confidence in the aphasic persons and made them willing to communicate more by being more responsive.

Through some available educational training programs, public awareness has being expanded and this has caused most caregivers to be able to provide support and encouragement to aphasic persons by imploring and implementing the available knowledge about the best approaches to communication and aphasia. This aspect is actually making

the caring process lighter and easy for both the caregivers and the aphasic persons to a greater extent.

It has been proven that using interpreters can improve the quality of life for an aphasic person if they have received formal support through training. From previous studies, it was seen that factors such as social relationships and participation, functional communication, and the ability to actively participate within the community-at-large may have more positive effects on their social wellbeing than therapy based improvements in language. (Hilari, et al., 2003; Ross & Wertz, 2003; Worrall & Holland, 2003).

Through drawings, messages that are in the memories of aphasic persons are being conveyed. Through drawings, competence and identity are rebuilt. Doing something over and over again helps to bring out communicative competence. As an example previous researches have highlighted the fact that, Therapy therefore aims at improving the skills of the communicative dyad, with emphasis on enabling others to reveal and acknowledge the competence of the person with aphasia. (Kagan, 1995; Simmons-Mackie, 1998)

With the use of communication books, aphasic persons can easily point to pictures, graphics, symbols, and drawings which can be easily identified by everyone hence making them willing to communicate more through non-verbal modes that does not involve talking. Aphasic persons become active and responsive to communicate more when communication books having symbols are frequently in use. (HO et al., 2005) *“Through the use of communication books, there was a sharp decrease in unrepaired communication breakdowns”*. (HO et al., 2005) In effect, the flow of communication is made easy by the present of communication books.

6.2.3 Physical Effects

Previous research has suggested that participation is positively related to an individual's physical well-being and improves overall life satisfaction. Non-speaking people often rely on AAC systems to assist them communicate better. The use of AAC systems of-

fers the potential to enhance communication, language, & literacy development for individuals with complex communication needs. By repeated practice, aphasic persons who use the available AAC tools and strategies, produces some positive effects as outcomes that greatly help to ease communicating with their caregivers. This is so because vitality and pleasant satisfaction can result by living a physical active life by doing certain things.

Aphasia persons who used the C-Speak Aphasia program (CSA) reported positive results through self-efficacy. Aphasic persons learn how they can select icons from a semantic-category group (picture and text) and put them together to create novel messages in different forms ranging from statements, questions, and commands. And each message can be spoken by the computer just by clicking on the message display area. Majority of the patients studied were able to communicate better with the program as this helped to improve their conversational abilities and language skills. Hence, CSA was particularly rated useful because it assisted some of the participants in making telephone calls, and in writing tasks there by easing communication. (Nicholas et al., 2011)

Most computer software devices that are used with aphasic persons are mostly picture based computer systems. An example of this is the C-Speak Aphasia software program. With this program, an aphasic person has nothing to do with spelling which is more often a big challenge to them. Using a programme like the C-Speak Aphasia software program eventually makes communication more functional and easy. In addition, it has being noticed that most of the available devices used to ease communication are beneficial to aphasic persons due to the fact that these programs results in words findings and this aspect eases communication and make aphasic persons become more confident and hence they turn to participate more.

Some of the available systems also help to improve language skills amongst persons with chronic aphasia. It was discussed in (Meinzer et al., 2005; Pulvermüller et al., 2001) that using the video-based script training through a therapy program can improve language skills through intense and structured linguistic training. Such programs enhance conversational skills in aphasic persons. (Lee et al., 2009) Therefore the improvement in language skills that results from intensive therapy training through video-

based scripts eventually ease communication between caregivers and aphasic persons due to improvement in verbal communications.

Drawing done in the physical can be used to reveal competence and at the same time rebuild one's ability. The memories an aphasia person has, can be conveyed through interactive drawings that eventually enhances active communication. Drawing entails a lot more; pointing gesturing, and creativity. (Sacchett, 2002) Aphasic persons who uses drawing as an AAC tool can made themselves easily understood there by easing communication with their caregivers.

The Voice recognition software program can compensate and even improve written expression in individuals with acquired dysgraphia. (Petheram, 2004) Written language is frequently the most severely impaired communication modality in individuals with aphasia. (Chapey, 2001) Aphasic persons who use the Dragon Nationally Speaking computer software can communicate easily even though they have lost their writing abilities.

As was mentioned earlier, aphasic persons are sometimes encouraged to use their relatives who have being trained alongside with aphasic persons to improve communication. Close persons can restore confidence and encourage their aphasic partners. (Cunningham & Ward, 2003) Family members and friends who together with their aphasic persons uses available AAC tools like for example the Computerized Script Training program, were said to have improvements in their language abilities through regular speech practice that eventually eases communication between them.

Person with aphasia usually experiences mood changes (loneliness, depression, and isolations), and some physical limitations due to the fact that their coping skills have greatly being reduced. More often, their self-esteem becomes very low as they usually feel useless and are sometimes being left out in decision makings. Aphasic persons can be depressed or upset by living with the effects of a stroke. Life is made more vital by staying engaged with family and friends, and becoming more active through participations can help to keep their emotions stable. Hence encouraging friends and family to check in with aphasic persons and do together with them some social activities will boost their

morals and rebuild their communicative competence. This can be done by joining a support group with stroke patients who understand their conditions.

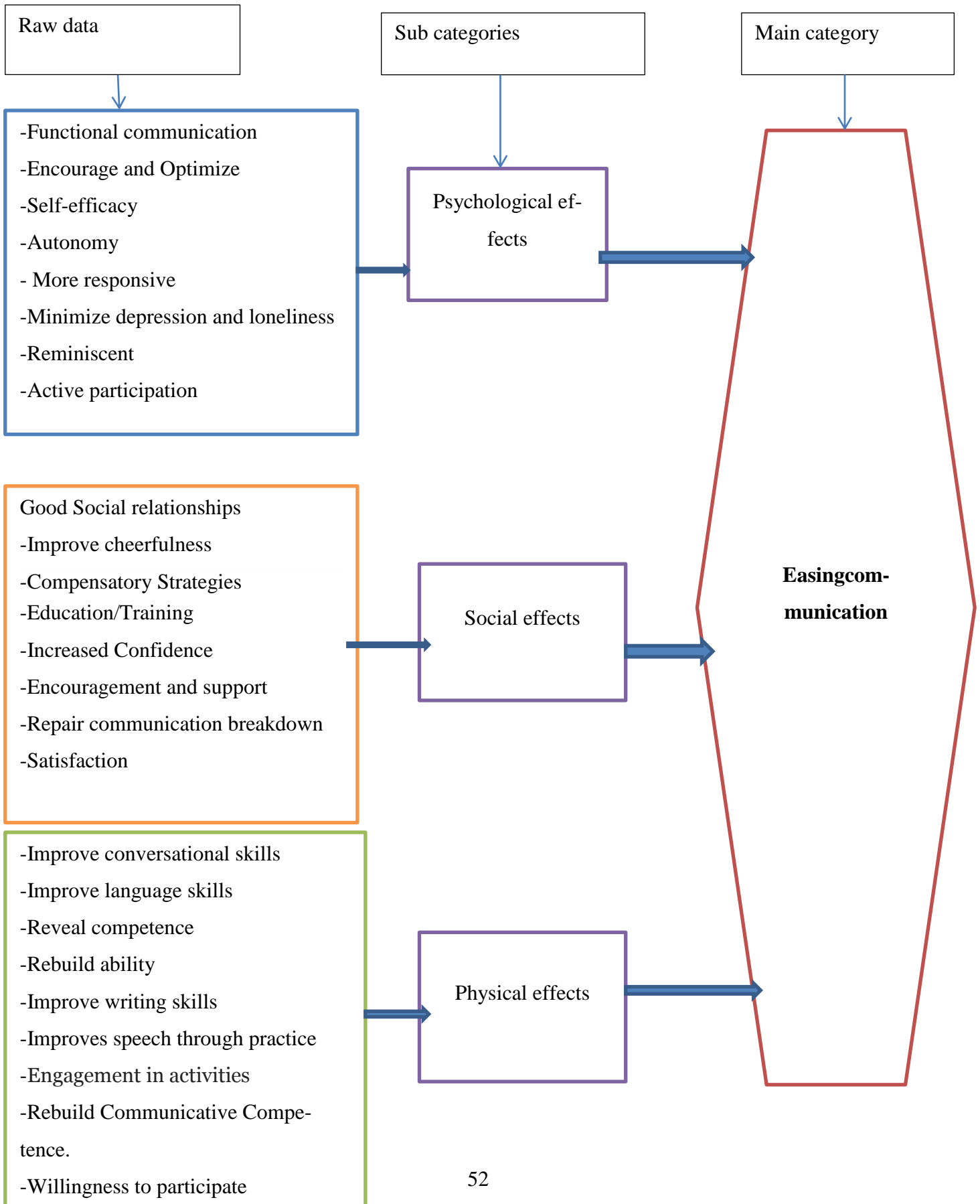
The availability of computer programs like the video-based script training makes aphasic persons to be more willing to participate more in communication. Studies have showed that intensive computer practice on a keyboard began to generalise, to some degree to writing with a pen and paper. (Mortley et al., 2001) Aphasic persons who use the video-based script training through a therapy program turns to improve their language skills and were willing to participate more in matters that concerns them thereby making communication easy between them and their caregivers due to improvement in their verbal communications.

Computerized Scripts Training software program are also available to assist both persons with fluent and non-fluent aphasia to improve their communication skills, verbalization, and augment other alternatives to speech so as to in turn ease communication between aphasic persons and their care givers.

As regards the second research question, the fact that by using the available tools and strategies, aphasic persons produced lots of positive outcomes as effects shows the extent to which these AAC systems can ease communication between the aphasic persons and their caregivers.

The above summary showing the effects of the tools and strategies that has sub been categorized as; psychological, social and physical effects is seen on table 4 below.

Table 4. Summary of how tools and strategies ease communication



7 CRITICAL REVIEW

In this section, the author examines to what extent, the results of the findings have answered the research questions. This will be done by examining the method that was used; and laying emphasis on whether the method helped in answering the research question or not. Also, any problems faced throughout the study will be mentioned.

7.1 Validity and Reliability

Without mixing words, the author of this study testifies its validity and reliability. This is because all the literature used to answer the research questions that guided the study are scientific articles done by previous researchers in the health care sector and the study material was gotten through authentic data base search engines. The fact that the author did a qualitative content analysis and ended up grouping the findings has showed to what extend the research has being measured.

The author reproduced the findings in this study by using similar methodology as used in the book, *“Doing a Literature review in health and social care: A practical guide”* by Helen Aveyard (2007), which is mostly recommended for scientific writings in the social and health care fields hence making the study reliable.

Validity has been defined as the degree to which they accomplish the purpose for which they are being used. (Worthen et al., 1993) Validity is like truthfulness and in this research; it presupposes reliability because, the findings were used to formulate the results and conclusions. The author, after reading the articles used, later on grouped the findings that were relevant to the study.

Reliability is the degree of consistency between two measures of the same thing. (Mehrens & Lehman, 1987) Joppe, (2000) defines reliability as, *“The extent to which results are consistent over time and an accurate representation of the total population under study and if the results of a study can be reproduced under a similar methodology, then the research instrument is considered to be reliable”*. The author avoided personal opinions in order not to alter the results of this study. As mentioned above, this

study is reliable due to the fact that it was done through similar methodology as prescribed by Helen Aveyard, (2007) which is an authentic book.

7.2 Limitations of the study

The author faced some challenges while undergoing the study. The first major challenge was the fact that some of the articles that were seen and deemed necessary for the study were not easily accessible.

Also the area of topic is a vast area that has been investigated by previous researchers hence it was not easy to select from the many articles that meet the inclusion criteria for the study.

The study was limited to a literature review study where as if interviews and observations were included too, then the results could be influenced from practical experiences that are different from theoretical writings.

Another limitation of the study is that almost all the articles used for the study had the same kind of investigations and related outcomes. Selecting the articles by relevant was not an easy task. Added to this, the complexity of deductive content analysis that was used as the only method made it more time consuming.

8 DISCUSSION/CONCLUSIONS

In this section the author uses the research questions as a structure for the discussion. This study was guided by answering these two research questions;

- 1- What kind of tools and strategies are available to communicate with aphasic persons?
- 2- How can these tools and strategies ease communication between persons with aphasia and their care givers?

After going through the reviewed literature that was used for the findings of this study, the author identified communication as the core concept. A person with aphasia who has lost the speech, usually experience change in moods and actually suffers from psychological, social, and physical losses. Psychological losses makes them emotionally unstable, Social losses usually range from a whole lot of aspects including, loss of job, reduce self-esteem, loss of friends while Physical losses like impairments and the reduction in coping skills are also big issues to deal with. Emotionally, they are more often left out during decision making, they feel useless, depress and more often they prefer to isolate themselves.

The fact that little children cry or make utterances when in need of something, or a foreigner who doesn't understand a particular language expresses his/her self through non-verbal communication modes, supports the importance of communication and these two examples should be compared to a person who loses the speech to aphasia.

Consider that you are in a position that you have a point to make but you cannot just find the right words anymore. This can be so frustrating to any individual; the situation where those with speech and language problems find themselves. But still, we can boldly say that all is not lost because of the presence of AAC systems.

The availability of AAC systems has definitely changed the whole picture by improving the quality of life for aphasic persons. Basic information and public awareness about aphasia is known today in addition to some available training and educational programs

about the best ways of coping with the impairments. AAC systems are available in the market and the good news is that they are in affordable prices.

In situations where some of the available devices do not match with the well-being of an aphasic person in question, less complicated modes (non-verbal modes) like gesticulations, pointing, eye contacts, touch, drawing, and the use of communication books should be implemented as alternatives communication.

From the findings, it is worth mentioning that in addition to the available tools and strategies that are used to communicate with aphasic persons, if the aphasic person's well-being is identified through a speech therapist (in order to know the right tool needed), the effects in return will be an easy flow of communication between the caregivers and the aphasic person thereby answering the second research question. Support through available approaches has changed the whole picture by easing communication between aphasic persons and their care givers.

Apart from the available AAC systems that can be used to ease communication, prolonged rehabilitation and follow up greatly help to assist aphasic persons to communicate better in some cases. It is always said, practice makes perfect. Most of the literature reviewed for this study was done through therapy and intensive training and most of the aphasic persons reported positive results through constant practice and rehabilitation.

Aphasic persons gained satisfaction due to the fact that their needs were being understood and met to a greater extend there by improving the quality of life of aphasic persons through these available AAC systems.

It is clear that there is not one great treatment of aphasia that everyone can agree on. This is because every case is different and requires individual attention. However the consensus is that one should not stick to one method of treatment and that both individual and group therapies are important in achieving the goal of a better quality of life.

Although much has being said about the availability of AAC systems (aided and unaided) and for the fact that they actually have positive effects on the users, it is worth

noting that these AAC systems are scarcely in used in homes and institutions where I have being hence most aphasic persons are being left out in decision making that concerns them because of their impairments.

In my opinion, further research is needed to understand why most of these available tools are not being used in health settings despite their availability and publicity.

Better still informational brochure should be kept available in public places and health care settings so that the world can understand a little more about the fact that aphasia is not a disease and also on how to live successfully with the impairments.

The fact that there exist numerous computer programs for aphasia rehabilitation is a good thing but the question is that, how many people with aphasia actually benefit from using them?

It has being noting that, theoretically the internet offers excellent information about how aphasia persons can improve social participation but reading and writing is a greater problem to most aphasia persons usually. The question is how best can this information be transmitted to aphasic persons?

In my opinion, this is of vital importance due to the growing aphasic population worldwide thus a better way of transmitting knowledge to aphasic persons should be taking into consideration for future research.

In a nut shell, it's worth concluding that the availability of the tools and strategies that were mentioned in the review articles can ease communication between aphasic persons and their caregivers.

REFERENCES

Albert, M. (2009). ""Silent Messages" – A Wealth of Information about Nonverbal Communication (Body Language)". *Personality & Emotion Tests & Software: Psychological Books & Articles of Popular Interest*. Los Angeles, CA: self-published. Retrieved (10.02.2012).

American Heart Association (2010). 41: pp 2402–2448.

American Speech-Language-Hearing Association [ASHA] (2001). p 26

American Speech-Language-Hearing Association (2002) Augmentative and alternative communication: Knowledge and skills for service deliver. *ASHA Leader* 7. (Suppl. 22) pp 97-106.

American Speech-Language-Hearing Association (2005). [Roles and responsibilities of speech-language pathologists with respect to alternative communication: Position statement](#). Retrieved on 3rd of January 2012 from: <http://www.asha.org>

Andersen, M.P. (1959). "What is communication?" *Journal of Communication* 9:5, 1959

Arcada (2010). Ethical committee. <http://studieguide.arcada.fi/en/studycada/degree-thesis/-ethical-committee> (accessed on 15.01.2012)

Aveyard, H. (2007). *Doing a Literature review in health and social care; a practical guide*. Maidenhead: McGraw-Hill Open University Press: P 60

Bengtson, V. N., Gans, D., Putney, N. M. & Silverstein, M. (2009). *Handbook of theories of aging*, in: Springer Publishing Company, pp 1-43 ISBN 978-0-8261-6251-9.

Accessed (21.01.2012) Available from:

http://www.springerpub.com/samples/9780826162519_chapter.pdf

Beukelman, D. R., Fager, S., Ball, L., Dietz, A. (2007) 'AAC for adults with acquired neurological conditions: A review', *Augmentative and Alternative Communication*, 23:3, pp 230 – 242

Beukelman, D. R. & Mirenda, P. (2005) *Augmentative and alternative communication: Supporting children and adults with complex communication needs* (3rd ed.). Baltimore: Paul H. Brookes Publishing Co. ISBN 9781557666840

Bond, J. & Corner, L. 2004, *Quality of Life and older people*, in Open University press, McGraw Publication, pp1-131. ISBN.0 335 20872

Burns, N. & Grove, S. (2001). *The practice of nursing research: conduct, critique and utilization*. (4th ed.). W.B.Saunders: Philadelphia, Pennsylvania, USA.

Burns, N. & Grove, S.K. (2005) *The Practice of Nursing Research: Conduct, Critique & Utilization*. Elsevier Saunders, St Louis.

Carol, S. (2002). Drawing in aphasia: moving towards the interactive, *Int. J. Human-Computer Studies* (2002) 57, pp 263-277

Caroline, L., Linda, J. G., & Julianne, L. (2007). The effect of a therapy dog on the communication skills of an adult with aphasia. *Journal of Communication Disorders* 40 (2007) pp 215-224

Chapey, R. (ed.). (2001). *Language Intervention Strategies in Aphasia and Related Neurogenic Communication Disorders*, (4th. ed.). Philadelphia: Lippincott, Williams and Wilkins.

Christine, E. & Ronald L. B. (2011). Using voice recognition software to treat dysgraphia in a patient with conduction aphasia, *Aphasiology*, 25: 3 pp 366-385.

Cossette, L. & Duclos, E. (2003). *A profile of disability in Canada, 2001*. Ottawa: Statistics Canada.

Debra Sanders, 2009, in her chapter 30, Communication Accommodation theory of Howard Giles, communication accommodation theory, retrieved on the 13/02/2012 from: <https://online.uas.alaska.edu/.../DLSANDERS/...2009/COMM380-JD...>

Elo, S. & Kyngäs, H. (2007). The qualitative content analysis process. JAN research methodology. Blackwell Publishing Ltd.

Engelter, S. T., Gostynski, M., Papa, S., Maya, F., Claudia, B., Vladeta, A.G., Felix, G. & Phillippe A. L. (2006). "Epidemiology of aphasia attributable to first ischemic stroke: incidence, severity, fluency, etiology, and thrombolysis". *Stroke*, 37:1379-1384.

Forest, B. (2009). Erika Chambers. Intro to communication. www.scribd.com > School Work > Essays & Theses: Accessed 18.01.2012

Fritz, K. (2008). Ethical issues in qualitative research. Available at <http://ocw.jhsph.edu/courses/qualitativedataanalysis/PDFs/Session12.pdf>

Gabriela Barthel, Marcus Meinzer, Daniela Djundja & Brigitte Rockstroh. (2008): Intensive language therapy in chronic aphasia: Which aspects contribute most? *Aphasiology*, 22: 4, pp 408-421

Giles, H., Michael, W., Cindy, G., Michelle, C. A. (2006). *Social Communication. Accommodating a New frontier: The context of Law Enforcement*. 5: p 92.
ISBN: 978-1-84169 428-3 (hbk)

Giles, H., G. Taylor, J. C. & Gourlay, R. N. (1973). Communication Accommodation Theory. en.wikipedia.org/wiki/Communication_accommodation_theory (Accessed 18.02.2012)

Goodwin, C. (1995). Co-constructing meaning in conversations with an aphasic man. *Research on Language and social interaction*, 28, pp 233-260.

Goodwin, C. (2002). Conversational frameworks for the accomplishment of meaning in aphasia. In C. Goodwin (Ed.), *Conversation and brain damage*, pp 90-116. New York: Oxford University Press.

Gun-Britt, L. (2009). *Scientific Theory, Research Methods and Research Ethics 2: The research process*.

Heidi, A., Kersti, S., Anna-Liisa, S. & Brandt, Å. (2011). What do we know from systematic review about the effectiveness of assistive products for communication and information used by people with disabilities?

Hilari, K., Wiggins, R. D., Roy, P., Byng, S., & Smith, S. (2003). Predictors of health-related quality of life (HRQL) in people with chronic aphasia. *Aphasiology*, 17, pp 365-381

HO, K. M., Weiss, S. J., Garrett, K .L. & Lloyd, L. L. (2005). The Effect of Remnant and Pictographic Books on the Communicative Interaction of Individuals with Global aphasia, *Augmentative and Alternative Communication*, 2005 vol. 21 (3), pp. 218-232.

Inger, L. & Anna-Lisa, T. (2007). *The Swedish Speech Interpretation Service: (SSIS) An Exploratory Study of a New Communication Support Provided to People with Aphasia*.

Johansson, P., Oleni, M. & Fridlund, B. (2002). Patient satisfaction with nursing care in the context of health care: a literature study. *Scand J Caring Sci*. 16, pp 337–344.

Julia, M. *Communication Accommodation Theory*. Retrieved on 15/02/2012, through <http://www.jmaine.co.uk/CAT%20final.ppt>

Kangas, K. A. & Lloyd L. L. 2005. *Augmentative and Alternative Communication*. In G Shames, NB Anderson, (Eds.), *Human Communication Disorders*, 6th ed. Boston, MA: Allyn and Bacon.

Kerstin, B. (2011): Video-based conversational script training for aphasia: A therapy study. *Aphasiology*, 2011, 25 (2), pp 191-201.

Khan, K., Kunz, R., Kleijnen, J., & Antes, G. (2002). *Systematic reviews to support evidence-based medicine. How to apply findings of healthcare research.* The Royal Society of Medicine Press. London. Philadelphia: Lippincott.

Krippendorff, K. (2004). *Content analysis, an introduction to its methodology.* SAGE publications, Inc. Second edition. ISBN 978-0-7619-1544-7.

Lane, D. R., McNicholas, J., & Collis, B. M. (1995). *Dogs for the disabled: Benefits to recipient and welfare of the dog.* Paper presented at Committee on Animal Welfare Well-Being & Ethology. Yokohama, Japan: WorldVeterinary Congress.

Lasker, J. P. & Beddrosian, J. L. (2000). *Acceptance of AAC by adults with acquired disorders.* In Beukelman, D. R., Yorkston, K. M. & Reichle, J. (Eds.). *Augmentative and alternative communication for adults with acquired neurological disorders.* Baltimore, MD: Paul H. Brookes.

Lee, J. B., Kaye, R. C., & Leora, R. C. (2009). *Conversational script performance in adults with non-fluent aphasia: Treatment intensity and aphasia severity.* *Aphasiology*, 23 (7-8). pp 885-897

Leora, R. C., Anita, S. H., Audrey, L. H. & Ron, C. (2008). *Computerized Script Training for Aphasia: Preliminary Results: America Journal of Speech –Language Pathology*, vol. 17, pp 19-34.

Light, J.C., Beukelman, D.R., Reichle, J. (ed.). (2003). *Communicative competence for individuals who use AAC: From research to effective practice.* Baltimore: Paul H. Brookes Publishing Co.

Lloyd, L.L., Fuller, D.R. & Arvidson, H. (1997). *Augmentative and alternative communication: A handbook of principles and practices*. Needham Heights, MA: Allyn and Bacon.

LoBiondo-Wood, G. & Haber, J. (2006). *Nursing Research Methods and Critical Appraisal for Evidence-Based Practice*: St. Louis, USA, Mosby Elsevier, pp 559-575

Logsdon, A. (2010). *Learning Disabilities Guide*: Retrieved (09-02-2012)
<http://learningdisabilities.about.com/bio/Ann-Logsdon-20159.htm>

Lyon, J.G., Cariski, D., Keisler, L., Rosenbek, J., Levine, R. & Kumpula, J. (1997). *Communication partners: Enhancing participation in life and communication for adults with aphasia in natural settings*. *Aphasiology*, 11(7), pp 693-708.

Marjorie, N., Michele, P. S. & Nancy, H. (2011). *C -Speak Aphasia alternative communication program for people with severe aphasia: Importance of executive functioning and semantic knowledge*, *Neuropsychological Rehabilitation*, 21: pp 322-366

Mason, I. (2006). *Developing and implementing aphasia-friendly stroke information for patients, families and carers*, VOL: 102, ISSUE: 47, pp 32-33

Meinzer, M., Djundja, D., Barthel, G., Elbert, T., & Rockstroh, B. (2005). *Long-term stability of improved language functions in chronic aphasia after constraint-induced aphasia therapy*. *Stroke*, 36, pp 1462–1466.

Mortley, J., Enderby, P. & Petheram, B. (2001). *Using a computer to improve functional writing in a patient with severe dysgraphia*. *Aphasiology*, 15(5), pp 443-461.

National Aphasia Association (1988) Available at www.medicinenet.com › ... › [aphasia index](#) (Site visited 14th of January 2012)

National institute for deafness and other communications disorder (2002). Retrieved on (10.01. 2012) from www.nidcd.nih.gov/health/voice/pages/aphasia.aspx

National Institute of Neurological Disorders and Stroke. (2008) NIH Pub. No. 97-4257 available at www.ninds.nih.gov/ (Site visited on the 10th of January 2012)

Nickels, L. (2002). Therapy for naming disorders: Revisiting, revising, and reviewing. *Aphasiology*, 16, pp 935-979.

Nicholas, M. & Elliott, S. (1998). *C -Speak Aphasia: A Communication System for Adults with Aphasia*. Solana Beach, CA: Mayer-Johnson Co.

Nina, S., Debbie, K., & Misty, S. (2004). "Speaking for Another": The Management of Participant Frames in Aphasia. *American Journal of Speech –Language pathology*. Vol.13. pp 114-127

Nordic Aphasia Association (NAA). Available at www.aivoliitto.fi/files/716/Afasia_english.pdf (Site visited on the 10th of December 2011)

Oelschlaeger, M. (1999). Participation of a conversation partner in the word searches of a person with aphasia. *American Journal of Speech- Language Pathology*, 8, pp 62-71

Oxford dictionary of current English. <http://en.wikipedia.org/wiki/Communication> Site visited on 25th January 2012)

Patton, M.Q. (2002). *Qualitative Research and Evaluation Methods*. Thousand Oaks, CA: Sage.

Petheram, B. (2004). Computers and aphasia: A means of delivery and a delivery of means. *Aphasiology*, 18 (3), pp 187-191

Polit, D., Beck, C. & Hungler, B. (2001). *Essential of Nursing Research*. 5th edition.

Polit, D.F. & Beck, C.T. (2003). *Nursing Research: Principles and Methods*. Philadelphia: Lippincott Williams and Wilkins Publishers.

Pulvermüller, F., Bettina, N. & Thomas E. (2001). Constraint-induced therapy of chronic aphasia following stroke. *Stroke* 32, pp 1621-1626

Rosemary, C. & Christopher, Ward. (2003). Evaluation of a training program to facilitate conversation between people with aphasia and their partners, *Aphasiology*, 17:8, pp 687-707

Ross, K. B. & Wertz, R.T. (2003). Quality of life with and without aphasia. *Aphasiology*, 17, pp 355-364.

Schlosser, R.W. (2003a). Roles of speech output in augmentative and alternative communication: Narrative review. *Augmentative and Alternative Communication* 19: 5-28.

Sigafoos, J. (2001). Conditional Use of Aided and Unaided AAC: A Review and Clinical Case Demonstration .*Focus on Autism and other Developmental Disabilities*. vol. 16 no. 3 pp 152-161

Sigafoos, J., O'Reilly, M., & Green, V.A.(2007). Communication difficulties and the promotion of communication skills. In A Carr, G O'Reilly, PN Walsh, J McEvoy (Eds.), *The handbook of intellectual and clinical psychology practice*. London: Routledge.

Speakability (2000). Accessed through: <http://www.speakability.org.uk/>

Suchitra Patnaik: (Defining Communication Theories):

www.mhhe.com/mayfieldpub/westturner/student.../theories.htm Retrieved on the 12/02/12)

Taylor, M.S. (2004.) *Understanding Aphasia: A Guide for Family and Friends* (4th ed. - 13th printing)

Taylor, M. S. (2006). Neurogenic disorders of speech and language. In O'Sullivan, S. & Schmitz, T. J. (eds.), *Physical rehabilitation: Assessment and treatment* (5th Ed.). Philadelphia, PA: F. A. Davis Co., Philadelphia.

Thomas. D (2003): A general inductive approach for qualitative data analysis. Available at http://www.fmhs.auckland.ac.nz/soph/centres/hrmas/_docs/Inductive2003.pdf.

Van de Sandt-Koenderman, M., Wiegers, M., & Hardy, P. (2005). A computerized communication aid for people with aphasia, *Aphasia Disability and Rehabilitation*, 27(9): pp 529-533

Van De Sandt-Koenderman, M. (2011). Aphasia rehabilitation and the role of computer technology: Can we keep up with modern times? *International Journal of Speech-Language Pathology*, 13(1), pp 21-27.

Wade, D.T., Hower, R.L., David, R. M. & Enderby, P.M. (1986). Aphasia after stroke: natural history and associated deficits. *J Neurol Neurosurg Psychiatry*, 49: pp 11-16

Worrall, L. E. & Holland, A. (2003). Editorial: Quality of life in aphasia. *Aphasiology*, 17(4), pp 329-332.

World Health Organisation (2001). The International Classification of Functioning, Disability and Health ICF. Geneva: WHO. Accessed (28.02.2012) Through: www.disabilitaincifre.it/documenti/ICF_18.pdf

Yavuzer, G., Güzelküçük, S., Küçükdeveci, A., Gök, H., & Ergin, S. (2001). Aphasia rehabilitation in patients with stroke. *Int J Rehabil Res. Sep*; 24(3), pp 241-244.

<http://www1.chapman.edu/comm/comm/faculty/thobbs/com401/nonverb.html> (Accessed 30.03.2012)

<http://learningdisabilities.about.com/bio/Ann-Logsdon-20159.htm> (site visited on 17th January 2012).

<https://www2.mcdaniel.edu/rtrader/com1102/definitions.html>;

www.arkunde.se

APPENDICES

Appendix 1 Literature Review

Authors/ Year of publication and Journals	Titles/Articles	Methods	Purpose of the study	Findings relevant to this study
Bilda (2011). Aphasiology	Video-based conversational script training for aphasia: A therapy study.	Therapy study	To show the positive effects and usefulness of a video-based conversational script training for aphasia.	Aphasia persons, who use the video-based script training, experienced increased communication skills.
Barthel et al., (2008). Aphasiology	Intensive language therapy in chronic aphasia: Which aspects contribute	Therapy study	The study was done to test the benefits of MOAT following therapy as an	Results shows that intensive MOAT training focused on individual deficits leads to substan-

	most?		AAC tool for persons with chronic aphasia.	tial and durable improvements in language functions in persons with chronic aphasia.
Sandt-Koenderman et al., (2005). Disability and Rehabilitation	A computerized communication aid for people with aphasia.	Multiple case study/ therapy	To develop a portable computerized communication aid for persons with aphasia that can assist them in their activities with daily livings.	Carefully selected aphasia persons may benefit from a computerized communication aid for their daily livings.
Cherney et al., (2008) America Journal of Speech – Language Pathology	Computerized Script Training for Aphasia: Preliminary Results	Control Trial	This article describes computer soft-ware that was developed specifically for	Findings in this study provided positive effects on all the 3 aphasic clients who used computerized Script

			training conversational scripts and illustrates its use with 3 individuals with aphasia.	Training.
Larsson & Thoren-Jönsson (2007). International Society for AAC	The Swedish Speech Interpretation Service: (SSIS) An Exploratory Study of a New Communication Support Provided to People with Aphasia.	Qualitative study in form of Interviews	To investigate aphasia person's experiences associated with the use of professional interpreters for assistance with daily activities.	An Interpreter can be used as an Augmentative and Alternative Communication tool to improve the quality of life of aphasic persons.
HO et al., (2005). Augmentative and Alternative Communication	The Effect of Remnant and Pictographic Books on the Communicative Interaction of Individuals with Global aphasia.	Randomized control trial	Study investigated the better option between remnants and pictographic symbols for persons with global aphasia.	Study provides support for the use of communicative books for individual with global aphasia.
Simmons-Mackie et al., (2004).	"Speaking for Another": The	Randomized control tri-	The study was under-	The study shows that a person

<p>American Journal of Speech – Language pathology.</p>	<p>Management of Participant Frames in Aphasia.</p>	<p>al/Qualitative study</p>	<p>taken to explore communicative interaction between an individual with severe aphasia and a non-aphasic speaking partner</p>	<p>with aphasia can use contextual resources and framing strategies to recount a prior event with the help of a close friend or relative.</p>
<p>Cunningham & Ward (2003). Aphasiology</p>	<p>Evaluation of a training program to facilitate conversation between people with aphasia and their partners.</p>	<p>Control trial design</p>	<p>The study was to investigate whether training a relative/friend and their aphasic partners, using an approach based on Conversation for adults with Aphasia (SCA), can improve their conversations.</p>	<p>It was noted that working with couples can produce beneficial effects.</p>
<p>Sacchett (2002). Int. J. Human-</p>	<p>Drawing in aphasia: mov-</p>	<p>Literature Review</p>	<p>Study reviews the literature</p>	<p>Drawing can be used as a non-</p>

Computer Studies	ing towards the interactive		on the use of drawing to communicate by people whose language is restricted due to aphasia.	verbal means of communication in other to convey messages by those whose speech is limited by aphasia.
LaFrance et al., (2007). Journal of Communication Disorders.	The effect of a therapy dog on the communication skills of an adult with aphasia.	Single participant study	Study explores the effects of a therapy dog and handler on the communication skills of an aphasic person receiving intensive speech and language therapy in a rehabilitation setting.	Presence of a therapy dog may be a catalyst to improve both verbal and non-verbal communication skills.
Estes & Bloom (2011). Aphasiology	Using voice recognition software to treat dysgraphia in a patient with conduction aphasia	Single Participant	To investigate the functional and linguistic effects of a treatment program that uses voice recognition	Findings show that with intensive instructions, the aphasic person can independently access the computer and Dragon Nat-

			software to improve written communication in an individual with chronic aphasia.	urallySpeaking Program.
Nicholas et al., (2011). Neuropsychological Rehabilitation	C-Speak Aphasia alternative communication program for people with severe aphasia: Importance of executive functioning and semantic knowledge	Individual Control	To test if AAC program like C-Speaks can be used for augmenting other communication modes.	C-Speak Aphasia alternative communication program can improve communication performances in aphasic persons.

Appendix 2 Abbreviations used

AAC- Augmentative and Alternative Communication

CAT- Communication Accommodation Theory

PCAD- Portable Communication Assistant for people with Dysphasia

MOAT- Model-oriented Aphasia Therapy

SCA- Conversation for Adults with Aphasia

AAT- Animal Assisted Therapy program

Appendix 3 Tables

Table 1. Characteristics of Broca and Wernicke Aphasia.....Page 10

Table 2. Table showing where and how the articles used for this study was chosen.....Page 28

Table 3. Available tools and strategies.....Page 38

Table 4. How tools and strategies ease communication.....Page 39

Appendix 4 Figures

Figure 1. Diagram showing Broca and Wernicke Aphasia: Accessed on 10.01.2012, through:

<http://en.wikipedia.org/wiki/image:BrocasAreaSmall.png>.....Page 10

Figure 2. Illustration showing the process of communicationPage 15

Appendix 5 Sample picture

C-Speak Aphasia ,sample picture.....Page 41